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## A tentative approach to analysing listening strategies in CALL

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### Abstract

While listening to an oral message individually, L2 learners may easily stop and/or go back to poorly understood previous pieces of information. Several experiments have been carried out in which L2 learners (L1: French) were listening on a computer to an MP3 track in German while a video of the screen was recording the movements of the mouse and its time-course. This new method permitted an accurate analysis of the subjects' self-controlled cognitive information input/intake strategies, that is to say the self-regulating process during the listening.

The data, the time-courses of the mouse were then analysed, from both a linguistic and a psycholinguistic point of view, enabling us, on the one hand, to define a typology of learning strategies. We recognised four listening types. As opposed to lesser-skilled learners, better-skilled learners deal with the listening task globally.

On the other hand, tracking the movements of the mouse while a learner individually listens to an oral text on a computer also has a methodological interest and permitted as well to verify some precise research hypotheses about the links between linguistics features, self-regulation strategies and comprehension.

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### 1. Introduction

While reading a text, L2 learners as well as L1 experts may easily stop and go back to poorly understood previous pieces of information. While listening, they have no possibility to develop such strategies because of the continuous incoming speech-flow. They cannot go backwards or simply stop in

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order to listen again if they want to think about the meaning of what they have already heard. Nevertheless, listening to an MP3 track in German on a computer or on an MP3 player offers a relevant individual alternative to ‘collective listening’ in the classroom and is indeed of important methodological interest for the study of listening ‘intake’ strategies. While listening to an oral message, L2 learners as well as L1 experts (provided they use an MP3 device) may nowadays regulate and freely control the information input/intake.

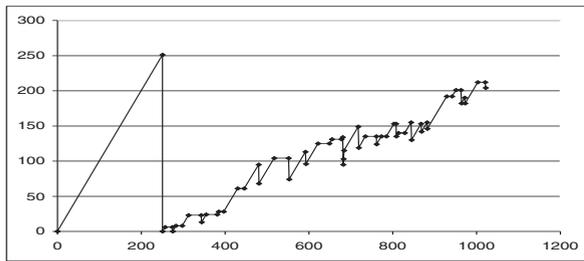
## 2. Method

The study consisted of four manipulations. Manipulations 1, 2 and 3 tested the effects of listening conditions and of initial level and listening strategies on comprehension. Manipulation 4 tested the influence of particular difficulties on comprehension and strategies. In these experiments, L2 learners (L1: French) between 14 and 16, level B1/B2 (CEFR, 2001) were expected to listen to an MP3 track in German on a computer while a video of the screen recorded the movements of the mouse and its time-course ‘on-line’. After listening, the learners had to recall the speech in French as a measure of comprehension, we made a proportional analysis (Kintsch, 1998, p. 37) of all the written recalls to measure their performance in comprehension. Recording the movements of the mouse and its time-course ‘on-line’ enabled accurate analysis of the subjects’ self-controlled listening strategies in information input/intake. We think that movements to stop or go back with the mouse during the listening task are indicative of metacognitive activity by the learners, such as planning and monitoring. For us, in this study ‘self-regulation’ indicates the capacity of the listener to exercise physical control over the listening input by using the mouse. Consequently, ‘physical’ self-regulation needs to be distinguished from metacognitive knowledge, that is to say the ability of learners to plan and regulate their listening. Our point is that the recorded physical movements of the mouse during the listening task are good indicators of metacognitive activity. Recent investigations of the differences between higher-skilled and lesser-skilled L2 listeners provide greater insights into the ways in which listeners regulate these processes (Vandergrift, 2007). The importance of metacognitive strategies in L2 listening success is highlighted by these studies (O’Malley & Chamot, 1990; Goh, 2002; Vandergrift, 2003; Chamot, 2005). In a study of adolescent learners of French, Vandergrift (2003) found statistically significant differences in strategy use: skilled listeners reported using about twice as many metacognitive strategies as their less skilled counterparts.

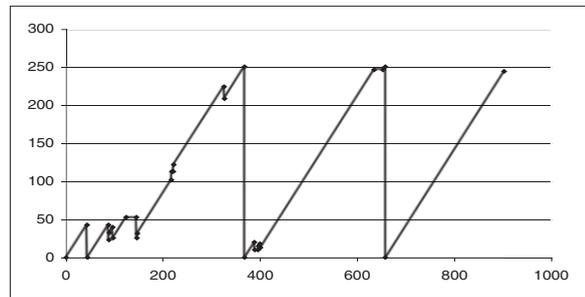
The first purpose of our study is to measure whether self-control over information input/intake improves information processing for all learners and in what way different strategies used by the learners depend on their initial expertise. Recording the movements of the mouse online while learners were listening to an MP3 track on a computer enabled us to show that choosing one or the other strategy influenced their performance in comprehension, and finally that some linguistic difficulties influenced their strategies and their performance in comprehension.

## 3. Results

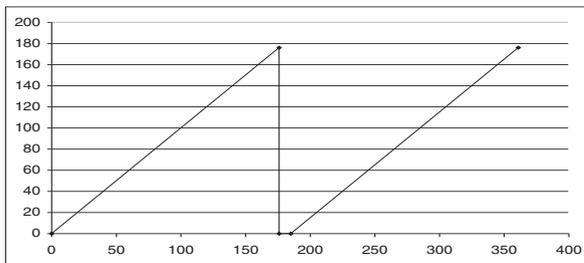
The analysis of the screen recordings of the time-codes showed four types of listening strategy. These can be represented as graphs with the total listening time in seconds, meaning the time spent by the learner listening to the speech, on the *x*-axis and the time of the listening text in seconds on the *y*-axis (Figure 1).



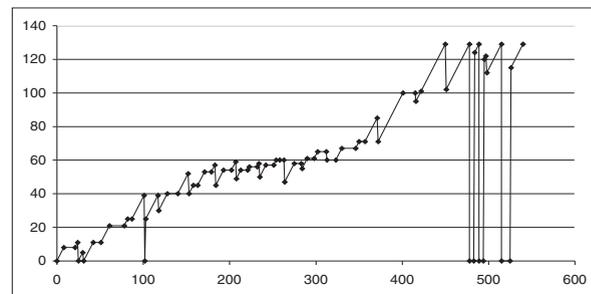
Type 1: one uninterrupted global listening followed by one analytical listening



Type 2: one analytical listening followed by one or several global listenings



Type 3: one or several global listenings without any regulation



Type 4: only one analytical listening without any global listening

Figure 1. Listening types

Generally speaking the first type of strategy gave the best results, particularly for learners with a good initial level. They first listened to the text globally and then split it into chunks of meaning to clarify what they had already understood, thus showing planning and monitoring ability. The second type of strategy gave poorer results in comprehension and a lot of learners in group B used this strategy. The third type of strategy was used by two categories of learners: those with very advanced listening skills, sometimes bilingual. They understood the meaning of the speech immediately and didn't need to stop or go backwards. But this third type of strategy was also used by learners who had a lot of difficulties. We suggest that, for this kind of learner, it was too difficult to parse the speech or to recognize chunks of discourse, which would have allowed them to know where to stop or go back. We also suggest that self-regulation represented too heavy a cognitive load for them. The fourth type of strategy was used by learners with a poor initial level; they were trying to regulate their listening task. Movements to pause or to go backwards or forwards were numerous and disorganized. Their low-level listening processes such as segmentation or perception were not automatized to the point of releasing enough cognitive energy to enable them to use high-level processes such as planning or monitoring. These results confirm and illustrate the difference that Vandergrift (2003) describes between highly skilled listeners and their lesser-skilled counterparts.

In the fourth experiment, 40 high school students (15-16 years old) in France with German as an L2 were divided into two groups with the same average score in the initial listening test. We then created two narrative texts containing the six compounds which were recorded by a native speaker: in the first text, compounds were in a non-salient position – indicating that they were unnecessary for the learners to grasp the global meaning of the text; in the second version, the same six structurally complex compounds were in a salient position – all of them being, this time, semantically crucial. We predicted that while listening

to the first text the learners would first listen globally and not stop on the compounds. Conversely, we thought that if they were listening to the second text – in which the compounds were crucial to the understanding – they would stop and go back on the difficult compounds and so adapt their strategy to the discourse to facilitate understanding.

We will take just two cases to illustrate the results: Jean and Marion were two students who had heard the first speech, with the difficult words in a non-salient position. Jean was a skilled listener (initial test result 14%), Marion an average one (initial test result 8.5%). They had selected the same type of strategy (type 1) which, with regards to our hypothesis, seemed to be an adapted strategy for listening to the first text. But there were interesting differences between the two type-1 strategies they used: even if they first listened globally to the text, Jean then went back and stopped on the compounds, listening five times, while Marion did so only once, and not on the compounds. The arrows in Figure 2 indicate the positioning of the six target compounds.

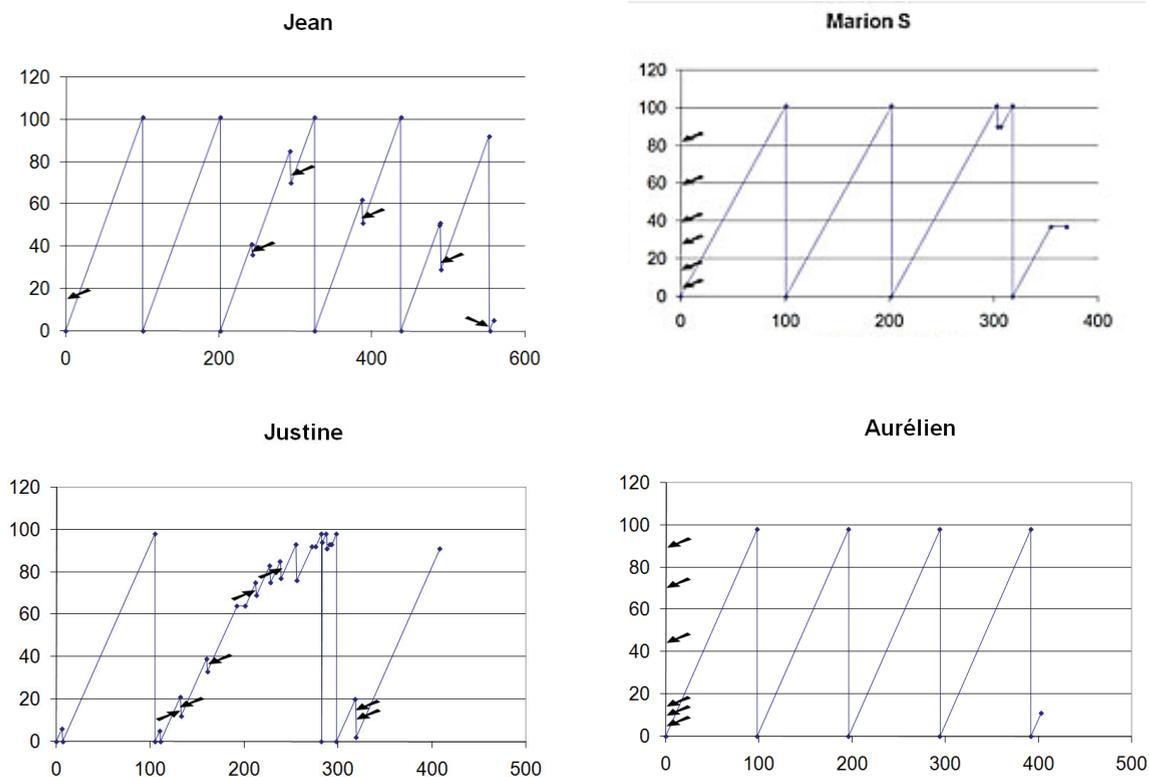


Figure 2. Sample students

Jean used a type 1 strategy, listening first to the text globally, then going back exclusively on the target words. His score in the recall test was 78% (average = 28%). Marion had selected a type 1 strategy too, which looks much more like type 3; there were almost no movements of the mouse and she didn't stop on the difficult words at all, because the compounds did not disturb her comprehension of the global meaning. Her score in the written recall test was 60% (average = 28), which means she had understood the global meaning of the text. This example shows that Marion and Jean both selected and adapted a

strategy for the first text.

Aurélien and Justine listened to text 2, with the difficult words in a salient position. They were both skilled listeners, but Justine (initial test result 20.5%) was a bit better than Aurélien (initial test result 17.7%). They selected different listening strategies: Justine a type 1 strategy, with numerous movements; Aurélien a type 3 strategy, listening to the speech globally without going back or stopping on the difficulties.

Justine first listened to the text globally and then went back and listened again many times. The main part of her movements backwards concerned the specific target words; she concentrated her listening on the difficult compounds. As a skilled listener, she was able to identify what kept her from understanding, and to go back to listen again. Consequently she had a good score in recall of 59.4% (average = 24.45). Aurélien used a type 3 strategy, listening to the speech only globally and not stopping or going back over difficult words. His score for the recall of the text was poor at just 9.9% (average = 24.45).

#### 4. Conclusions

In our study, we resorted to a new method and to an experimental protocol to identify accurately, and to represent graphically, listening ('intake') strategies used by L2 learners. We found that, although the initial level does play an important part and influences L2 'input/intake' processing, self-regulation strategies allow learners to better handle incoming spoken discourse.

We thus recommend specific tuition in order to help L2 learners develop 'top-down' compensatory, metacognitive strategies likely to improve their ability to extract meaning from the incoming information.

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