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A cognitive perspective on language learners' listening comprehension problems

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Abstract

In this article, I offer a cognitive perspective on the comprehension problems of second language listeners. I do this by identifying real-time listening difficulties faced by a group of English as a second language (ESL) learners and examining these difficulties within the three-phase model of language comprehension proposed by Anderson (1995, Cognitive Psychology and its Implications, 4th Edition. Freeman, New York). Data were elicited from learners' self-reports through the procedures of learner diaries, small group interviews and immediate retrospective verbalisations. My analysis showed 10 problems which occurred during the cognitive processing phases of perception, parsing and utilisation. Five problems were linked to word recognition and attention failure during perceptual processing. There were also problems related to inefficient parsing and failure to utilise the mental representations of parsed input. A comparison of two groups of learners with different listening abilities showed some similarities in the difficulties experienced, but low ability listeners had more problems with low-level processing. In the last part of the article, I highlight the benefits of researching real-time cognitive constraints during listening and obtaining data through learners' introspection, and offer some practical suggestions for helping learners become better listeners.

Keywords: Listening comprehension problems; Language learning; Cognitive framework

1. Introduction

All language learners face difficulties when listening to the target language. Nevertheless, the types and the extent of difficulty differ, and much listening comprehension research has been conducted to investigate these differences. The

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results of this body of research show that listener difficulties may be influenced by a number of factors. Lists of general factors have been identified (Tinkler, 1980; Boyle, 1984; Flowerdew and Miller, 1992) while the role of specific factors has also been examined. Some factors that have been the focus of research include speech rate (Conrad, 1989; Blau, 1990; Griffiths, 1992; Zhao, 1997), lexis (Johns and Dudley-Evans, 1980; Kelly, 1991), phonological features (Henrichsen, 1984; Matter, 1989) and background knowledge (Markham and Latham, 1987; Long, 1990; Chiang and Dunkel, 1992). Other issues have also been related to listener difficulties. These range from text structure and syntax to personal factors such as insufficient exposure to the target language, and a lack of interest and motivation. Brown (1995) acknowledged the relevance of all these issues, and further argued that listener difficulties are also related to the levels of cognitive demands made by the content of the texts. Besides these issues, problems arising from social and cultural practices have been suggested by Lynch (1997) in his study of two-way (interactional) listening.

2. Understanding learners' listening problems

2.1. Using learners' self-reports

This article discusses 10 problems identified from a group of English as a second language (ESL) learners' self-reports and compares the difficulties experienced by different ability listeners. These problems are presented in terms of what these learners did or failed to do when trying to comprehend texts. In other words, these difficulties are not about external and internal characteristics that might impinge on text understanding. Rather, these are real-time processing problems, directly related to cognitive procedures that take place at various stages of comprehension. The learners had described these difficulties in their own words as they reflected on specific situations when they listened to English. In some cases, they also offered reasons for these problems. These observations constitute a part of the learners' metacognitive knowledge about themselves and their learning processes (Flavell, 1979; Wenden, 1991; Goh, 1997). I believe that such introspective reports can be useful to both researchers and teachers because they allow us to understand some of the cognitive constraints that are usually invisible to an outside observer. Puzzled looks or blank expressions may indicate a lack of comprehension, but they tell us very little about mental processes. Moreover, by providing opportunities for learners to report in their own words, we might gain some insights into their understanding of and attitude towards some of these difficulties. The learner's voice can be very valuable to our understanding of their comprehension difficulties.

2.2. Adopting a cognitive framework

The data have been analysed and presented within a cognitive framework of language comprehension proposed by Anderson (1995). This three-phase model proposes that comprehension consists of perception, parsing and utilisation (Anderson,

1995, p. 379). *Perceptual processing* is the encoding of the acoustic or written message. In listening, this involves segmenting phonemes from the continuous speech stream (Anderson, 1995, p. 37). During this phase in listening, an individual attends closely to input and the sounds are retained in echoic memory. During *parsing*, words are transformed into a mental representation of the combined meaning of these words. This occurs when an utterance is segmented according to syntactic structures or cues to meaning. These segments are then recombined to generate a meaningful representation of the original sequence. This mental representation is related to existing knowledge and stored in long-term memory as propositions or schemata during the third phase, *utilisation*. At this stage the listener may draw different types of inferences to complete the interpretation and make it more personally meaningful, or use the mental representation to respond to the speaker. Perception, parsing and utilisation represent different levels of processing, with perception being the lowest. All three phases are interrelated and recursive, and can happen concurrently during a single listening event. They are "by necessity partially ordered in time; however, they also partly overlap. Listeners can be making inferences from the first part of a sentence while they are already perceiving a later part" (Anderson, 1995, p. 379).

Although Anderson's (1995) three-phase model is based on first language (L1) comprehension, it is no less relevant to an understanding of second language comprehension (L2). We have good reasons to believe that there are many similarities between L1 and L2 comprehension. Færch and Kasper (1986), for instance, have put forward convincing arguments that the fundamental cognitive processes in L1 and L2 comprehension are similar even though language learners obviously face more linguistic and sociolinguistic constraints. The study by O'Malley et al. (1989) has also provided evidence in support of the presence of perception, parsing and utilisation in L2 comprehension.

A cognitive framework is useful for understanding learners' listening difficulties as it pinpoints those places in cognitive processing where comprehension can break down. This knowledge can in turn help us trace the source of these difficulties in our learners. Knowing why some of the problems occur will naturally place us in a better position to guide our learners in ways of coping with or overcoming some of their listening difficulties.

3. The study

The report in this article is part of a larger study on L2 listening comprehension (Goh, 1998a). One of the aims of this study was to identify ESL learners' person knowledge, i.e. their metacognitive knowledge about themselves as L2 listeners. This knowledge included insights into real-time problems that they faced during listening. I have reported some of the learners' listening problems in an earlier article (Goh, 1997).[1]

[1] This 1997 article was based on data from listening diaries and discussed all three aspects of metacognitive knowledge — person, task and strategy. It highlighted some listening problems under person knowledge. Data collected from subsequent think-aloud protocols and small group interviews have

3.1. Informants and methods

The data were collected from a group of foreign tertiary-level students from the People's Republic of China. At the time of the study, they were learning English in preparation for undergraduate studies. Their average age was 19. The data were collected from three sources. The main source was weekly diaries kept by 40 students as part of their listening course. In these diaries, the students wrote about actual listening events and described how they tried to understand what they heard and the problems they experienced. In addition, 17 students from these 40 participated in small group interviews. These were semi-structured interviews aimed at finding out what the students knew about the task of learning to listen to English. Twenty-three students also participated in an immediate retrospective verbalisation procedure based on Ericsson and Simon's (1987, 1993) principles for collecting verbal data. Although the main aim of these sessions was to examine processing strategies used, the students' recall protocols often included descriptions of listening difficulties.

The diaries were written in English, sprinkled with some Chinese words. The oral reports were mainly in English even though the students were free to speak in Chinese. They used Chinese only when they could not express an idea in English immediately. The small group interviews and immediate verbalisations were recorded, and later transcribed and coded. The diaries were analysed and coded directly.

3.2. Data analysis

I began by reading the transcriptions and listening diaries carefully, looking out for any mention or description of problems during listening. When I came across such reports, I highlighted them with a pen and then summarised each one in a short statement. Next, I recorded the problem on a sheet of paper. Here is an example of what I did: one student said, "Sometimes there are two or three words together and the pronunciation sounds like another word, and I get confused." This comment showed difficulty with recognising individual words in a stream of speech. I summarised this description by the student as "cannot chunk streams of speech". Other descriptions reflecting the same difficulty were summarised likewise.

As I recorded the different problems revealed in the data, I also made a note of the number of times each problem was mentioned. When a student referred to a problem again after it had been recorded, the comment was highlighted on the text but not counted as a new report. By the time I finished analysing the data, I had a list of listening problems and the tally of reports for each of them. I then examined each problem for characteristics that linked it to perception, parsing or utilisation. The problems were then classified according to these phases of comprehension. I showed the preliminary classification to a colleague who agreed with all except one

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revealed further on-line problems and confirmed those in this earlier article. I have since rethought the problems, modified their descriptors and reorganised them in the light of Anderson, 1995 (see Goh, 1998a, for further details).

of the categories. After discussing with this person and re-examining the data, I arrived at the final categorisation as it appears in this article. A sample of the data was also checked by another colleague who acted as an independent coder for the main study (Goh, 1998a) on which this article is based.

4. Results

4.1. Problems related to perception, parsing and utilisation

This section discusses the problems that students reported and, where possible, highlights some of the reasons for the presence of these problems offered by the students themselves. The data revealed 10 processing problems that occurred during their listening. Problems experienced at the *perception* stage had mainly to do with recognising sounds as distinct words or groups of words. Perception problems also included difficulties with attention. Parsing problems included various difficulties with developing a coherent mental representation of words heard. In the utilisation stage, some learners had difficulty with understanding the intended message of the speaker. Difficulties also arose at this stage when the listener was unable to process the text further due to either a lack of prior knowledge or inappropriate application of prior knowledge. Table 1 shows the 10 listening comprehension problems. Among the 10 problems identified, three were reported by more than half of the 40 students and two were mentioned by a fairly large number of them (Fig. 1).

The rest of this section describes each problem, beginning with the five problems in Fig. 1. To illustrate the problems, I have included excerpts from the students' reports (the students' names have been changed). The reasons some students cited for these problems are also included.

Table 1
Problems related to different phases of listening comprehension

Perception	Parsing	Utilisation
Do not recognise words they know	Quickly forget what is heard	Understand words but not the intended message
Neglect the next part when thinking about meaning	Unable to form a mental representation from words heard	Confused about the key ideas in the message
Cannot chunk streams of speech	Do not understand subsequent parts of input because of earlier problems	
Miss the beginning of texts		
Concentrate too hard or unable to concentrate		

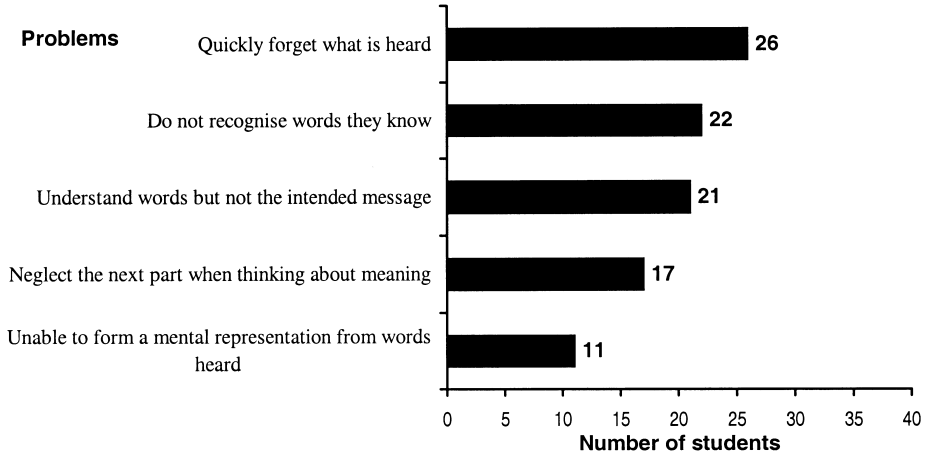

Fig. 1. Five common listening comprehension problems.

4.1.1. Quickly forget what is heard

About two-thirds of the students reported that they could not remember certain words and phrases they had just heard. One of the most common complaints was that, although they could understand what was said when they heard it, they would forget it as soon as they began listening to another part of the message.

1. When I heard the new words, I forget the contents which was mentioned before. (Limei)

2. When I listen to radio, I can understand most of words, but I forget the precedent sentences after listening to the present sentence. (Huang Da)

The students recognised words in the text and had apparently understood what they heard, but they soon forgot the contents. A possible cause is the limited capacity of the students' short-term memory. As Anderson (1995) has suggested, the three phases of language comprehension do not always occur in distinct stages, but can be recursive and overlapping. Therefore, these listeners could be trying to store one part of the input they had successfully perceived while simultaneously attending to the acoustic signals for the next part. Short-term memory is constantly cleared for new input and unless some form of association or fixation in long-term memory occurs immediately, the information will be forever wiped out from an individual's memory (Howard, 1983; Anderson, 1995). This appeared to have been the problem faced by the students.

Overlap among the three comprehension phases was evident from some students' verbal reports. There was some indication that the students experienced this problem most when the part they had just parsed was followed by input with unfamiliar elements, such as new concepts or vocabulary. Limei's comment (1) seems to suggest

this. Having to process more demanding input had most probably caused a cognitive overload. This would have resulted in little or no spare processing capacity to form meaningful associations with existing knowledge in long-term memory. Huang Da's report (2) suggests that he had successfully perceived and parsed the input. However, before he could utilise the interpretation (store it in long-term memory for later retrieval), it was displaced by new input occupying the limited-capacity short-term memory. As a result, he could no longer recall the words or the meaning of what he had parsed.

I have categorised this problem as a parsing problem because it appeared that the mental representation formed during parsing was ineffective. This strongly suggests that parsing was not carried out adequately and efficiently. The text was not processed semantically in a deep and meaningful way. Craik and Lockhart's (1972) depth-of-processing theory proposes that without depth of processing, information received will be quickly forgotten. They defined 'depth' in terms of the meaningfulness extracted from the stimulus.

4.1.2. Do not recognise words they know

The second most common problem the students faced during listening was related to a fundamental aspect of comprehension — perceptual processing. More than half said that although some words sounded familiar, they were unable to recall their meanings immediately. Consequently, they were unable to process the message using those words. Here are two reports highlighting this:

> 3. Listened to TV news. Some words sounded familiar but I can't remember their meanings. So I must develop my reaction speed. (Hailong)

> 4. For example just now 'automatically', I know this word, and I, and if I read this I can easily understand. (Xiao Qian)

Many students, such as Hailong (3), remarked that they had to learn to speed up their reaction to the words they heard. A possible reason for this slow recognition is that the students could not match the sounds they heard with any script in their long-term memory. It is likely that for some of them, sound-to-script relationships have not been fully automatised. Therefore, although they knew certain words by sight, they could not recognise them by sound. Put another way, their listening vocabulary was underdeveloped. Their ability to understand spoken words was greatly handicapped because they had not stored the sounds of lexical items efficiently in long-term memory. This underdeveloped listening vocabulary could have been directly related to the way the students learnt new words. Many of them said they learnt by memorising the spelling of words and often neglected to remember how the words sounded. Another possible explanation for this problem is that word-referent relationships might not be automatised. The students 'knew' the words but were slow when activating this knowledge. Some students were aware of a possible link between learning practices and this specific listening problem. Meng Min demonstrated such an awareness:

5. I think to intimate (sic)[means 'imitate'] the pronunciation is the best way to learn speaking and also to help us listen, with our listening. Since so many years we are training, we are trained to be good at reading, to remember words by watching, by writing, so we gradually lost the familiarity to intimate (sic).

Although many students did not have a habit of learning words by simultaneously remembering the correct pronunciation, this does not mean they did not have any phonological representations of new words or phrases in their memory. However, since these sound representations were not always accurate, they were of little use when the words were pronounced accurately, as the following examples show:

6. I remember that yesterday the teacher told us the word 'hostel', but I couldn't understand because I always pronounced as 'hosTEL'. So this gave me a lesson. (Fei Fei)

7. Ah, last time when someone mentioned 'benign' in the class, I didn't react to very quickly because I always pronounced it as 'BEning' for many years. (Li Ya)

4.1.3. Understand words but not the intended message

More than half the students said they were unable to get the full meaning of the message even though they had understood the literal meaning of the words. This is a utilisation problem because it is related to the listeners' ability to make useful elaborating inferences or act on the intended meaning of the message.

8. I found that actually sometimes it's not I couldn't hear it, but couldn't understand it. I couldn't fully understand its special meaning in the fixed situation. (Li Peng)

9. Sometimes I don't think when I'm listening, I just find the meaning, not the extended meaning. (Libei)

Most students did not explain why they could not get the intended meaning from what they heard, though occasionally the reason was given, as in the case of Li Peng (8). Sometimes, the reason could be inferred from the verbal report, as with the following comments from Huaxu:

10. I listened to a tape. A man talked about special management of company in American English. I can understand most of the words, but I can't join them together and understand whole sentences meaning. I asked someone else what's the topic and I listened as carefully as possible. (Huaxu)

Huaxu did not have sufficient background knowledge, or the relevant schema, for the talk he was listening to. His lack of prior knowledge about company management skills had limited his top-down processing of the text. Inferencing is a process essential to comprehension (Eysenck and Keane, 1995) and a crucial mental activity

during utilisation (Anderson, 1995). In the absence of a relevant schema, Huaxu was unable to make appropriate elaborating inferences. Besides limitations of content knowledge, problems during utilisation may also arise from the listener's lack of communicative competence (Hymes, 1979). The listener might be able to make literal sense of an utterance at the parsing phase, yet still not understand the illocutionary force the utterance might have, as Limin's report shows:

> 11. I think culture is the key element in language. Sometimes I can catch the whole sentence. But I can't understand the true meaning of the words. Because I haven't the same culture as the speaker, I couldn't give the accurate response to it.

4.1.4. Neglect the next part when thinking about meaning

The fourth most common problem cited by the students was missing the next part of a text when they stopped to think about unfamiliar words or the interpretation of a segment of text. This is an attention problem which directly affected the amount of acoustic input that could be perceived and processed. Examples (12)–(14) show how three students described this problem:

> 12. There are also some intervals when I ponder upon the specific meaning of one word and lose the following words, which hinder me from coherent understanding. (Tianqing)

> 13. The problem I find is that there are many words that sound very familiar to me, but I can't think of their meanings immediately. It takes me several minutes to react, but during this short time, the sentences that follow them are not grasped by me. (Li Liu)

> 14. When I listen clearly to the first sentence and think its meaning, the second has come, so what can I do now? (Weijun)

Xinlei explained why it was sometimes hard not to stop and think about words:

> 15. Sometimes when I come across a word which I remembered I had learned recently but just forgot its meaning, I would think of it hard and this affected my listening to the following sentences. (Xinlei)

These reports not only illustrate a common listening problem, they once again show recursiveness and overlapping of the three phases of comprehension, suggested by Anderson (1995). Since the students were unable to process the information fast enough, it was soon displaced by new input from the stream of speech. The students, therefore, experienced several setbacks simultaneously: they could not understand some words and so tried to search for the meanings. This had to be done under the constraints of a limited short-term memory, which was further limited by the demands of processing a language in which they were not completely proficient (Call, 1985). The decreasing cognitive processing capacity became even more

severely taxed when they had to keep up with new input. This could have caused the students to be caught in a vicious circle of perception and parsing, with few opportunities to utilise mental representations they tentatively formed.

4.1.5. Unable to form a mental representation from words heard

The last of the five common problems occurs at the parsing phase. The students reported that they failed to derive a reasonable mental representation of the input by connecting the words they heard.

16. When I was listening to an English song tape, I could catch most words. But I could not put all the words into a full sentence to get a full idea. (Gaohong)

17. It is my greatest failure because I can't connect those words what I heard into complete sentences for the absence of key words. ... I tried to listen to BBC. But unfortunately what I got was just some signal words and some phrases. About its meaning, I only learned a little, even near to zero. (Lixia)

One likely reason for this problem is that many of the words the students managed to hear were not key or content words, but merely words the students were familiar with and could recognise instantly. As Lixia noted, there was 'the absence of key words''. Donghai demonstrated his insight into this problem when he said:

18. I mean, for example, you say ''I'm going to do something.'' If I hear ''I'm going to'' I can't make, I do not understand the meaning what you are going to do. If I heard the verb I'm going to do what, then I can understand the whole sentence.

4.1.6. Other listening problems

Three more problems at the level of perception were identified. Students reported that they could not chunk streams of speech into recognisable words or phrases. Here are two reports describing this:

19. I don't know how to divide the long sentence into several parts. I'm afraid of listening to long sentences. (Limei)

20. Like some words, some words together, they link together. (Junyung)

Many students realised that attention was fundamental to listening and identified their lapses in concentration as another listening problem:

21. The main problem is that I can't concentrate well on those serious topic, maybe I need practising more. (Xiaoqing)

Some students also said that whenever their attention was diverted from the input, they would find it extremely difficult to follow the rest of the message:

22. During listening, Wejie talked with me for a second, and then I missed the whole thing. (Li Jia)

Others, however, reported that concentrating too hard could be counter-productive:

23. Sometimes you are so eager to catch more. As a result, you only care about your mind, not the listening material. (Wenyi)

Catching the beginning of a spoken text was another problem reported. Some students said that although they could hear sounds, they could not recognise or remember anything that was said during those early moments. Donghua and Liu Bin observed this problem and offered some explanations:

24. Usually the first sentence of the listening is the most difficult to understand, coz maybe I'm not prepared enough for it...it came a lot of a sudden that...the first part of it is usually missing. (Donghua)

25. Sometimes, I think in most case when I begin to listen, the first sentence always I miss it. And then I can hear very clearly some words, then I can concentrate on the talk or lecture. ... Because at first you don't know the content at all then get involved, it's just at the beginning you're lost, and gradually you may grasp the meaning, but you can only pick up the meaning of words here and there. (Liu Bin)

Besides these three perceptual-processing problems, a further problem with parsing was reported. Some students observed that because they did not understand one part of a text, they were unable to understand subsequent parts. This was in spite of the fact that they could understand the words in these latter parts. Below is an excerpt from a recall protocol:

26. Yeah, these things I cannot put them in a sentence. ...Yeah, I cannot understand them exactly, so I, I cannot carry on the meaning. Sometimes, I think if the word I cannot know is not important because I can understand smoothly but sometimes if the word is important, my thinking is broken, so it's harder to carry on. (Weilin)

This problem seemed to be largely due to a lack of local or specific context, which earlier parts of the text would have provided. The degree to which this lack of local context affected comprehension might have depended on how much prior knowledge the students could bring with them to their interpretation. Those who had rich background knowledge were often able to compensate for this lack by engaging in top-down processing to fill in the gaps. Those who could not do this would have no choice but to fall back on input-driven parsing, which became even more difficult when there were many unfamiliar words. The absence of a 'big picture', therefore, made it extremely difficult to interpret fragments of the input even when the words were familiar.

The last problem occurred at the level of utilisation. Some students were confused about the key ideas in the message. Although they had successfully parsed some parts of the input, they were still unable to ascertain the relative importance of different parts of the input. They could not make use of the information because they did not know whether what they had understood was useful.

27. Another problem is in Chinese, while we listen to Chinese, we only listen to one sentence, we can judge, guess what the speaker will say. Or after a long speaking we can easily find which is important and which is not very important, but in English, some speakers say a lot of rubbish, we can't find it whether it is useful or not. (Zhizheng)

Zhizheng has used the rather strong word 'rubbish' in his comments probably to express his intense frustration at not being able to distinguish key ideas from unimportant points.

The students could have been confused because they were unable to listen selectively. This could have been due to a lack of planning and also a clear purpose in listening. We could infer this from Yang Mei's comments:

28. Yeah, because it happens suddenly, we can't decide in such a short time... to recognise whether it is very important for us, so sometimes we just lost it.

Learners like Yang Mei might have been aware of the need to distinguish what was important from what was not, but they were unable to make good use of metacognitive tactics to manage this aspect of their listening. Adopting a planning strategy like selective attention and a tactic like listening for particular discourse marker phrases would have been useful in such situations. For some learners, this problem might also have been linked to their listening ability, in particular, their speech recognition and parsing ability. Identifying which bits of information are important would clearly be been a problem if listeners do not understand all or most of the information given.

4.2. A comparison of learners with different listening abilities

To find out whether there were any differences between the listening difficulties faced by L2 listeners of different abilities, I compared the verbal reports of two groups of learners. Each group consisted of eight students selected according to their results in a post-instruction standardised proficiency test. The test used was the SLEP test (Educational Testing Service, 1991).[2] The students in the high-ability group had

[2] This test measured reading and listening comprehension. It contained 150 multiple-choice questions, 75 for each skill. I used the scores in the listening test to distinguish the two ability groups. The average raw score for the high-ability group was 65 while that for the low-ability group was 49. There was also a noticeable difference in the students' scores for the entire SLEP test. Students in the high ability group had a range of scores that was equivalent to TOEFL scores of 550–600, while those in the low ability group had a range of scores equivalent to TOEFL 440–500.

achieved listening scores in the top 30% of all the students enrolled in the intensive English programme. The low-ability group consisted of eight students whose listening scores in the same test were in the bottom 30%. The selection was further confirmed by the students' overall performance in terms of improvement from pre-instruction test scores and their final exam scores in lecture comprehension. The frequency for each problem was first tallied according to ability groups. Next, the problems mentioned by more than half of the students in one or both ability groups (i.e. five or more in each group) were identified and compared.

The majority of the high ability listeners reported three problems. The low ability listeners also identified three. Two problems were common to both groups. Table 2 shows these four problems.

Both high and low ability listeners said that they had a problem with recognising words they knew. This perhaps would not come as a surprise because both groups were still learning the English language and their speech perception skills were, therefore, not yet fully automatised. Nevertheless, the extent of the difficulty would predictably be different. Another problem both ability groups shared was that they often quickly forgot what they thought they had understood. These two problems were among some of the most common ones experienced by all the 40 students in the study. As suggested earlier, this was probably due to excessive demands from unfamiliar input on a limited processing capacity. As many low-level processes such as sound-script and word-referent processing were not automatised, there was little or no mental capacity available for higher level processing which forms meaningful associations with existing knowledge in long-term memory. It might also have been that processing had been shallow, i.e. the students recognised specific words but did not process the chunk of input semantically. Another related reason is that due to the recursive nature of comprehension processes, mental representations from successful parsing were displaced by new input before they could be utilised. From this comparison, we can see that even the high ability listeners were not spared these cognitive difficulties. All this indicates that language learners, regardless of proficiency, have limited short-term memory capacity, as Call (1985) has suggested.

In addition to these two problems, high ability listeners also said they were often unable to get the meaning of the message even when they had understood all the words. This is a utilisation problem: these listeners could not use the literal information they had successfully parsed because they had not understood its intended meaning. As suggested earlier, this problem was most likely due to their limited schemata. It could also be related to insufficient contextual information, which

Table 2
Problems experienced by a majority in each listening ability group

Problem	Comprehension phase	High ability	Low ability
Do not recognise words they know	Perception	✓	✓
Quickly forget what is heard	Parsing	✓	✓
Understand words but not the intended message	Utilisation	✓	–
Neglect the next part when thinking about meaning	Perception	–	✓

would otherwise be useful for drawing inferences. Although few in the low ability group reported this problem, it should not be taken to mean that they were better at high-level processing than the high ability listeners were. What was more likely was that the low ability listeners hardly ever got beyond the perception or parsing phase because of limited proficiency and inadequate processing capacity. Their problems were, therefore, often confined to low-level processing such as speech recognition, as the comparison further showed.

The third problem that these low ability listeners reported had to do with attention. They often did not hear the next part of a text because they spent too much time thinking about something they had just heard. A number of low ability listeners agreed that their comprehension suffered greatly because of this, but said they sometimes found it difficult not to be fixated on unfamiliar words. This problem was related to the strategy of fixation that many of these learners used to help them process text (Goh, 1998b).[3] Both high ability and low ability listeners had a tendency to pay close attention to a small problematic part of the text in order to understand it. They did this by searching for the spelling or meaning of the difficult words or trying to memorise words or phrases so that these could be processed later. However, the high ability listeners often used the metacognitive strategy of directed attention to bring their attention back to the unfolding text and continue with listening. This prevented further disruption to their processing of the text even though they had been temporarily fixated on problematic parts. The low ability listeners, on the other hand, reported little use of such a strategy for keeping their attention on the input. These students would clearly benefit from using monitoring strategies more frequently to overcome this attention problem. Having said this, it is also possible that the tendency for low ability listeners to spend time thinking about difficult words was due to a general lack of vocabulary or an underdeveloped listening vocabulary. Poor sound-script and word-referent automatisation would naturally have led to numerous problems at the perception and parsing phases.

The comparisons above show that although the two ability groups had some similar problems, there were clearly differences in the degree of cognitive constraints each experienced. The results are indicative of the major difficulties each group of listeners faced, but it was not possible to conclude that certain problems were associated exclusively with a particular group.

4.3. Summary of findings

The students in my study reflected on specific instances when they listened to English and described their difficulties in terms of what they were unable to do. This provided rich data on contextualised real-time listening problems. My analysis revealed 10 real-time comprehension problems related to the three cognitive processing phases — perception, parsing and utilisation. Half of them were perceptual processing problems arising from failure in word recognition and ineffective attention. Three others were problems with parsing and two with utilisation. These 10

[3] This article reports the pattern of strategy use among these same groups of learners.

problems could have been the result of a number of related factors: sound-script and word-referent processes were not automatised, poor sound representations of familiar words, failure to use appropriate comprehension tactics, a lack of appropriate schematic knowledge, insufficient prior knowledge, preoccupation with knowing the meaning of certain content words, limited processing capacity in short-term memory and shallow processing. A comparison of high and low ability listeners showed that they shared some similar problems, but the low ability listeners appeared to have more low-level perception problems.

By discussing listening difficulties within the three-phase comprehension model, I hoped to better understand the different cognitive demands that the students faced when confronted with text that was transient, and contained unfamiliar phonological and lexico-grammatical features. Anderson and Lynch (1988) have noted that the level of difficulty of the input could vary according to the listeners' purpose in listening. Nevertheless, it may be safe to assume that at various points in their learning experience, language learners will face difficulties related to some or all three phases of language processing. Therefore, by identifying their cognitive problems at each stage, learners could be made aware of these potential setbacks and learn to take steps to cope with them when these difficulties arise.

5. Helping learners become better listeners

Various authors have discussed ways of helping learners improve their listening comprehension. Brown (1990) proposed a methodology that combined developing the learners' phonological code and helping them use contexts to make predictions. Buck (1995) proposed using pre-communicative and communicative activities, following a pedagogical framework by Littlewood (1981). This included helping learners develop a facility with fast natural speech and use good listening strategies. Field (1998) proposed an approach that took into consideration learners' listening problems and suggested a series of exercises for practising listening subskills in short micro-listening exercises.

I agree with Field (1998) that spending time on helping learners tackle their listening problems is an important part of teaching listening. In fact, I believe it is absolutely crucial that we include practice activities that can help learners overcome or cope with such difficulties so that they can have better control over their listening comprehension. However, to get the most out of these activities, we need first to identify our students' listening problems so that we can deal with each problem specifically. By concentrating on only those areas that affect their comprehension most, we can use limited teaching time more profitably.

For example, although it may appear to be a good idea to engage students in distinguishing minimal pairs, such ear training activities may not actually be useful for improving communicative listening where the listener is actively engaged in meaning construction. Because words are not heard in isolation but in specific contexts, listeners are often able to use top-down processing strategies, such as inferencing and elaboration, to complete an interpretation even when they do not recognise

every word in the input (Goh, 1998 a, b). Rost (1990) gives a detailed description of inferential processes that listeners engage in when faced with problems such as 'lexical fuzziness'. Moreover, as this article shows, word recognition problems during perceptual processing often had to do with sound-script and word-referent automatisation. There was no indication that the students were at any time confused over words with slightly different phonemes. Therefore, exercises in distinguishing minimally different words are not going to help them deal with their perceptual processing problem. Tauroza (1993) made similar observations about the value of exercises that focus on word-final consonants. He also rightly cautioned against putting learners through exercises which developed strategies that were not normally used by L1 speakers. This possible mismatch between teacher assumptions and learner needs is another reason why more information about actual real-time listening problems is urgently needed.

One way to obtain this information is through learner introspection or self-reports, that is to ask learners to reflect on the problems they experience during specific listening events. The data for my study have proved to be useful because they revealed cognitive difficulties that otherwise would have remained largely hidden. This introspective approach to understanding learners' listening difficulties also has many practical benefits. The problems revealed can provide insights into how well learners apply listening strategies to help them deal with comprehension difficulties. Learners who repeatedly complain about low-level perception problems probably do not engage sufficiently in top-down processing. It is also likely that they do not or cannot manage their difficulties through an efficient use of metacognitive strategies. Learners who are fixated on unfamiliar words are probably unaware of the importance of monitoring and directing their attention so that they could continue to receive input in spite of some temporary setbacks. These insights will have implications for selecting listening strategies to be taught in class. In addition, low-level processing problems could also indicate that the contents of the listening texts or the nature of the listening tasks are too cognitively demanding for the learners. If this problem occurs repeatedly in the classroom, it could mean that the listening materials or teaching methods used are not suitable for the students.

My analysis of listening problems according to the three comprehension phases has further provided me with insights into the extent to which these problems could be tackled. For example, the predominance of low-level comprehension problems indicates that comprehension can break down as early as the perception stage if learners rely heavily on bottom-up processing. Nevertheless, if they possess the relevant prior knowledge, they could perhaps be persuaded to settle for some ambiguity by applying top-down strategies that could help them derive a general sense of the message, unsatisfying though this may be for some learners. They could also be taught how not to be fixated on difficulties but to continue to listen to other parts which might provide some clues or clarifications. In addition to this, regular perception practice may also help learners become more sensitised to the sounds of the target language.

On the other hand, the problem of inefficient or shallow parsing may be much harder to tackle. Parsing is a complicated mental process. The transience of listening

input and the recursive nature of the three comprehension phases make it all the more difficult for listeners who have an imperfect grasp of the language. This is the key difference between L2 listening and reading comprehension. While readers can go over a piece of text as many times as they want in order to understand the relationship between the words in it, listeners do not get this luxury of pause and replay. In theory, learners may need similar subskills to parse texts in reading and listening. In practice, however, L2 listeners need to hold as much of the spoken text as possible in their limited capacity short-term memory, interpret the content before it is displaced by new input, and provide immediate listener response if that is required. At the same time, they hear more words being spoken, and what has not been processed is permanently lost. Many learners frequently find themselves in this situation.

I suggested earlier that the weaker listeners in my study appeared to be caught between perception and parsing, with few opportunities to process the information at a higher cognitive level. Whereas we can carry out listening exercises to improve learners' aural perception, it is difficult to teach real-time parsing. We do not yet know enough about how learners form mental representations from syntactic or semantic cues and how this process actually breaks down. Nevertheless, we can teach learners to use appropriate comprehension strategies to exploit whatever input they manage to process and to cope with imperfect processing. Apart from enhancing perception and utilisation, it is possible that these strategies can facilitate parsing as well.

I will now suggest two teaching strategies that can help learners improve their listening by addressing the problems reported in this article. The first is a direct strategy which makes use of listening exercises for improving perception and activities for learners to use specific comprehension tactics. The second teaching strategy aims to indirectly improve learners' listening ability in all three phases of comprehension by raising their metacognitive awareness about L2 listening.

5.1. Direct strategy: perception and strategy practice

We can help learners improve their listening comprehension directly by providing them with practice in perception of selected sounds, content words, pronunciation of new words and intonation features, such as prominence and tones. However, perception practice alone would not be sufficient for preparing learners to deal with listening for meaning. It is therefore important that they learn to adopt listening strategies that can assist or enhance their comprehension. There are three groups of strategy that learners would benefit from using — cognitive, metacognitive and social-affective. Each of these comprises distinct tactics or mental techniques. Cognitive tactics act directly on the input to make sense of it; metacognitive tactics manage cognitive processes and difficulties during listening; social tactics involve other people in achieving understanding; affective tactics manage unproductive emotions during comprehension. Table 3 lists types of practice in perception and listening tactics[4] that can help learners improve their comprehension by dealing with problems similar to those discussed this article.

[4] The comprehension tactics suggested here are selected from Goh (1998a, b).

Table 3
Types of practice for improving listening comprehension[a]

	Perception	Parsing	Utilisation
I. Perception practice			
a. Listen to how new vocabulary items are pronounced	◆		
b. Follow along with transcript of recording	◆		
c. Write down content words from short passages	◆		
d. Identify the most prominent word in short utterances	◆	◆	
e. Identify meaning groups in sentences of varying lengths	◆	◆	
f. Identify tones and their communicative value	◆	◆	
g. Identify common discourse markers and their functions	◆	◆	
h. Identify common phrasal verbs and their meaning	◆	◆	
II. Listening strategy practice			
Cognitive tactics			
a. Infer missing or unfamiliar words using contexts, co-text and prior knowledge	◆		◆
b. Predict general contents before listening using contexts and prior knowledge	◆		◆
c. Predict unfinished utterances using contexts, co-text and prior knowledge	◆		◆
d. Use prior knowledge to elaborate and complete interpretation			◆
e. Take short notes of important content words		◆	◆
f. Relate limited interpretation to a wider social/linguistic context			◆
g. Relate one part of the text to another			◆
h. Visualise scenes, objects, events etc. being described		◆	◆
i. Reconstruct meaning using words heard		◆	◆
Metacognitive tactics			
a. Preview contents in different forms	◆		
b. Rehearse the pronunciation of potential content words	◆		
c. Establish purpose for listening	◆		◆
d. Listen selectively according to purpose	◆	◆	◆
e. Pay attention to discourse markers		◆	◆
f. Pay attention to visuals and body language	◆		◆
g. Pay attention to tones and pauses	◆	◆	
h. Monitor comprehension using contexts and prior knowledge			◆
i. Evaluate comprehension using contexts, prior knowledge and external resources			◆
j. Continue to listen for clarification in spite of difficulty	◆		
k. Assess the importance of problematic parts and decide whether to ignore them or actively seek clarification	◆		
l. Determine the potential value of subsequent parts and vary intensity of attention accordingly	◆		
Social-affective tactics			
a. Ask speaker for clarification and repetition	◆		◆
b. Paraphrase what speakers say to check understanding			◆
c. Learn to relax before and during listening	◆		
d. Encourage oneself to continue listening	◆		

[a] The symbol (◆) indicates the comprehension phase which can be facilitated by such practice.

5.2. Indirect strategy: metacognitive awareness raising activities

An individual's metacognitive knowledge is their self-knowledge about learning, and this consists of knowledge about person, task and strategy (Flavell, 1979; Wenden, 1991). Knowing about one's listening comprehension problems is a component of person knowledge. Language learners are generally aware of these problems, which they consider to be an unpleasant but inevitable part of learning a new language. Their attitudes to listening problems may differ, however. Some learners are 'listener-blamers' (Lynch, 1996); they have a tendency to blame themselves whenever they could not understand what they hear. Some, on the other hand, blame their failure to comprehend on external factors, such as vocabulary, accent and speech rate.

By encouraging learners to consider the difficulties they experience while listening to the target language, we get them to think about how their cognitive processes could be affected and when comprehension could potentially break down. Moreover, by asking them to focus on individual problems, we help them to view their overall sense of listening difficulty in terms of mental processes that can be dealt with systematically. Hopefully, when they think about the possible causes of these difficulties, learners would develop a more balanced view about their comprehension problems. Instead of taking on all the blame or shifting it entirely to the speaker or the text, they might see that listening comprehension is a very complex issue and involves many factors. Further, when learners speculate on the causes for these difficulties, they could be prompted to consider how these difficulties could be dealt with realistically. This increased metacognitive awareness about their learning processes could cause them to take a more active part in overcoming some of their listening difficulties, rather than accept all their problems as unavoidable and insurmountable.

We can raise learners' awareness about learning to listen in four ways:

1. set aside lesson time for discussion and reports about listening problems and useful strategies;
2. encourage students to 'think aloud' soon after they have completed a listening task;
3. provide opportunities for individual reflection through listening diaries; and
4. extend the scope of pre-listening and post-listening tasks to include metacognitive tasks.

Readers who are interested in more details about these activities can refer to my earlier discussion in Goh (1997).

6. Conclusion

In this article, I described 10 real-time listening comprehension problems faced by a group of ESL learners and compared the differences between learners with different listening abilities. I also suggested two teaching strategies essential for helping

learners become better listeners. The direct strategy aimed at improving perception and strategy use. The goal of the indirect strategy was to raise learners' metacognitive awareness about L2 listening. Both strategies are needed if we want to help learners not only improve their listening comprehension but also become more efficient at directing their own learning and development as L2 listeners.

Clearly, there is a great deal more to be known about real-time comprehension problems. Further research is needed among other groups of language learners to examine the causes of ineffective low-level processing. We also need to find out to what extent word recognition problems are due to ineffective sound-script and word-referent automatisation as well as other constraints, such as limited vocabulary due to low language proficiency. The problem with inadequate parsing could be investigated further by examining the effects of syntactical knowledge, the use of semantic cues and memory. Another issue that merits further investigation is learners' attitudes to their listening problems and how they deal with these difficulties. More research is also needed to ascertain the relative seriousness of these real-time listening comprehension problems so that they could be prioritised for teaching purposes.

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