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THE IMPACT OF EXPLICIT INSTRUCTION ON THE PRONUNCIATION OF FRENCH LIAISONS

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In order to determine if the explicit description of the many rules traditionally given to explain French liaisons have an impact on students' production of liaisons, I compare seven recordings made by 25 undergraduate students enrolled in an intact third-year class on French pronunciation. Recordings were coded for the accurate production of obligatory and prohibited liaisons and results were analyzed using Goldvarb. The analysis in this pilot study shows that liaisons are pronounced correctly around 80% of the time. Explicit instruction seems to have an effect since the first recording (before instruction) is associated with the lowest rate of accurate production while the sixth recording of the semester is associated with the highest. The trajectory of the improvement, however, is not linear with several setbacks during the semester. Another statistically significant factor is the syntactic environment of the liaison. Some environments show a ceiling effect with high accuracy from the beginning. Others shows gains over the course of the semester while some don't. The discussion centers on which of these contexts seem to improve most after explicit instruction and should, therefore, be included in overt explanations of liaisons.

INTRODUCTION

In order to measure the effectiveness of explicit instruction, this pilot study focuses on the accurate realization of obligatory and prohibited liaisons. Liaison is a French sandhi phenomenon that can be defined as follows: in some contexts, the otherwise-silent final consonant of a word will become pronounced as the onset of the following word when this following word starts with a vowel. For example, we note a contrast in the two pairs below, where the vowel-initial word in the 'friend' example starts with a consonant that is not normally pronounced at the end of the determiner (as shown in the left-hand examples below), and that is resyllabified as the onset of the word for 'friend'.

(1)	les filles ('the girls')	les amies ('the friends' feminine)
	[**le**.fij]	[le. ‿**Z**a.mi]
(2)	un garcon ('a boy')	un ami ('a friend' masculine)
	[**ɛ̃**.gaʁ.sõ]	[ɛ̃. ‿**N**a.mi]

Liaisons are described as suprasegmental by Kennedy, Blanchet, and Trofimovich (2014) and Gordon and Darcy (2016) since they involve linking between words. But at the same time, since they involve the presence or absence of a particular consonant, they can also be described as a segmental phenomenon.

According to traditional descriptions, starting with Delattre (1951) and many since then, there are 3 'types' of liaison, classified according to their frequencies: obligatory liaisons are said to occur 100% of the time when the conditions are met, prohibited liaisons never occur, and

optional ones can be pronounced or not depending on non-linguistic factors such as style. All three types of liaisons are typically taught very explicitly with a list of all the contexts, yielding five different rules for obligatory liaisons, nine for prohibited, and six for optional liaisons in Violin-Wigent, Miller, and Grim (2013), the textbook used for the class analyzed in this study. Because of this, they provide a good testing ground for an investigation on the efficacy of explicit pronunciation instruction. After a brief review of previous studies on this issue, the methodology adopted in this study will be described before results are presented and discussed.

EXPLICIT PRONUNCIATION INSTRUCTION

Many studies have investigated the question of explicit instruction (EI) in the acquisition of pronunciation, such as Kissling (2013 and 2014), Saito (2013 and 2015) and Gordon and Darcy (2016), among many others. In an early study, Derwing and Munro (2005: 387-8) conclude that EI is beneficial because it helps students notice the differences between the target and their own production. In their meta-analysis of 86 studies, Lee, Jang, and Plonsky (2015) show a significant effect of EI but they nuance their conclusion by suggesting that studies without significant results are probably not published. Thomson and Derwing (2015: 332-3) reviewed 75 studies and also noted the positive results of EI in 82% of cases when learners read texts aloud, rather than produced spontaneous speech.

Most published studies center on English (as a foreign or second) languages. Methods and results are not always transferable to other languages, as a fair number of them focus on suprasegmental phenomena (particularly on stress placement), which may not apply to other languages. Among studies on other languages, we can cite, among others, Chun, Jiang, and Avila (2013) for Chinese, and, for Spanish, Elliot (1995), Gonzales-Bueno (1997), Lord (2005, who describes improvement during a Spanish phonetics class, but without a control group), Gonzales-Bueno and Quintana-Lara (2011) and Bajuniemi (2013). As far as French is concerned, we can cite Weinberg and Knoerr (2003) whose primary interest is in including technology, and Ruellot (2011) on the distinction between [u] and [y]. French liaisons are studied in Kennedy et al. (2014), who show a relationship between instruction, awareness, and production in an FSL context. They classify liaisons under quantitative awareness, which is associated with memorization of rules or chunks. In addition, De Moras' studies (2011 and 2013) report on the effect of three types of treatment (instruction, repetition, and feedback) given to learners in different orders. She concludes that explanations are not very beneficial in the acquisition of liaisons and that repetitions seems much more valuable.

METHODOLOGY

In this context, the investigation focuses on the evolution of learners in a class focused on French pronunciation and phonetics. The class, taught at a large Midwestern university, includes 25 students and can be considered an intact class since the productions at the basis of this study were part of their regular class assignments. These "oral quizzes" are seven recordings that the learners enrolled in the class turned in during the 15-week semester. The lesson on liaisons is associated with recording 4, considered as the immediate post-treatment test.

Students read texts aloud, recorded them using Audacity, and uploaded them on the class website. The task of reading aloud was chosen because it reflects what was done in class and this

study focuses on the effectiveness of in-class instruction. As described in the washback effect (Lee & VanPatten 2003, p. 100), it is necessary that testing reflects classroom activities, and vice-versa. We also follow the assumption that if liaisons are not produced accurately in a guided activity with heavy self-monitoring and a focus on accuracy, they will not be produced in more spontaneous contexts. Since this is the first class where liaisons are discussed, we also assume that they will not have been acquired yet. In addition, as mentioned by Tomson and Derwing (2015, p. 339), spontaneous tasks should be reserved for longitudinal studies as explicit teaching done in the phonetics class is more akin to awareness raising while true learning or acquisition will take place beyond the time-limit of the class. Finally, this was a way to eliminate learner avoidance strategies. For example, in the case of common liaisons, like between articles and nouns or pronouns and verbs, it is not hard to select a different noun or verb that starts with a consonant to avoid a liaison, or simply to pause between the two elements, which would automatically block the liaison. The task of reading aloud, however, could be detrimental to accurate production since a task based on the graphical representation of words may reinforce or at least trigger two types of mistakes that are found to be common: the non-linking of the liaison consonant to the following word (*non-enchaînement*) and the spelling pronunciation of the liaison consonant (such as [d] instead of [t] in words such as *quand* 'when').

Following Liakin, Cardoso, and Liakina (2017: 356), two advanced learners of French served as research assistants. After training and discussion, they listened to each student's recordings for accuracy of liaison production. In the case of conflicting transcriptions, the author made the final decision. The inter-rater reliability rate was around 98%. Liaisons produced accurately compared to a native-like target (following the nativeness principle) were coded with 1. All others were coded as 0, including liaisons that were not produced when they should have been or produced when they shouldn't have been, liaisons that were produced with the wrong consonant, and liaisons in which the liaison consonant was not resyllabified.

The recordings produced a total of 1625 potential sites for obligatory and prohibited liaisons. However, 131 tokens were excluded for one of the following reasons: students didn't turn in a recording; words or sentences were skipped or transformed/misread; or students made an optional pause between words in cases of prohibited liaisons. Statistical analysis was carried out using Goldvarb, a logistic regression program that assigns a weight to each element to describe its influence on the probability of choosing each option in a pair (in this case, the accurate vs. non-accurate production of liaisons). In the tables below, higher weights indicate that the associated element promotes or increases the likelihood of accurate liaisons while lower weights indicate that the associated element demotes or decreases the likelihood of accurate liaisons. While unusual in the field of language acquisition, Goldvarb is widely used in sociolinguistics as it is designed to compensate for very uneven numbers of tokens in cells, which is the case here. Four factors were tested: time in the semester (before treatment, immediately after treatment, after treatment), the recording number (from 1 to 7), the type of liaison (obligatory vs. prohibited), and the context of liaison (corresponding to the explicit rules given to the learners in class).

RESULTS AND ANALYSIS

Overall results show that 80.4% of the remaining 1494 liaisons were produced accurately. Among the four factors tested, only two were selected as significant by Goldvarb: the recording number and the type of liaison.

Recording Number

Table 1 below presents the results for the accurate pronunciation of liaison according to the recordings done by learners during the semester.

Table 1

Results for recording number

	Relative weight	N correct	N total	Percentage
1	0.316	122	195	62.6
2	0.467	187	220	85
3	0.196	54	99	54.5
4 (treatment)	0.443	210	273	76.9
5	0.654	121	133	91
6	0.644	267	291	91.8
7	0.610	240	283	84.8
	Range = 0.458			

Before discussing the results in this table in detail, we should mention that the weight associated with recording 3 may not be representative of learners' actual liaison performance of the students for several reasons. First, this recording only contained four possible tokens of liaisons, which is a fairly low number to be able to generalize from. In addition, two of these tokens involved the phrase *cent autres (renards)* '100 other (foxes)'. As will be explained in section 4.3 below, liaisons after numbers are particularly problematic when the consonant involved is not a [z]. Indeed, native speakers consulted on this mentioned that they would prefer to rephrase it to avoid a liaison that was deemed odd. Ignoring the figure for recording 3 then, the relative weights presented in Table 1 show a steady increase between recording 1 and recording 5, with a small set back immediately following treatment (on recording 4), and a more important slide back after the peak in recording 5. This indicates that, in spite of a small delay, some improvement has taken place after treatment. Indeed, the weights associated with recordings 5, 6, and 7 are all above 0.5 (which is considered neutral), hence showing that these recordings promote the production of accurate liaisons. At the same time, the weights associated with the recordings before recording 5 show weights below 0.5, therefore indicating that liaisons in these recordings were more likely to be produced incorrectly.

While these results are encouraging, we notice that the range of weights (in the last row) is relative small, especially when compared with the range of the weights associated with the contexts of liaisons (in Table 2 below). This indicates that, while significant, the recording

number is not the most important factor in explaining the variation in the accurate pronunciation of liaisons, but that the context of liaison is.

Context of Liaison

Table 2 below presents the results for the accurate pronunciation of liaison according to the contexts in which liaisons occur. These do not reflect all possible contexts but only the ones present in the recordings.

Table 2

Results for context of liaison

	Relative weight	N correct	N total	Percentage
Before or after 'et'	0.758	213	224	95.1
In fixed phrases	0.730	24	25	96
Between two groups	0.732	214	226	94.7
Between a pronoun and a verb	0.468	97	120	80.8
Between a determiner and a noun	0.460	408	534	76.4
Between a subject NP and a verb	0.378	114	137	83.2
After a monosyllabic adverb	0.322	31	50	62
After a monosyllabic preposition	0.244	68	93	73.1
After a monosyllabic conjunction	0.058	17	70	24.3
	Range = 0.700			

As can be seen in the first few rows in this table, three contexts seem to be acquired fairly well since their weights are very high, reflecting a high likelihood of accurate production. These contexts include two prohibited liaisons (before or after the conjunction *et* 'and' and between two groups) as well as one obligatory, in the fixed expression *peut-être* ('maybe'). In addition, it should be noted that all the cases (15 tokens) involving a prohibited liaison before a proper noun were realized correctly and are, therefore, not shown in the chart. Additional statistics were run on the two prohibited contexts to see if there was a change over the duration of the semester. These gave non-significant results, showing that these two contexts of liaison were acquired even before the class began. These results lend support to Kennedy et al.'s (2014) classification of liaisons under quantitative awareness where contexts that are more chunk-like, like fixed phrases or around a particular word, seem to be acquired first.

Table 2 also shows two contexts that are fairly neutral, namely, between a clitic pronoun and a verb and between a determiner and a noun. Finally, all the other contexts may be deemed

problematic since their weights indicate that they are very likely to be associated with inaccurate production of liaisons. Most of these contexts involve an obligatory liaison after a monosyllabic function word. A closer look at these categories is needed to investigate whether improvement or change has taken place as a result of instruction.

Evolution of Non-Acquired Contexts

Starting with the two contexts associated with neutral weights in Table 2, no significant effect of treatment or recording was found between a clitic pronoun and a verb, hence showing no evolution during the semester. A tendency can be seen however, as percentages show a rise from 72.3% to 86.3% before and after the lesson. Table 3 below present the evolution of the results for determiners depending on the lesson.

Table 3

Evolution of liaisons after determiners according to treatment

	Relative weight	N correct	N total	Percentage
Pre-lesson	0.382	173	266	65
Lesson	0.434	104	125	83.2
Post-lesson	0.756	131	143	91.6
	Range = 0.374			

This table suggests that instruction had a positive effect on the correct production of the liaisons after a determiner, even though this effect was not immediate as can be seen in the weight associated with the lesson, which is below still 0.5 but higher than before the lesson. By the end of the semester, liaisons after a determiner seem almost fully acquired as the percentage approximate those from Table 2 that were deemed acquired. Two additional factors were tested regarding determiners (the type of determiner and the liaison consonant) but the former was found to be significant, as shown in table 4 below.

Table 4

Results according to the type of determiner

	Relative weight	N correct	N total	Percentage
Indefinite plural *des*	0.780	90	96	93.8
Definite plural *les*	0.670	111	122	91
Possessive singular *mon*	0.525	121	147	82.3
Indefinite *quelques*	0.436	16	23	69.6
Indefinite singular *un*	0.244	36	71	50.7
Numerals *six* and *cent*	0.141	34	75	45.3
	Range = 0.639			

Table 4 clearly shows a preference for liaisons with plural determiners, with the exception of *quelques* (‘a few’), which is an unusual determiner in French in so far as it is multisyllabic. This is not surprising as liaisons with [z] are very strongly associated with the plural in French, so strongly in fact that false-liaisons are known to occur after numbers that do not end with an orthographic <s> such as *quatre* (‘four’) or *huit* (‘eight’), or even *cent* (‘one hundred’). This may help explain the low weight associated with the last category since two of the three tokens for each student involve *cent* (realized accurately 28% of the time vs. 80% for *six*). Additional data is need in this category to come to a more definite conclusion.

Table 5 below presents the results for the only significant factor retained for the context of between a subject NP and verb. It is to be noted that this context was not included in the recordings prior to the lesson and that only one token per student was in the recording associated with the lesson. For this reason, as well as the fact that the percentages and the weights do not show the same progression, we need to be prudent in our analysis.

Table 5

Evolution of subject NP and verb according to recording

	Relative weight	N correct	N total	Percentage
4 (treatment)	0.118	12	25	48
7	0.685	42	48	87.5
6	0.503	60	64	93.8
	Range = 0.567			

This table shows an improvement in the realization of liaison but not immediately after the lesson. It would have been beneficial to have not only tokens prior to the lesson but also for recording 5 in order to have a more complete picture of the evolution of students in this context.

As far as the last three contexts in Table 2 are concerned (after monosyllabic adverbs, prepositions, and conjunctions), we need to be cautious with the results due to small numbers. In particular, there were only two tokens per student of an adverb, one in recording 1 with 36% of correct pronunciation of liaisons and one in recording 4 (associated with the lesson) with 88% accuracy. Four prepositions per student are included in the corpus, one in recording 2 (produced accurately 83.3% of the time), one in recording 5 (87.5% accuracy) and two in recording 6 (60% accuracy). Finally, three conjunctions are found in the following three recordings: one in recording 1 (12% accuracy), one in recording 4 (17.4% accuracy), and one in recording 6 (45.5% accuracy). These figures seem to indicate that there is an improvement as the semester progresses, except for the back sliding observed with prepositions in recording 6. Again, tokens are too few and too unevenly spread out during the semester to come to a definite conclusion for these three contexts.

CONCLUSION

Even without comparing these results with those from a control group, we can conclude that there is a significant improvement of accuracy over the course of the semester. The trajectory of

the improvement, however, is not linear as the second recording (still before instruction) is associated with a higher accuracy than the recording linked with the liaison unit, hence suggesting that students have improved on their own, but regressed with the introduction of the explicit rules governing liaisons, showing a pattern of back sliding, especially with the final recording. We have also observed variation in accuracy depending on the context of liaisons. Indeed, three contexts show a ceiling effect: around *et*, in idiomatic expressions, and between two groups, while almost all the other contexts show a positive evolution, with the exception of between a clitic pronoun and a verb.

These results seem to contradict those from De Moras (2011 and 2013) but several elements need to be mentioned to qualify this statement. First of all, students in her studies all received treatment but in different orders and her conclusions are really about the optimal order of presentation rather than the effectiveness of explicit instruction. In addition, neither study has a control group that would enable us to see the effect of treatment as opposed to the effect of additional language exposure without any focus (feedback, repetitions, or explicit instruction) on liaison. I am currently collecting data from such a control group for a future study.

Finally, though preliminary, the current results suggest that class time should include more attention to contexts where improvement is possible (between determiners and nouns) and on difficult contexts (such as between clitic pronouns and verbs and after prepositions, conjunctions, and adverbs). Needless to say, further research is needed on these contexts as well as on others not included here or without enough tokens to bring valid results. In addition, further research should compare tasks to investigate if results from reading-aloud tasks transfer to spontaneous speech, including in longitudinal studies.

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