

ASSESSING SECOND LANGUAGE PHONOLOGICAL DEVELOPMENT THROUGH THE USE OF COGNITIVE RETROSPECTIVE VERBAL REPORTS*

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ABSTRACT. This paper centers on the question of learning strategies and on how, through the use of cognitive retrospective verbal reports upon task completion, some insights into the learning process could be gained in order to assess learners' phonological development. My goals were to identify the range of strategies used and to determine whether those strategies could be organized within existing classification frameworks. In addition, the 16 subjects were randomly assigned to two groups which underwent different training in order to evaluate the possible relationship between strategic variation and the method of instruction employed.

It was able to identify the range of strategies used by the subjects and classify them within Brown and Palincsar's (1982) basic classification framework. The findings also suggest that strategic variation was not method-dependent since no statistically significant difference was found in the subjects' strategic use. Finally, the value of cognitive reflection upon task completion for the two groups was confirmed.

RESUMEN. Este estudio se centra en la cuestión de las estrategias de aprendizaje y en cómo, a través del uso de relatos verbales cognitivos retrospectivos al finalizar una determinada tarea asignada, se puede extraer información del proceso de aprendizaje para evaluar el desarrollo fonológico de los aprendices de una segunda lengua (L2). Mis metas eran identificar el rango de estrategias empleadas y determinar si dichas estrategias se pueden organizar dentro de marcos de clasificación ya existentes. Asimismo, los dieciséis sujetos que participaron en el estudio se dividieron al azar en dos grupos y se sometieron a dos sesiones de diferente entrenamiento pedagógico. Mi

* I would like to thank Dr. Karen Smith and Dr. Robert Smead (University of Arizona) for very helpful comments. I would also like to thank the participants in the SLRF Conference where this paper was presented in March 1993 for their comments and interest. I am very grateful to Dr. Rosa M. Manchón (Universidad de Murcia) for her insights and encouragement. Finally, I would like to thank Jeffrey Marks for editorial assistance and Stephen Marks for help in the statistical analysis.

intención era evaluar la posible relación existente entre la variación estratégica y el método de instrucción empleado.

Pude identificar el rango de las estrategias utilizadas por los sujetos y clasificarlas dentro del modelo básico de Brown y Palincsar (1982). Los resultados indican que la variación estratégica no depende del método de instrucción pues no se hallaron diferencias estadísticamente significativas en cuanto al uso estratégico por parte de los sujetos. Por último, también se confirmó el valor de la reflexión cognitiva de los aprendices a la hora de evaluar su desarrollo fonológico en la L2.

1. INTRODUCTION

In second language learning (L2L) there has been no agreement on the definition and classification of strategies, and confusion persists over the distinction between learning strategies and those types of strategies which apply more to language use, production and communication strategies. Although cognitive psychology has contributed toward establishing a definition and classification of learning strategies by providing the distinction between metacognitive and cognitive, agreement about what constitutes these types of strategies has not followed, as is evidenced in Brown *et al.*'s (1983) summary of the ongoing discussion in the literature. Still, this distinction has helped focus the discussion of how strategies work, the kind of public who would use them, and how they might be taught. The significance of the metacognitive/ cognitive framework lies in the fact that effective strategy training requires both types of strategies. The difficulty in transferring strategy training to new learning situations has often been attributed to the problems of combining both types of strategies during learning (Brown and Palincsar 1982).

Cognitive psychology was the dominant mode of strategy analysis in the late 1970's and influential well into the 1980's. However, other approaches have made important advances. Early studies of learning strategies in L2 acquisition have also contributed to the definition and classification of strategies. Rubin's (1975) introduction of the concept of the good language learner led to important contributions in linguistics which were independent of the contributions of cognitive psychology. Rubin (1981) developed a strategy classification framework which included two general categories: processes that have a direct effect on learning versus processes that have an indirect effect on learning. This author observed the learning strategies that occurred in classrooms and videotapes of classroom situations, student self-reports and diaries, strip stories, etc. He realized that these observations did not produce useful data because of the instructors' focus on the students' learning outcomes rather than on the process; because of some students' ability to describe their learning strategies more readily than others; and because the students were tutored in order to know how report on their learning strategies. Rubin's findings were in line with those reported by Cohen and Apeh (1981) in the sense that these authors' data also failed to reveal information about consistent strategic usage or patterns of communication.

One of the main concerns of early studies on learning strategies was the definition and classification of strategies. Wenden (1983, 1987) proposed classification frameworks like Rubin's but added a metacognitive component. Oxford (1985) suggested two categories paralleling those employed by Dansereau (1985) who distinguished between primary strategies and support strategies. Primary strategies work directly on the learning materials whereas support strategies concentrate on the creation of an appropriate learning attitude. Dansereau noted that strategies can differ depending on the scope of the learning task and on how specialized strategies were for particular tasks. Oxford elaborated on these by including different subcategories and by considering additional examples of strategies within each of these subcategories. Thus, she created an extended taxonomy of sixty-four strategies. As O'Malley and Chamot (1990:103) discussed, the problem with Oxford's approach is that her "extended listing is far removed from any underlying cognitive theory, fails to prioritize which strategies are most important to learning, and generates subcategories that appear to overlap". However, Oxford (1986) set the basis for a questionnaire, the Strategy Inventory for Language Learning (SILL), which aimed to assess the use of learning strategies in L2 acquisition.

While acknowledging the lack of consensus on the definition and classification of learning strategies, this paper seeks to contribute data and observations that may help evaluate the usefulness of the existing framework of strategy classification as well as to further our understanding of how different strategies are employed by L2/ FL learners in distinct learning situations.

2. OBJECTIVES

The main goals of the present study are: (1) to identify the range of learning strategies used by subjects within the experimental setting; (2) to determine whether those strategies could be organized according to existing classification frameworks; and (3) to determine whether the strategies employed varied according to the training method and/or tasks employed.

3. PROCEDURES

The learners in this study were randomly assigned to two training groups. Learners in Group 1 were asked to perceive the non-native speech contrast represented by the two *rs* in Spanish, namely the trill versus the flap. Initially, I delayed opportunities for oral production in this group; whereas learners in Group 2 had to perceive and produce the trill-flap contrast in imitation tasks after the tutor from the beginning of the training session. I hypothesized that the two training methods would have an effect on the learners' employment of strategies resulting in

different learning routes for the two groups. Learners in both groups participated in a variety of picture selection and picture naming tasks which employed real lexical items within a meaningful learning context. The tutor-learner protocols included two physical actions (TPR, Asher 1977) - touching and pointing to pictures as a means of confirming aural comprehension (for example, Tutor: “*Toca el perro*” [= Touch the dog] or “*Señala la carreta*” [= Point to the cart]). As a means of prompting oral production the tutor would either touch or point to a particular picture as the learner named the action (for example, Learner: “*Toca el perro*”). Both groups’ training sessions took place in a discourse laboratory, were video and audio taped and lasted approximately 20 minutes per subject. The tasks proceeded as follows:

The first two tasks required that the learners in both groups perceptually identify the two speech sounds. Group 2 was also required to produce them.

Task 1: Subjects were presented with a first set of pictures/lexical items containing the Spanish trill (each item was presented 7 times).

Task 2: Subjects were presented with a second set of pictures/lexical items containing the Spanish flap (each item was presented 7 times).

Tasks 3 and 4 required that the learners in both groups perceptually discriminate between the two speech sounds presented — Task 4 being a review of the previous task. Group 2 was also required to produce our speech contrast.

Task 3: Subjects were presented with a third set of pictures/lexical items contrasting the trill and the flap. The minimal pairs were represented in separate pictures (each item was presented 14 times).

Task 4: Subjects were presented with a fourth set of pictures/lexical items contrasting the trill and the flap. The minimal pairs were represented in the same picture (each item was presented 14 times).

The last task demanded both identification and discrimination at the perceptual and articulatory levels.

Task 5: Subjects were presented with the fifth set of pictures/lexical items containing all the pictures used in the training session (each item was presented 21 times).

A total of 12 lexical items were employed, 8 items in minimal pairs and 4 non-minimal pair items, which constituted a lexical context and rendered the two speech sounds in all possible phonetic environments. At the initial singleton position (*rvc*), *reptil* (trill) (= reptile); at the initial consonant cluster position (*crv...*), *tronco* (flap) (= trunk); at the intervocalic position (...*rvv...*), four minimal pairs: *perro* (trill) - *pero* (flap) (= dog - apple), *carreta* (trill) - *careta* (flap) (= cart

- mask), *corral* (trill) - *coral* (flap) (= corral - coral), and *morro* (trill) - *moro* (flap) (= pig snout - moor); at the final syllable position (...vrc...), *puerta* (trill) or (flap) (= door); and finally, at the final singleton position (...vr), *cuidador* (trill) or (flap) (= caretaker).

4. PARTICIPANTS

The subjects who participated in this study were 16 adult American-English nil-proficiency learners of Spanish as a foreign language (FL) (Trudgill and Hannah 1982). I chose nil-proficiency learners in order to study the very onset of L2 phonological learning as well as to better assure equality in the subjects' target language (TL) experience.

By means of a preliminary questionnaire, applicants who either had had formal (school room) exposure to Spanish for more than one year, or informal (non-school room) exposure to Spanish for more than six months were eliminated. The variable of gender was controlled by selecting an equal number of males and females. The average age of subjects in Group 1 was 23.5 while in Group 2 it was 24.6. The two FLs most in evidence in the subjects' background were French and German. In Group 1, there was an incidence of 50% French and 37% German; and in Group 2, of 62.5% French and 37% German.

5. METHODS

Immediately after the training session, learners in both groups were asked two questions related to the specific tasks that they had been asked to accomplish and the learning strategies that they had used to perform those tasks: (1) How did you go about doing your task?; (2) What strategies did you use to accomplish your task? I hoped to gain some insights into the subjects' learning process by means of this immediate retrospection which accesses traces of original cognition in short-term memory (Ericsson and Simon 1987). Informants verbalized only when explicitly asked to do so upon task completion.

6. RESULTS

In general, I succeeded in identifying learning strategies through interviews with students. Group 1 identified a total of 20 strategies - 3 metacognitive and 17 cognitive, whereas Group 2 identified 19 of which 3 were metacognitive and 16 cognitive. These results suggest that there may be little significant difference between these groups'

strategic use, which in turn seems to indicate that the subjects' strategic performance did not depend upon the different training methods employed.

7. DEFINITION AND CLASSIFICATION OF STRATEGIES

The classification scheme proposed by Brown and Palincsar (1982) consisting of metacognitive and cognitive strategies was used to categorize the results for it provides basic, clearly defined categories. According to these authors, metacognitive strategies refer both to knowledge about cognition as well as to the regulation of cognition. In the former case, the application of thoughts about our own cognitive operations or those of others may be included; and in the latter, the planning, monitoring and evaluating of a learning task or a problem-solving activity may be considered. Cognitive strategies, on the other hand, apply to different learning activities and involve the use of those operations in learning or problem solving which require direct analysis, transformations or synthesis of learning materials.

The classification framework employed in the categorization of the results includes:

LEARNING STRATEGIES

DEFINITIONS

1. *Metacognitive*

Planning:
Selective Attention

Deciding in advance to attend, in general, to specific aspects of language input during task execution (i.e., listening for similarities & differences between the various lexical items used in the training session).

2. *Cognitive*

Keyword Method

Remembering a new word in the TL by relying on either a familiar word or a similar-sounding word in the first language (L1) (i.e., cognates).

Repetition

Silent rehearsal of a language model while performing a language task.

Imagery

Using visual images to understand or remember new information (i.e., relying on the picture display technique, the salience of the drawings, or associating words & pictures).

8. OUTCOMES

The following table lists the experimental outcomes classified according to the above classification scheme. Also included are some descriptive statistics. These outcomes are explained in the discussion section below.

	<i>G1</i>	<i>G2</i>	<i>q1</i>	<i>q2</i>	<i>qd</i>	<i>sd</i>	<i>t-stat</i>
<i>Selective Attn. (Metacognitive)</i>	3	3	0.375	0.375	0.000	0.000	0.000
<i>Keyword Method (Cognitive)</i>	4	5	0.500	0.625	-0.125	0.263	-0.475
<i>Repetition (Cognitive)</i>	1	1	0.125	0.125	0.000	0.177	0.000
<i>Imagery (Cognitive):</i>							
<i>Picture Display</i>	6	2	0.750	0.250	0.500	0.231	*2.160
<i>Saliency of Drawings</i>	2	3	0.250	0.375	-0.125	0.245	-0.509
<i>Word-picture associations</i>	4	5	0.500	0.625	-0.125	0.263	-0.475

df = 14

*Significant at alpha = 0.005

G1 = Group 1

G2 = Group 2

q1 = Group 1 Sample Proportion

q2 = Group 2 Sample Proportion

qd = Difference in Group Sample Proportions

sd = Estimated Standard Deviation of Difference in Group Proportions

t-stat = t statistic for difference in sample proportions

9. DISCUSSION

Given the particular characteristics of the study, having examined speech perception and production using nil-proficiency learners, a greater incidence of cognitive strategies over metacognitive ones was expected to be found in both groups. In this sense, the data confirmed the hypothesis that there is almost no significant difference between Groups 1 and 2 in types of strategies used. As reflected in the table above, only in the cognitive strategy subcategory of imagery, namely, reliance on the picture display technique employed during the training session, is the difference in strategic performance between the two groups significant (at $\alpha = 0.05$).

In the course of the training session and given the five tasks that learners had to accomplish, only 3 students out of 8 (0.375) in each group identified selective attention as a metacognitive strategy. Among the cognitive strategies, one of the most widely employed, as reported by subjects in Group 1, was imagery, specifically, reliance on the picture display technique. A total of 6 students out of 8 ($q_1 = 0.750$) identified this cognitive strategy. Group 2 reported that keyword method and imagery (word-picture associations for the two sounds) were their most widely utilized cognitive strategies — 5 students out of 8 ($q_2 = 0.625$) identified them — while these two strategies ranked second in usage by Group 1.

The results indicate that the learners in both groups relied on their L1 mostly for the retention of cognates, these words being easily cued from the pictures. These nil-proficiency learners of Spanish (US English as L1) reflected on the similarities and differences between the TL and their native language and used their knowledge of the latter to identify cognate words as well as similar-sounding words (i.e., “pear” *vs.* “pero”), a tool that would enable them to accomplish their task.

As a means of creating mnemonic devices during task completion, learners made use of imagery by paying attention to the picture display technique, or to the comparative size of the different drawings employed, in order to establish word-picture associations for the two speech sounds. As reflected in the table above, the difference in strategic performance between the two groups may be slightly significant for the subcategory of picture display. It is interesting that subjects in Group 1 found this cognitive strategy to be effective for the particular task of perceptually identifying the two speech sounds while failing to name other strategies such as size of drawing or word-picture associations. No particular reason for this discrepancy was evident.

Most learners in both groups showed awareness of the fact that the experiment dealt with the trill-flap distinction and they mentioned the use of selective attention for the similarities and differences among the various lexical items used in the training session. However, it is interesting to note that none of the subjects reported on their focusing on their articulatory mechanisms even though Group 2 had access to pronunciation practice throughout the training session.

Silent rehearsal (repetition) was the only strategy concentrating on articulation that learners in both groups identified. Although it was expected to be more prevalent for subjects in Group 1, since they had an initial delay in their oral production, it had the same small incidence in both groups of subjects ($q^1 : q^2 = 0.125$).

10. CONCLUSIONS

The above experiment yields two observations. First, the commonalties found in the subjects' phonological development during the training session lend support to the idea that the strategies employed are not greatly dependent on the training method.

Second, the importance of the distinction between metacognitive and cognitive strategies and the usefulness of a strategy classification framework based on this distinction in L2 acquisition is confirmed in the sense that subjects in both groups relied on a combination of both types of strategies, following Brown and Palincsar (1982). However, since cognitive strategies are supposed to be directly related to specific learning tasks (O'Malley and Chamot 1990), the types of tasks required in a particular instructional setting can be expected to influence the cognitive strategies used to accomplish them. The fact that this did not happen in this study, except in the case of imagery, might eventually call into question this strategy classification framework. Certainly these results warrant further investigation.

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