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How do teacher's gestures help young children in second language acquisition?

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Abstract

This article aims to discuss what we know about the impact of gestures on memorisation of items. There have been few studies on that subject so far. I am specifically working on the impact of teaching gestures (very iconic movements used by teachers in classroom, especially in second language teaching) on young children (aged 5 years old). This article describes an experiment in which young subjects had to memorise words in L1. These words were heard on a video and were illustrated by gestures. Some of the children just had to look at the gestures and repeat the words heard, others had also to reproduce the gestures they saw. Results show that in a free recall task, children who have reproduced the gestures memorise better than those who only looked at them and than those of the control group. These results concern short term memorisation of L1 words but will help us to conduct further experiments on long term memorisation of L2 lexical items.

Key-Words: *teaching gestures, foreign language teaching, lexicon, memorisation, children*

In the second language classroom, teachers behave in a specific way: the way they speak and the way they gesture are altered by the classroom situation. They slow down their speech, and they intensify the articulation of every word and of the prosodic parameters to make sure that the students will understand them better. For the same reason, they use helping gestures. We are not dealing here with typical everyday communicative gestures but with specific ones, which have to be clear and unambiguous in order to help the students understand the verbal input the gestures illustrate. This is particularly true when teaching to young children. Official and scientific texts dealing with the teaching of foreign languages to children advise teachers to use gestures to illustrate their speech and thus to improve the children's understanding and memorisation of the foreign language. This is given as an affirmation and it appeared to us that nobody has ever tried to assess how much the teacher's gestures could help young children understand and memorize the foreign language lexicon. Therefore, the past few years we have been trying for to elaborate different methods and experiments aimed at assessing the impact of teacher's gestures on the learning process. We have first worked on their impact on the understanding of language (Tellier, 2004, 2005b, and to be published) and we are currently analyzing the effect of gestures on the process of short term memorisation. The following article will present an experiment conducted on this latest premise.

1. Theoretical basis

1.1. What is a teaching gesture?

In the field of second language teaching, a *teaching gesture* is, as we have already stated, different from everyday communicative gesture. The reason is that, in ordinary communication, gestures and words work together, and one relies on the other to have meaning; in short, they are complementary. In usual communication, where all the participants have the same level of fluency in the vehicular language, speakers produce gestures rather unconsciously to help them structure their thought and organize their

discourse. But this is not the case in foreign language teaching, because the participants do not share the same level of fluency in the target language: on the one hand we have the teacher who has great command of the language, and on the other hand we have learners who understand more or less what is being said. When the learners are beginners and/or children, the linguistic relationship is highly asymmetric. Thus, gestures are what the learners rely on to understand what the teacher says. This means that the gestures need to convey enough meaning to be understood alone (without verbal language), and have to help one to infer the meaning of the words they are associated with. We, therefore, believe that teaching gestures are produced more consciously than usual communicative gestures and that they are specifically addressed to the learners.

We have listed different types of teaching gestures which appear in class and we have discovered that they serve various functions. So far we have found three main roles for teaching gestures: management of the class (to start/end an activity, question students, request silence, etc.), evaluation (to show a mistake, correct, congratulate, etc.), and explanation (give indication on syntax, underline specific prosody, explain new vocabulary, etc.). In our study, we are particularly interested in the gestures which occur in the process of explaining new or unknown vocabulary.

They appear in various shapes: hand gestures, facial expressions, pantomime, body movements, etc. They can either mime or symbolize something and they truly help the learners to infer the meaning of the verbal, providing that they are unambiguous and easy to understand (Tellier, 2004, 2005b, and to be published).

However, teaching gestures do not only help in the process of understanding. We can indeed suppose that they have an impact on the memorisation of the vocabulary. Therefore, in the following study we will try to assess the impact of these gestures on the memorisation of words.

1.2. Previous work on the impact of gestures on memorisation

We have specifically relied on the following studies to elaborate the present experiment. The first experiment is one elaborated by Cohen and Otterbein (1992). They worked with three groups of adult subjects. The subjects had to watch a video containing several different sentences, then write down as many sentences as they could remember. Each group had the same sentences but the videos were slightly different: one just exposed the sentences, another one showed somebody illustrating each sentence with illustrative/pantomimic gestures and in the last one, sentences were also accompanied with gestures but they were non-pantomimic. Cohen and Otterbein wanted to assess what modality would help the subjects remember the greatest number of words. The illustrative gestures proved to be the most significant helping modality in short term memorisation.

Linda Quinn Allen (1995) explored the same objective but in the field of second language learning. She worked with 112 university students in French. A non-treatment group and a comparison group were shown 10 French sentences and their English equivalent on a screen and they also heard a teacher pronouncing them 3 times. They were told to repeat them. The experimental group's procedure differed only in that the students were also provided with an illustrative gesture for each sentence, which they saw three times (with the three repetitions of the sentence) and had to reproduce. However, they did not repeat the sentences, only the gestures. Then, immediately after all 10 sequences, a posttest was given: the teacher said the

10 French sentences in a different order and during the pause after each sentence the subjects had to write down the English equivalent. The comparison group and the experimental group were given the gestures as well. There were 5 sessions of this kind with different groups of 10 French expressions. The analysis of the results shows that the students presented with illustrative gestures recalled more sentences than the others. The experimental group who reproduced the gestures did better than the comparison group who just saw them during the posttest.

Both experiments dealt with adult subjects. In our study on second language teaching to young children and the role of teaching gestures in lexical memorisation, it seemed interesting to elaborate similar experiments with younger subjects. Our first work in this field (Tellier, 2005a) was with 32 children age 5 who were divided into 2 groups (control and experiment) and had to watch 3 videos which contained a list of 10 words each. The words were in French, the subjects' mother tongue, for we did not want to work with foreign language yet. The children watched the video individually and had to do a free recall task immediately after. The three videos watched by the control group only presented them with words pronounced by a person on the film. The first video watched by the experiment group was the same as the control group, the second video was illustrated with gestures and the third had pictures to illustrate the words pronounced. The experiment group had significant better results with video 2 and 3. This enabled us to infer that the use of visual modalities improved short term memorisation.

In this article we will still work on short term memorisation in a free recall task. We will thus deal with the notion of mnemonic span (Milner, 1956; Baddeley, 1990) which refers to the quantity of items a subject can memorize from a list. The average score is 7 items plus/minus 2 for an adult, but is less important for children age 5, which we have assessed around 3 (Tellier, 2005a) and which is likely to grow with age and cognitive development.

Also, in the present study, we will not deal with foreign language. Since we were interested in short term memory, we did not teach new words to children but worked on words they are familiar with in their mother tongue. Thus, we will be able to assess the real effect of gestures.

2. Method

2.1. Design

The experiment was a 3 x 3 x 4 factorial design. There were 3 groups: control, comparison and experiment. They were working on 3 different videos named Video 1, Video 2 and Video 2G. There were 4 different tasks involved: listen and recall, repeat words and recall, view gestures then repeat words and recall, and finally, reproduce gestures and repeat words then recall.

2.2. Sample

Forty-two (42) French children from the same school were involved in the experiment. The age mean was 5 years 9 months old, and the range was 5 years 3 months old to 6 years 3 months old. They were divided into 3 groups of 14 children for the purpose of the experiment: a control group, a comparison group and an experiment group.

2.3. Materials

Two (2) lists of 10 French words were elaborated. They were designed for children, based on everyday vocabulary. They were built on the same pattern: a fruit, an aspect, a drink, a school tool, a place, an animal, etc. They were recorded on video tape. For Video 1, a person pronounced every word with an interval of 2 seconds between words. For Video 2, there were two versions: one was like video 1 (to be watched by the control group) and the other was illustrated with gestures and which we will call Video 2G. The person on the video did an illustrative gesture for each word. The gesture slightly preceded the pronunciation of the word so that the children would focus on the gesture first. The videos assigned for each group are present in Table 1, below.

Tab. 1: Videos assigned for each group

Group	Video 1	Video 2	Video 2 G
Control	X	X	
Comparison	X		X
Experimental	X		X

2.4. Procedure

The subjects were tested individually in a quiet room of the school. The children sat in front of a TV set and the experimenter sat a bit apart: not too close to the child, to avoid disturbing his/her concentration, and not too far to avoid formal atmosphere and to prevent the child from moving his/her chair to get closer to the experimenter. The sessions were also recorded with a video camera placed next to the TV set.

To avoid problems of fatigue and weariness, we did two sessions: one for each video. The second session was done a week after the first one.

The children were introduced to the experiment as a game to play. At the beginning of each session, the memory task was explained and children were given time to practice with another and shorter word list to make sure they understood the nature of the task. The task depended on the group the children were in and the video they were working with (1 or 2).

In the first session, with Video 1, the children of the control group were told to listen to the list of words and then recall as many items as they could and in a free order. The other groups were told to repeat each word in the 2 seconds blank between each item and then proceed to a free recall of the list.

In the second session, the children of the control group had to repeat the words of Video 2 the same way the other groups did with Video 1. The comparison group had to repeat the words and look at the gestures that were shown with them. However we did not want them to imitate the gestures. We did not want to tell them “Don’t reproduce the gestures” for we thought it might confuse them, so we placed a small teddy bear in their hands which they were told to hold. Thus their hands were busy and they were not tempted to gesture. As far as the experiment group was concerned, subjects were asked to reproduce the gestures and repeat the words after the person on the video, in short to imitate her.

The following table (Tab.2) sums up the various tasks for each group and each video:

Group	Video 1	Video 2	Video 2G
Control	Listen and recall	Repeat words and recall	X
Comparison	Repeat words and recall	X	View gestures, repeat words and recall
Experimental	Repeat words and recall	X	Reproduce gestures, repeat words and recall

Tab. 2: Tasks assigned for each group

2.5. Research questions

In a free recall memory task, based on a list of 10 words heard once, what conditions can improve the number of words recalled by children aged 5?

Does the repetition of words improve the number of items recalled?

Does the repetition of words associated with the visualization of an illustrative gesture improve the number of items recalled?

Does the repetition of words associated with the reproduction of illustrative gestures improve the number of items recalled?

What impact can these results have on second language teaching to young children?

3. Analysis and results

3.1. Does the repetition of words improve the number of items recalled?

For the task of Video 1, the mean of words recalled by the control group was 2.786; it was 2.929 for the comparison group; and 3 for the experiment group. Analysis of variance (ANOVA) revealed that the repetition had no significant effect on the short term memorisation of words: $F(2,39) = .144, p < .05$, even if the means of the last two groups seem higher.

For the task of Video 2, the control group who just had to repeat words heard on the video recalled a mean of 3.071 words which is very close to the means the other groups obtained in the same condition with Video 1. We may thus infer that the difficulty of both word lists was similar.

3.2. Does the repetition of words associated with the visualization of an illustrative gesture improve the number of items recalled?

For Video 2, the comparison group visualized an illustrative gesture with each word they heard and had to repeat this word. They recalled 3.357 words. Did the fact of seeing the gestures help to improve memorisation?

Impaired t-test comparing the number of words recalled by the control group (3.071) and the comparison group (3.357) revealed that the visualization of gestures had no significant effect on short term memorisation: $t(26) = -.702$ with $p < .4889$.

This result is clearly different from what we found in a previous research (Tellier, 2005a) in which children who had seen gestures did significantly better than those who did not. However we may explain this phenomenon by the fact that the task was not exactly the same since the children in the previous experiment did not have to repeat the words, we may infer that in the present experiment the children's attention might have been caught more by the repetition than by the gesture. We will come back to that question later on.

3.3. Does the repetition of words associated with the reproduction of illustrative gestures improve the number of items recalled?

For Video 2, the experimental group had to repeat the words and reproduce the gestures seen on screen. Did the reproduction of gestures enable these children to memorize more words than those of the two other groups? The control group recalled a mean of 3.071 words, the comparison group: 3.357 words and the experiment group 4.143 words.

Impaired t-test comparing the number of words recalled by the control group and the experiment group revealed that the reproduction of gestures had significant effect on short term memorisation: $t(26) = -2.912$ with $p < .0073$.

Impaired t-test comparing the number of words recalled by the comparison group and the experimental group also revealed that the reproduction of gestures had significant effect on short term memorisation: $t(26) = -2.317$ with $p < .0286$.

3.4. Impact these results can have on second language teaching to young children.

This experiment only involved children memorizing words in their first language and on a short term memorisation basis so one might think it can have little to do with second language acquisition. However, we think that if reproducing gestures enables children to improve memorisation in their mother tongue, it will probably have an impact on the memorisation of second language lexicon. Moreover, short term memorisation was analyzed in this experiment but we may infer that reproducing gestures may help for long term memorisation as well.

Our next step will be to experiment the impact of gestures on the learning of foreign language words: that means work on both an unknown language and long term memory.

Also, we have noticed that the repetition of words did not really contribute to improve memorisation. On the contrary, compared to the results we had obtained in the previous experiment which did not imply repeating, it seems that the repetition of words has weakened the process of short term memorisation. It appeared to us that when the children repeated the words of the list after the person on the video, they did it in a very mechanic and passive way. Whereas in the previous experiment where they had to remain silent during the listening task, we can assume that they did a mental repetition of words in order to remember as many as they could. In short, their listening was more active and concentration was strengthened. The fact that they had to repeat the words out loud in the present experiment killed in a way the mental repetition and the concentration. Nevertheless, the reproduction of gestures had the reverse effect: memorisation significantly improved. We can suppose that having to

reproduce a gesture implied more attention to the visualization of gestures and to the items, and the repetition became more active.

4. Conclusion

We, therefore, assume that the use of teacher's gestures in the learning of foreign vocabulary can have an effect on memorisation; but to make the most of this effect, teachers should make sure that the children reproduce the gestures while repeating the words. Thus, they will be more active in their repetition and reinforce its trace in memory. Also, the three ways of learning will be solicited: auditory modality will be provided by the teacher's voice and the repetition, visual modality will be exposed through the visualization of gestures, and kinesthetic modality will appear thanks to the reproduction of gestures. All this will enable every child to make the most of the three modalities proposed to reinforce their memorisation.

We consider important that the impact of gestures in second language acquisition should be promoted in teacher's training. Reflection on gestures and second language learning as well as development of teaching gesture techniques should be part of teacher's training so that the majority of gestures can be made by learners, especially young ones.

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