What motivates extra-rising patterns in L2 French: Acquisition factors or L1 Transfer?

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ABSTRACT

Learners of L2 French, be they German or Spanish, produce an extra-rising melodic movement (T*HH%) at the right edge of non-final IPs, whereas French native speakers do not produce such form. From the analyses of a large data set extracted from a learner corpus, it appears that this non-native tonal pattern could not be attributed to an L1 transfer. Different factors are thus explored in order to explain the occurrence of such form. The results show that: (i) the use of such rises is related to the learner level of proficiency, this form being unmarked at the beginning of the L2 acquisition process, and (ii) this tonal pattern could be a sign of linguistic insecurity.

Keywords: Intonation, L2 acquisition, interlanguage prosody, phonetic implementation.

1. INTRODUCTION

Several studies on second language acquisition argue that L1 transfer is one of the main factors that explain both phonological knowledge and phonetic competence in the target language (L2). Hence, many L2 prosodic patterns observed in learners' oral productions are attributed to their L1. However, some studies have shown that prosodic forms observed in learners' oral productions are neither observed in their L1, nor in native productions of the target language (cf. [9]). Furthermore, similar prosodic forms with similar phonological status in both the learners' L1 and the target language are not necessarily observed in learner productions (cf. [5], [6], among others).

Among the studies that have shown that L1 transfer cannot account for all the observed prosodic patterns, very few have tried to explain what could motivate some of the learners' prosodic errors. It has been argued that several factors such as a specific order in the acquisition of prosodic features (cf. [1]) or the levels of accuracy obtained in other linguistic domains such as syntax or semantics (cf. [10]) could constrain the emergence of certain L2 prosodic patterns. However, the relative weight of these various factors in the acquisition process itself has rarely been investigated in comparison to the L1 transfer.

As for the acquisition of intonation in an L2, [9] have found that learners have a tendency to overuse high rises when producing yes/no and wh-questions, although falling intonational patterns are produced in their L1 on a par with the rising ones. In other studies, it has been argued that these rising patterns could be considered as the emergence of default melodic movements (or *prosodic primitives*) constrained mainly by universal representations of prosody and leading to a limited L2 tonal repertory at an early stage of acquisition (cf. among others [4]).

The current study focuses on the melodic movements occurring at the end of non-final Intonational Phrases (IPs) in L2 French. In the productions of Spanish and German learners of L2 French, extra-rising tonal patterns (T* HH%) were observed in these prosodic contexts, whereas continuation rises consisted usually of mere rising patterns (T*H%) were found in native productions, be it in French, Spanish or German. Our main objectives here are twofold: (i) providing a description of the distribution of these extra-rising contours observed at the end of non-final IPs, and (ii) clarifying which factors could explain the occurrence of these tonal patterns that cannot be directly attributed to an L1 transfer. Different types of independently motivated factors are considered: the learner's L1, the level of proficiency in L2 French and linguistic insecurity.

The paper is organized as follows. Section 2 presents the data and method. In section 3, results and explanatory factors are presented and discussed. Concluding remarks are given in section 4.

2. METHOD

2.1. Corpus and data collection protocol

The data analysed for this study are extracted from an oral corpus that includes learners' productions in L2 French and L1 productions in French as well as in the different L1 spoken by the learners. Here the French, Spanish and German data as well as the L2 oral productions from the Spanish and German learners of French were exploited.

The protocol used to gather the various data sets (German, French and Spanish) was always identical and thought in such a way as to allow comparing L2 learners' productions with native productions. All speakers performed three types of production tasks. They had: (i) to read a set of small texts and dialogs (reading tasks), (ii) to describe paintings or pictures that were presented to them (monologal oral production tasks) and (iii) to interact with an interviewer in two distinct tasks (interactive oral production tasks). In one of these tasks they had to answer questions about their family, their hobbies, etc., and in another one, they participated to a role-play in which they asked questions to the interviewer in order to fill up an enrolment form. The utterances used for the current study were extracted from these three types of tasks.

2.2. Participants

The 43 speakers of this study were recorded according to the just mentioned protocol. They could be divided into two major groups: a native speaker group formed by 28 speakers, and a learner group composed by 23 learners of L2 French.

The native speaker group could be divided into three sub-groups relatively to the speakers' L1: 10 French native speakers (FL1) raised in Paris, 10 Mexican Spanish speakers (SL1) raised in Mexico City, and 8 German native speakers (GL1) mostly raised in South Germany (Bad Württemberg).

The learner group consisted of 15 Mexican Spanish learners (FL2-S) and 8 German learners (FL2-G), which were also recorded in their L1 (GL1 group). All learners were classified in two different proficiency levels in L2 French according to the Common European Framework of Reference for Languages: A2 and B1 levels. At the moment of the experiment, FL2-S speakers were following French courses at the National Autonomous University of Mexico (6 students were positioned at the A2 level and 9 at the B2 level), whereas FL2-G speakers were attending French courses either at the University of Konstanz or at the GSS Schule in Konstanz (5 were positioned at the A2 level and 3 at the B2 level).

The learner groups FL2-S and FL2-G as well as the FL1 group were recorded in French, whereas SL1 were recorded in Spanish and GL1 in German. As for German speakers, it is important to note that they were first recorded in German (GL1), and then in French (FL2-G).

2.3 Data extraction procedure

To study the occurrence of extra-rising tonal patterns (T*HH%) in L2 French, it was necessary to extract from the corpus utterances containing non-final IPs.

To do so, non-final IPs were determined according to a syntax-prosody mapping approach: coordinated root clauses and extra-sentential elements at the left periphery of a clause were considered as motivating the occurrence of an IP boundary at their right edge (see for such analysis [2], [3], and [8] among others). Using a syntax-prosody mapping approach had the advantage of allowing for a better comparison between native and non-native productions.

We extracted from the various data sets 810 utterances with non-final IPs (371 utterances from non-native productions, and 439 from native ones, among which 215 in native French). Non-final IPs were classified in two groups according to prosody-syntax parameters: non-final IPs produced in clause chaining (CC), i.e. at the right edge of a non-final root clause, and IPs consisting of an Extra-sentential Elements (EE), be it an adverbial or a nominal adjunct, or a dislocated XP. Examples of CC and EE are given respectively in (1) and (2).

(1) [Je m'appelle Maurice,]$_{IP}$ je suis étudiant.
   'My name is Maurice, I am student'.
(2) [La semana pasada]$_{IP}$ fui al cine.
   'Last week, I went to the movies'.

In addition, non-final IPs followed by a pause were distinguished from those produced without a pause. This criterion allowed examining whether pauses play a role in the occurrence of extra-rising tonal patterns.

2.4 Prosodic Annotation

To encode the tonal form of the boundary tones occurring at the end of non-final IPs, it was important to use a procedure that allowed comparing different phonological tonal systems, among which some were unstable and unknown (e.g. learner systems FL2-S and FL2-G). Hence, it was decided to use an automatic tool, the Prosogram (cf. [7]), to stylize the pitch contours and to encode the tonal events in a language-independent way. An f0 stylisation of all melodic movements with the following perceptual thresholds (G=0.32/T^2, DF=20 and dmin=0.035) were achieved. In addition, the tool helped us determining two distinct pitch levels: High (H) and Top (T), the later corresponding to the top of the speakers' range. The melodic movements occurring at the end of non-final IPs were thus encoded according to their span, which were measured from the beginning of the last pitch accent until the end of the IP, and relatively to the speakers' range. Two symbols were thus assigned to the IP boundaries:

- H% is used when the rise spans for less than 9 semitones and does not reach the top of the speakers' range as shown in figure 1(a)
- HH% accounts for a rise spanning over more than 9 semitones and/or reaching systematically the top of the speakers' range as illustrated in figure 1(b).

In the case of French, final rises start systematically within the last final syllable of the IPs, since the last syllable is also accented [8]. By contrast, in Spanish and German, final rising movements were frequently realized over several syllables, from the last pitch accented one until the end of the IP. It often leads to the realization of a high plateau (*cf.* [2] and [3]). In these cases, the span of the final rise was thus evaluated on the basis of the final pitch accent shape. Two-experimented phoneticians carried out a perceptual judgment of the strength of final rises in order to validate the prosodic annotations.

Figure 1: Stylisations obtained by the Prosogram and annotations used for describing two rise types for the utterances *la semaine dernière* ('last week') *and à Paris* ('in Paris') in L1 French (1a) and L2 French (1b)


(a)

(b)
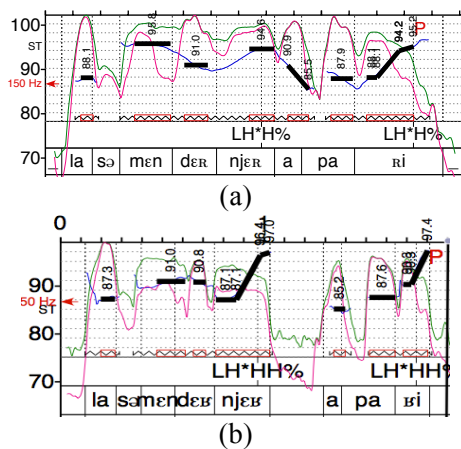
3. RESULTS

The data was modelled using linear mixed effects models, with the predictor variables Tones (H%, HH%), Group (FL1, FL2-S, FL2-G, GL1 and SL1), Structure (CC, EE), Task (MOP, RT), Pause (Presence, Absence), Level (A2, B1), random intercepts and slops for subjects. The contribution of each predictor variable was estimated using a model reduction and likelihood ratio tests (χ^2). In the following sections, we present the main results of these models and their interpretation for different parameters: L1, level of proficiency and presence of a pause.

3.1. Evaluation of the L1 transfer

Figure 2 presents the proportions of HH% produced across the five groups. The bar plot shows that learners (FL2-S and FL2-G) produce more often an extra-rising contour than native speakers (FL1, SL1 and GL1) do.

Figure 2: Proportions of HH% across the groups.
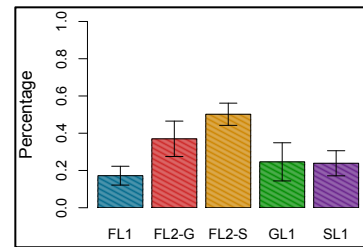
We examined if the factor Group has an effect on the distribution of HH%. Results show that there are not significant differences across the three groups of native speakers with respect to the use of the two rising contours. As illustrated in the figure above, FL1 do not use more HH% than SL1 do (z=1.744, p=.112), nor than GL1 (z=.374, p=.708). Similarly, SL1 do not use more HH% than GL1 do (z=1.607, p= 0.108). These observations suggest that both rising contours are equally distributed across these three groups, the T*H% contour being the canonical one.

By contrast, learners have a tendency to use more HH% in L2 than in their L1. FL2-S learners produce more HH% than SL1 do ($\chi^2(1)$=17.03, p<0.0001). Similarly, German speakers have a tendency to employ more HH% when speaking in L2 French than in their L1 ($\chi^2(1)$=3.05, p<.05). When we compare the proportions of HH% vs. H% used by the learners and the FL1 speakers, we found that HH% is more often employed by FL2-S than by FL1 ($\chi^2(1)$=23.176, p<0.0001). Similarly, HH% appears more often in FL2-G than in FL1 ($\chi^2(1)$=8.814, p<.001). Furthermore, when examining the proportion of HH% across the learners groups, we found only marginal differences: FL2-S learners have a tendency to employ more HH% than FL2-G do ($\chi^2(1)$=3.492, p=.061).

While the factor Structure does not affect the distribution of the rising contours across the three groups of native speakers (z=1.454, p=.146), the results show that the two groups of learners used significantly more HH% in CC than in EE ($\chi^2(1)$=9.914, p<.001). In addition, the effect of the factor Task did not reach significance across the groups of native speakers (z=-.767, p=.443), nor between the groups of learners (z=-.242, p= .809).

From the results obtained, it can be argued that the T*HH% pattern occurs more often in the learners' productions (be they Spanish or German speakers) than in the French native ones. In other words, HH% is an L2 prosodic pattern that is not frequently observed in the native oral productions of the target language. In addition, the use of the HH% form cannot be attributed directly to an L1 transfer, since SL1 and GL1 groups (native productions in the learners' L1) do not use this tonal contour in the same proportion as learners do. Henceforth L1 transfer cannot be invoked to explain the occurrence of this tonal pattern.

The T*HH% contour is thus an L2 pattern that is motivated by other factors than L1 transfer. According to the results obtained, syntax could be seen as an interesting predictor, since learners produce more HH% in CC than in EE in comparison to the native speakers. This fact suggests that syntactic proficiency in the target language could play a role in the use of HH%.

3.2. Evaluation of Proficiency level

Figure 3 presents the proportion of HH% used by the two learners' group depending on the proficiency level: learners positioned at A2 level use more HH% than learners positioned at B1 ($\chi^2(1)$=3.105, p<.05).

Figure 3: Proportions of HH% by proficiency levels across the learners' groups.
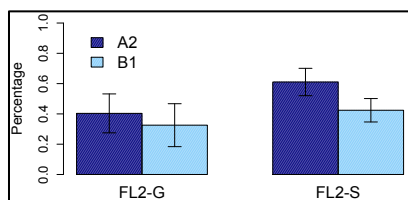

More interestingly, results show that this pattern does not interact with the Group (z=-.630, p=.529). It thus indicates that beginner learners perform more HH% than intermediate learners, independently of their L1. These observations suggest that L2 learning process is similar for both groups: T*HH% seems to be the default melodic movement used at the end of non-final IPs in L2 French at an early stage of acquisition.

3.3. Evaluation of presence/absence of a pause

Figure 4 illustrates the proportion of HH% in all the groups in relation to the presence/absence of a pause. We found that the presence of a pause has an effect on the use of HH% across the three groups (χ^2=8.519, p<.001). Moreover, an interaction between the factor Pause and the distribution of HH% across the five groups did not reach significance (all p-values>.05). In other words, all participants, be they native speakers or learners use more HH% when non-final IPs is followed by a pause.

Figure 4: Proportions of HH% according to the presence/absence of a pause across the groups.
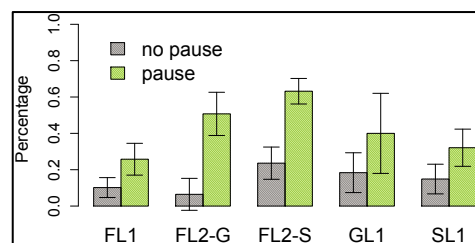
As expected, the proportion of pauses differs significantly when comparing the productions of native speakers (FL1, SL1 and GL1) and learners (FL2-S and FL2-G), the later groups producing by far more pauses than native speakers ($\chi^2(1)$=22.654, p<.0001). Note, however, that pauses are equally distributed between the two groups of learners FL2-S and FL2-G (z=.302, p=.763).

These results show that pauses have a strong relation with the distribution of HH% in all groups. As learners produce more pauses than native speakers, they consequently perform more HH%. Since the use of pauses in L2 productions is often related to certain insecurity and an insufficient proficiency in the target language, we suggest that the emergence of HH% may also be a sign of linguistic insecurity and lack of proficiency.

4. DISCUSSION AND CONCLUSION

The extra rising tonal pattern T*HH%, which occurs at the end of non-final IPs, is frequently used in L2 French. From the analysis of the data, it appears that this form cannot be seen as resulting from an L1 transfer. Indeed, this tonal pattern is a marked form in Mexican Spanish and German, as well as in native French. Other factors related to the L2 acquisition process itself were thus examined. Firstly, our results suggest that this prosodic form represents the default melodic occurring at the end of non-final IPs at an early stage of the L2 acquisition. Secondly, our analysis points out that HH% could emerge as an expression of some sort of linguistic insecurity, by being related to the presence of pauses. What remains to be explained is why this form occurs in L2 French. Would it be universal? Should it occur also in other non-native languages such as L2 Spanish or L2 German? These issues will thus be explored in future research.

6. REFERENCES

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7. AKNOWLEDGEMENTS