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LEARNING L2 PRONUNCIATION THROUGH COMMUNICATIVE TASKS

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L2 pronunciation is often neglected in the EFL classroom and, when addressed, it is typically decontextualized from communicative practice. Additionally, limited research has been conducted in SLA on the role of task manipulation for the improvement of L2 pronunciation accuracy during meaning-focused interaction. This study investigated the impact of decision-making tasks, organized in increasing complexity, on the production of English /æ/-/ʌ/. L1 Catalan/Spanish young adults (*n*=18) performed four dyadic problem-solving, reasoning-gap tasks over a three-week period. Tasks were always preceded by form-focused pre-tasks that contained lexical items contrasting the target vowels (e.g., *bag-bug, cap-cup*) to be used during task performance. Furthermore, tasks were sequenced on the basis of increasing level of cognitive complexity (+S, -S, -C, +C) in order to progressively enhance the occurrence of pronunciation-based language-related episodes (LRE). Production accuracy was pre- and post-tested through a delayed-sentence repetition task. In line with the Cognition Hypothesis (Robinson, 2007, 2011), the results revealed that orienting attention to a phonological contrast during interactive tasks improves its production significantly, and increased task demands along resource-directing variables (i.e. ± reasoning demands and ± elements) generate more pronunciation-focused LREs.

INTRODUCTION

The learning of second language (L2) phonological representations requires practice through long periods of exposure to the foreign language (FL). Nevertheless, in school contexts, authentic L2 oral input may be scarce and often limited in out-of-class exposure (Muñoz, 2008). Apart from the lack of linguistic experience in the FL environment, L2 pronunciation is conceived as one of the most challenging skills to be taught and learned in English as a FL classrooms. According to Murphy and Baker's (2015) historical overview of the teaching of pronunciation, none of the current methodologies appears to be effective enough due to an interplay of factors such as the use of old methods and outdated materials, and lack of teacher training. Despite this, Guion-Anderson and Pederson (2007) claimed that pronunciation-based instruction is likely to help learners 'notice the gap' between L1 and L2 phonetic categories and produce more accurate pronunciation.

Nowadays, many practitioners follow an analytic focus-on-form approach, which implicitly draws learners' attention to form in the context of meaningful communication. This approach is motivated by the Interaction Hypothesis (Gass, 1997), which claims that interaction is crucial in L2 acquisition, and the modifications that result from negotiation of meaning increase input and output comprehensibility. In any case, phonetic learning is not instantaneous and learners may first exhibit emergent interlanguage forms that need to be repetitively practiced in content-based contexts in order to be internalised (Saito, 2013). Saito and Wu (2014) advocate for orienting attention to phonetic form while maintaining the primary focus on meaning, and they emphasize the benefits of integrating instruction on

suprasegmental features in formal teaching environments. As negotiation of form in content-based lessons has been shown to improve L2 pronunciation accuracy, tasks are a useful instrument to direct learners' cognitive resources to phonetic forms during real-world activities (Salaberry & López-Ortega, 1998).

From a task-based language teaching (TBLT) perspective, tasks ought to have a clear goal and well-defined outcome that learners need to fulfil. Also, tasks increase the conditions for focus on form during communicative activities that bear resemblance to real-world tasks and involve cognitive processes that promote L2 development and performance. Additionally, task features can be manipulated in order to generate further focus on form in meaning-driven interactions. This study follows the Cognition Hypothesis (Robinson, 2007, 2011) which emphasizes the flexibility of attentional capacity and claims that greater effort at conceptualization induces learners to stretch and develop their L2 linguistic resources. Robinson and Gilabert (2007, p. 162), following the SSARC[1] model, state that "pedagogic tasks should be designed, and then sequenced for learners on the basis of increases in their cognitive complexity" because such tasks have the potential to lead to more accurate and complex language. Within resource-directing dimensions, tasks can be manipulated by increasing task complexity through ± elements and ± reasoning demands, each of which guides resources to specific functional and linguistic requirements (Talmy, 2000).

For example, Gilabert, Baron & Llanes (2009) and Baralt (2014) found that complex tasks where learners have to exploit their attention and memory resources trigger more language-related episodes (LREs). These can be defined as any part of a dialogue where learners discuss language they are producing, question their language use, or self-correct their language production (Swain & Lapkin, 1995). Our study considered self-repairs (i.e., the learners' self-correction of faulty pronunciation), recasts (i.e., a correct restatement of a learner's incorrectly formed utterance) and repetitions (i.e., the learners' statement of the same word with the same pronunciation) as instances of LREs. Increasing task demands along resource-directing dimensions is likely to draw attention to how messages are being encoded during performance and, consequently, lead to interlanguage development (Gilabert, 2007). Nevertheless, complex tasks are more prone to inducing LREs when they are not extremely challenging and understanding between interlocutors is sufficient for communication (Révész, 2011).

Task-based pronunciation teaching (TB*P*T) presents tasks which generate form-focused episodes that target phonological elements during interaction. In other words, tasks raise awareness of pronunciation elements by making target items essential and enhancing the occurrence of pronunciation-focused LREs during interaction (Mora & Levkina, 2017). Empirical studies on TB*P*T are limited, but some researchers have successfully applied already extensively researched TBLT dimensions (i.e., task complexity, task repetition and task modality) to L2 pronunciation. One example is Solon, Long, & Gurzynski-Weiss (2017), whose findings support the Cognition Hypothesis (Robinson, 2007, 2011) in that the more complex version of the task generated more accurate realizations of L2 vowels; however, contrary to what might be expected, the simple task generated more pronunciation-based LREs than the complex task.

[1] SSARC stands for *stabilize, simplify, automatize, restructure*, and *complexify*. This model posits that (a) task sequencing should be based on cognitive complexity factors and (b) tasks should increase first in resource-dispersing dimensions and then, in resource-directing dimensions.

THE PRESENT STUDY

The aim of this study is to bridge the gap between L2 pronunciation instruction and task-based language teaching. The design of this experiment was based on four communicative tasks, embedded in a real-world situation, targeting L2 phonological forms that were essential for task completion. Specifically, the goal was to examine the effectiveness of task design on the production of a difficult vowel contrast for EFL learners. The selected phonological contrast was /æ/-/ʌ/ (e.g. *cat-cut*), two English sounds that are known to be challenging for Catalan/Spanish speakers because they are perceptually assimilated to a single L1 low vowel category /a/ (Flege, 1995; Best & Tyler, 2007; Rallo-Fabra & Romero, 2012). Task complexity was operationalized as manipulation of cognitive complexity differences between 4 tasks in terms of ± elements and ± reasoning demands. The objective was to enhance pronunciation-based LREs, which would facilitate the improvement of L2 pronunciation accuracy. Considering the objectives outlined above, our study addressed the following research question:

> Does increasing task complexity have an effect on the occurrence of pronunciation-based LREs? Is the frequency of pronunciation-based LREs related to learners' gains in the production of the /æ/-/ʌ/ contrast?

METHODS

Participants

Thirty-six Catalan-Spanish bilingual EFL learners (18 controls) at secondary school took part in the study. In the experimental group, there were 18 students (9 females, mean age 16.4) learning English together at school since the age of 6. 61.1% of the class stated that they had received extra-curricular English instruction between 2 and 13 years (M= 6.36) for 2.5h/week. The vocabulary size test (M= 2933.33) indicated a B1-B2 level according to the Common European Framework of Reference for Languages. Other foreign languages spoken were French (B1) [5 students], Italian (A2) [1 student] and Portuguese (A1) [1 student].

Instruments

The experimental and control groups were tested before and after a one-week treatment period, which involved 4 daily sessions of 15 to 30 minutes each. Production was tested through a delayed sentence repetition task. The pre-test and post-test were identical except for some novel items included in the latter in order to assess generalization of gains. Novel items were non-words that learners had not been exposed to during testing or training, or items learners had been previously exposed to, but produced by a different voice. The target items were practiced repetitively during pre-task and tasks.

Stimuli

The selected target sounds were the two standard Southern British English vowels /æ/ and /ʌ/. This contrast was embedded in 10 pairs of real words, which appeared in the pre-test and post-test, and 5 pairs of non-words, which appeared only in the post-test. They were uttered by four English native speakers (two males).

Testing

In the delayed sentence repetition task, learners were exposed to 44 test trials + 2 practice trials. The 44 test trials included 40 sentences with the target vowels /æ/ and /ʌ/ (e.g., Your

cap is on my head. A *cup* of tea, please.) and 4 sentences with other non-target minimal pairs such as /iː/ and /ɪ/ (e.g., The *sheep* are eating flowers. The *ship* is alone in the sea.) These distractors were used in order to get a more natural exposure by avoiding learners focusing too much on the target vowels. The sentences were uttered once by one male and one female speaker.

Training

Pre-tasks

A general pre-task was used to train the meaning of the words that appeared in the tasks. Then, participants practiced their pronunciation through word imitation and sentence imitation tasks where feedback was provided. In the word imitation and sentence imitation, 10 minimal pairs were presented (20 tokens), containing the vowels /æ/ and /ʌ/ (i.e. *bag/bug, bat/butt, cap/cup, cat/cut, mag/mug, ram/rum, amber/umber, babble/bubble, natty/nutty, stab/stub*) plus 5 minimal pair distractors (10 tokens), containing the vowels /iː/ and /ɪ/ (i.e. *bean/bin, feast/fist, sheep/ship, teen/tin, weep/whip*) with their corresponding images.

Tasks

The four decision-making tasks were two-way, split, close and convergent (Pica, Kanagy & Falodun, 1993) because the two interlocutors had different information and had to come up with one single solution (Figure 1). Moreover, learners could not solve the task without producing the L2 phonological contrast accurately and so, the contrast was made 'task-essential' language (Loschky & Bley-Vroman, 1993). These tasks were designed around a trip to Kenya that students had to plan. In a sequential manner, learners had to decide on what they wanted to see and buy in a natural park in Kenya (Task 1); the objects they wanted to bring to Kenya (Task 2); the organization of a roleplay party in Kenya (Task 3) and what they wished to post on the school website (Task 4). All tasks involved two mental operations: information-sharing and decision-making. Nevertheless, in order to complexify the tasks in increasing order (+S, -S, -C, +C)[2], more elements and reasoning demands were added over the course of a week (see SSARC model, Robinson, 2010). In addition, task complexity was independently assessed (Révész, 2011) by ten experienced language teachers, who critically evaluated the tasks according to degree of difficulty and mental effort. Students themselves also rated task difficulty after each task. All the tasks had been previously piloted on a similar sample of learners and proved to be adequate in difficulty for their level of proficiency.

[2] S= Simple
C= Complex

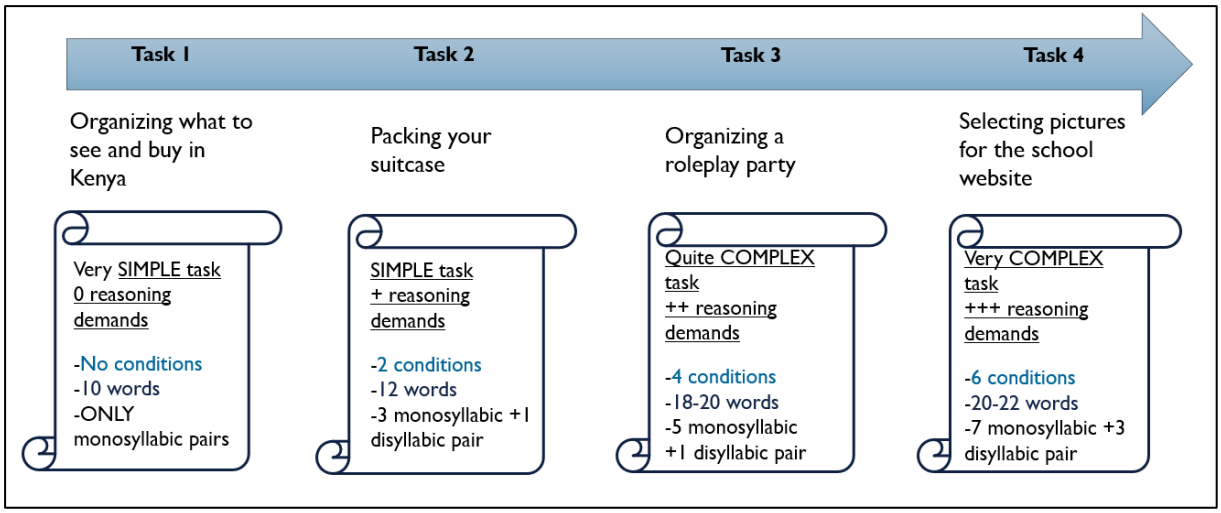

Figure 1. Sequential organization of the tasks in order of increasing complexity.

Procedure

In the DSR task, learners had to read the sentence on the screen, listen to it, wait for a beep sound and repeat it. Learners' productions were recorded with a digital *Tascam Dr-40* recorder with an external *Shure SM58* microphone. After the pre-test, learners in the experimental group did a pre-task and several tasks. Tasks lasted 15-30 minutes, depending on their complexity and were registered using two *Tascam Dr-40* solid-state recorders. Learners were placed in front of a microphone and facing each other so they could not see each other's piece of information.

Analysis

Learners' accuracy scores were obtained by analysing the quality of vowels /æ/ and /ʌ/. Analyses focused on the first formant (height) and second formant (advancement), which were transformed into Bark following Syrdal & Gopal's (1986) formula (B_i = 26.81/(1+1960/F_i) - 0.53) and then, the spectral distance between the two vowels was also calculated.

Three raters (mean age 24.7), who were experienced English teachers living in Barcelona (Spain) at the time of testing, were instructed on the analysis of LREs. They listened to all the recordings (4 tasks), transcribed the pronunciation focused LREs and classified them into four types: (a) general LREs, (b) recasts, (c) self-repairs, and (d) repetitions. The number of LREs per person was calculated with all types of LREs as well as with only general LREs. In addition, an LRE ratio (LRE/time-on-task) was estimated to interpret the results in accordance with Solon et al. (2017). It was important to compensate for the different lengths of the productions, generated by the different levels of complexity, with more complex tasks generating more interaction. Finally, in order to correlate production gains and number of LREs, each pair of students was assigned the same number of LREs, irrespective of which student in the dyad initiated or produced the LREs.

RESULTS

Total inter-rater reliability across tasks was 91.6%: 76.7% (task 1), 97.8% (task 2), 95.2% (task 3) and 96.6% (task 4). A one-way ANOVA was used to assess the effect of task complexity (+S, -S, -C, +C) on the occurrence of all LREs. The ANOVA revealed a significant main effect of task complexity, (F (3,15) = 42.630, p<.001, η^2 =.895). Bonferroni-

adjusted pairwise comparisons showed that the number of LREs increased significantly as cognitive complexity increased across tasks (Figure 2): task 1 (*M*=3.89, *SD*=2.96), task 2 (*M*=6.00, *SD*=2.91) and task 3 (*M*=10.00, *SD*=4.82), (*p*<.05). However, the difference in the number of LREs between task 3 and task 4 did not reach significance (*M*=13.11, *SD*=4.56, *p*=.086).

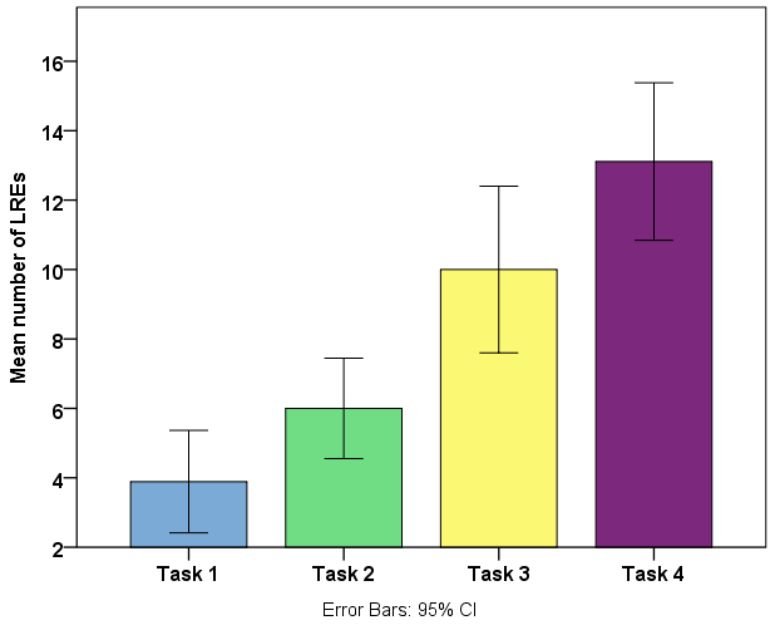

Figure 2. Mean number of LREs (general LRE, recasts, self-repairs and repetitions) by task.

When analysing LREs per minute, the one-way ANOVA confirmed a significantly lower number of LREs in simple than in complex tasks, (F (3,15) = 7.747, p=.002, η^2 =.608) (Figure 3), a cognitive complexity effect mainly driven by the significant difference between task 1 and tasks 2, 3, 4 (p<.05), as differences between tasks 2, 3 or 4 did not reach significance. In short, the more complex the task was, the higher the occurrence of pronunciation-based LREs irrespective of time-on-task.

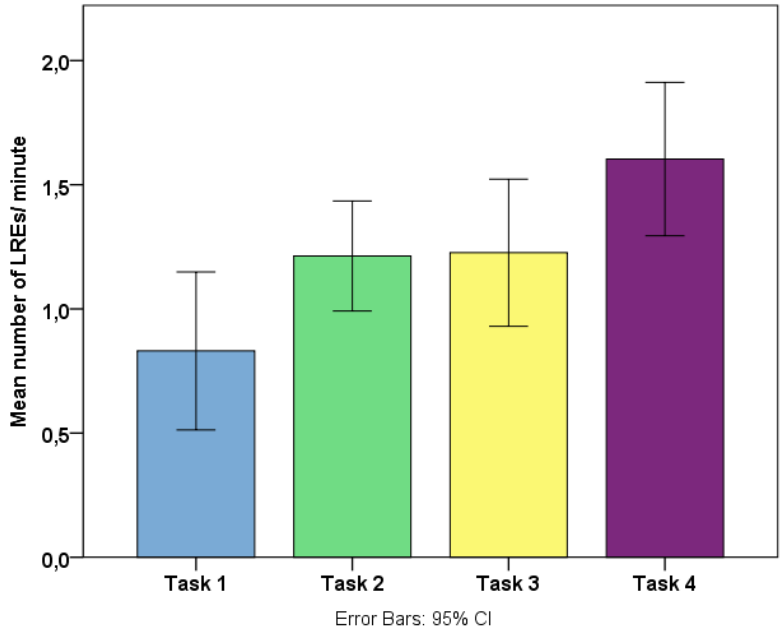

Figure 3. Mean number of LREs per minute by task.

Production results showed that learners' Euclidean distance increased (albeit non-significantly) from pre-test to post-test (Table 1) owing to the treatment with tasks. LREs were analysed in comparison to learners' accuracy gains in the production of /æ/ and /ʌ/. The *Pearson-r* correlation revealed that the more language related episodes learners produced, the larger the size of gains in Euclidean distance learners obtained (r=.479, p=.044). As a result, we can conclude that the more often they paid attention to the phonological contrast, the better able they were to distinguish between the two vowels in production.

Table 1

Descriptive statistics for Euclidean distances between /æ/ and /ʌ/.

	Pre-test			Post-test		
	N	*M*	*SD*	*N*	*M*	*SD*
Males	9	1.45	.65	9	1.47	.64
Females	9	1.45	.45	9	1.54	.66

DISCUSSION AND CONCLUSIONS

According to the Cognition Hypothesis (Robinson, 2007, 2011), greater task complexity enhances greater incidence of form-focused episodes, which would promote interlanguage development. Following previous studies on grammar (Baralt, 2013) and pragmatics (Kim & Taguchi, 2015), our study has shown that four decision-making tasks, with a focus on pronunciation, improved learners' L2 pronunciation accuracy. Furthermore, in line with Baralt (2013) and Gilabert's (2007) findings, learners' attention towards language increased as tasks increased in complexity because more complex tasks demanded the use of more

precise linguistic resources. In addition, the reduction of resource-dispersing variables (i.e., familiarity with the task and planning time) helped them pay attention to phonetic form during communicative interaction.

The results of the present study show that a significantly larger number of pronunciation-based LREs was generated in more complex tasks. Interestingly, the occurrence of LREs per minute was also higher in the complex tasks, which indicates that learners were reflecting on form to a higher extent in complex tasks regardless of time-on-task. This finding is at odds with Solon et al.'s (2017) findings, which found that simpler tasks generated more LREs (albeit not significantly). They argued that whereas grammatical targets have specific forms that can be described by metalinguistic rules, phonetic targets cannot be described through such rules because they are part of the gradient range of production possibilities and require the physical modification of the articulators. In addition, learners were not familiar with verbally reflecting on phonetic form as pronunciation training was not a part of their language curriculum. However, we interpret our results to suggest that it is possible to raise metaphonological awareness by generating a clear focus on phonetic form and by making the target phonological contrast essential for task completion during meaningful interaction. Under such circumstances, learners appear to be able to negotiate the target form explicitly and implicitly through direct corrections, recasts or repetitions. As in Solon et al. (2017), pronunciation training was not a part of the learners' curriculum and, even if they were not accustomed to reflecting verbally on phonetic form, learners developed strategies to improve intelligibility during conversation. The result was a higher production of LREs regardless of the real time-on-task.

The present study has also shown that the number of LREs was related to the size of gains in production. The careful task design triggered many opportunities to focus on the language learners were producing (cf. Sicola, 2009), especially those phonetic forms implementing the target phonological contrast.

To conclude, our study has contributed to current research investigating whether the benefits of tasks can be extended beyond grammar and lexis to L2 pronunciation (Gurzynski-Weiss, Long, & Solon, 2017) and how task manipulation can help enhance an intentional focus on phonetic form. Through the use of four carefully-designed pedagogic tasks that resemble real-world events, we called learners' attention to phonetic form during meaningful interaction. In this way, learners were able to notice the gap between their peers' productions and their own as well as engage in metaphonological reflection on the phonetic form of the output (Robinson, 2011). Such a method respected learners' developmental stages and processing ability while making the target form essential for task completion. Increasing cognitive complexity through task design resulted in higher occurrence of LREs, which led to improvement in L2 segmental accuracy. Our study provides evidence of the potential benefits of task design and manipulation on L2 pronunciation development, and suggests that TB*P*T is a promising research avenue that will help bridge the gap between research and practice in L2 pronunciation teaching and learning.

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