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THE ROLE OF PRONUNCIATION INSTRUCTION ON THE ACQUISITION OF *LIAISONS* BY ANGLOPHONE SPEAKERS.

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According to the Usage Based Model (UBM), frequency of items and structures permit young L1 learners (Ellis, 2002; Tomasello, 2003) and L2 learners (Eskildsen, 2009) to establish word properties, word sequences, and make it possible for them to master these structures. One such structure is French liaisons, where both L2 acquisition and production are of interest for several reasons. While few authors have analyzed L2 production of liaisons (Howard, 2005; Mastromonaco, 1999; Thomas, 2002), their results indicate that Anglophone students master liaisons at a near-native level. However, given the complexity of the phonetic constraints on liaisons, and the lack of information on the effect of formal instruction, I first wanted to test L2 *liaison* production. I wanted to determine whether it is possible to teach them successfully, and designed a text with 51 compulsory liaisons which 20 Francophones and 37 Anglophones read. As expected, majority Francophones pronounced obligatory liaisons in a systematic fashion (95.6%), and the three groups of Anglophone students were much less accurate (60.7 %).With the three groups of Anglophones, I tested the effect of repetitions, corrections and explanations on the acquisition of liaisons. All groups' productions increased after the intervention (average of 69.5%). The group which had the greatest progress was the one with the most repetitions.

INTRODUCTION

In French, there are two types of linking: *enchainement*, which is comparable to linking in English, and *liaison*, which is unique to French. Linking is a marker of fluent speech (Hieke, 1984) and L2 linking production affects listening comprehension (Henrichsen, 1984). Similarly, if L2 learners do not produce enchainement, they may not understand native speakers who do (Sauders, 2007).

Liaisons are important because they mark the cohesion both between two words and within a phrase. When non-native speakers do not produce the liaisons between *les* and *enfants*, for example, they separate words and may pause between the first and second words being linked (hereafter called word1 and word2). This goes against the general stress, intonation and pause patterns, and is contrary to the open syllabification of French, as well as to native speakers' expectations. The non-production of liaisons thus constitutes a possible source of confusion.

The system of linking in French is rather complex, which is why Francophone children master obligatory liaisons late, around age 6, yet continue to make mistakes in the production of the optional and so-called forbidden contexts until the age of 12 or 13 (Dugua, 2005). Adults of all ages also make mistakes with the less frequently pronounced optional and forbidden liaisons. For example, French children and adult native speakers are aware of the anti-hiatus constraint, as well as their language's open syllabification, and they go to great lengths to avoid the hiatus. Their mistakes usually consist in adding the wrong liaison consonant, or in pronouncing one which should not be pronounced.

According to the Usage Based Model (UBM), frequency of items and structures permits young L1 and L2 learners (Ellis, 2002; Gass & Mackey, 2002) to establish word properties, word sequences and to create abstract categories. Indeed, young learners of French acquire the most frequently pronounced liaisons first, and the least frequent ones last (Dugua, 2006).

Second language liaisons have seldom been studied. In Mastromonaco (1999), obligatory liaisons were reportedly produced at 93.3%; in Howard (2005, 2006), Anglophones who stayed in Ireland produced 82.5%, and students who spent a year in France produced 95% of liaisons. In Thomas (2002), Anglophones who stayed in Canada produced 93.9% of liaisons while students who spent a year in France produced 90.8%. These results (Table 1) suggest that second-language learners of French master liaisons at a near-native level.

Table 1
Summary of liaisons productions by Anglophones in Mastromonaco (1999), Thomas (2002) and Howard (2005) compared to French native speakers (Malecot, 1975).

	Malécot (1975) Francophones	Mastro-monaco	Howard Anglophones who stayed in Ireland	Howard Anglophones who went to France	Thomas Anglophones who stayed in Canada	Thomas Anglophones who stayed in Canada	Thomas Anglophones who went to France	Thomas Anglophones who went to France
Test					Pre-test	Post-test	Pre-test	Post-test
Students' level		2nd year university Canada	2nd year university Ireland	2nd year university Ireland	3rd year university Canada	3rd year university Canada	3rd year university Canada	3rd year university Canada
obligatory *liaisons* %	96.9%	**93.3%**	82.5%	**95%**	91.1	**93.9%**	86.7%	**90.8%**

However, none of these studies examined the effect of instruction. According to Thomas (1998, p. 544), this may be because it is too complex to teach.

The small amount of research on second language learning of liaisons and the reported near-native acquisition of the forms contrasts with the experience of many teachers of French. As a result, this study discusses whether Anglophone students really master liaisons at the levels reported for them. If they do not, does instruction permit progress, and if yes, to what extent? Which elements of instruction are the most beneficial for teaching French liaisons?

LIAISONS AND THE PHONETIC SYSTEM

French encourages open syllabification (syllables ending with a vowel), and favours consonant-vowel contexts and the anti-hiatus constraint (avoidance of two vowels in a row) which explains phenomena like liaisons, elisions (l'/le), epenthetic consonants (va-t-il), variable prepositions (à/en), and morpho-syntactic variation of masculine adjectives (ce/cet).

Liaison occurs when a latent consonant is pronounced and attached to the following word, if it begins with a vowel.

Example: *les* (word1)_(z)*enfants* (word2) [le zã fã].

Enchainement occurs when the fixed consonant is resyllabified and pronounced with the following word, if it begins with a vowel.

Example: *Une bonne amie* [yn bɔ na mi].

Both liaisons and enchainements require that word1 be resyllabified with word2, but the difference is that liaisons have a latent consonant which is otherwise not pronounced.

There are several rules for liaisons. One of them involves written <h>. There are two types of phonetic realizations of h: the mute h and the aspirated h. Even though neither h is ever pronounced in French, the two types require different rules for liaisons.

When words (of Greek or Latin origin) begin with a *mute h*, such as *habit,* elision occurs in the singular form and liaison in the plural form.

Example: *l'homme* (the article *le* is elided to avoid the hiatus in *le homme*) [lɔm]

les (word1)_(z)*hommes* (word2) [le zɔm]

When words begin with an *aspirated h,* (often of foreign origin other than Greek or Latin), such as *handicap* (from English), there is no elision and no liaison.

Example: *le handicap* (the article is not elided) [lə ã di kap]

les (word1)_(z)*handicaps* (word2) [le ã di kap]

Liaisons are forbidden with aspirated h and with words starting with y. There are other categories of forbidden liaisons, and they can all be considered to be exceptions to the general rule that liaisons occur across word boundaries if possible. The different types of liaisons are summarized in Table 2. This classification is the most commonly used (by, among others, Delattre, 1951; Encrevé, 1988; Mastromonaco, 1999; the *Académie Française*).

Table 2
Classification of liaisons

Obligatory *liaisons*	**Forbidden *liaisons***	**Optional *liaisons***
Article + noun: *un_arbre*	Between a determiner and a noun starting with an aspirated h: *les hiboux*	*Liaisons* are optional if neither obligatory nor forbidden
Adjective + noun: *gros_effort*	Between a determiner and a noun starting with y: *un yoyo*	Noun + plural adjective: *Des enfants_intelligents*
After a pronoun: *nous_avons*	after *ET*: *beau et intelligent*	Auxili*ary + past participal* *Ils sont_arrivés*
After a monosylabic preposition: *en_avance*	Noun subject + verb: *Jean arrive*	Polysylabic adverb + any word: (past participal, determiner…) *beaucoup_intéressés*
Fixed expressions: *États-Unis*	Noun + singular adjective: *enfant intelligent*	negation + any word: *pas_arrivé*

In general, French final consonants are not pronounced, unless the final consonants are <c, r, f, l> or involve a liaison. These conflicting rules can potentially create confusion and hinder acquisition. Furthermore, one needs to know when and how to link the words with liaisons, and know the pronunciation rules of the liaison consonants; in addition, one must know the hierarchy of liaisons. When given a choice between pronouncing a compulsory and an optional liaison, as it is often difficult to pronounce all of them, obligatory liaisons should be pronounced first.

Experience shows that L2 learners do not seem to acquire liaisons nor enchainements naturally. They tend to separate words and produce fewer liaisons and enchainements than Francophones (Lauret, 2007, p. 59). Thus, syllabic equality, syllabification, resyllabification of French, liaisons and enchainements are difficult to master for all L2 learners of French (Charliac & Motron, 1998, pp. 7-9).

When pronouncing differently from majority Francophones, the main tendencies of non-native speakers of French (Table 3) are to either not pronounce the liaison consonant, to pronounce it with word1 instead of pronouncing it with word2, and to pronounce the final consonant improperly.

Table 3
The main ways L2 learners improperly pronounce the liaison.

Reasons of errors	erroneous pronunciation	expected pronunciation
1. Final consonant of word1 not pronounced at all, example: *Un oiseau*	[œ̃ wa zo]	[œ̃ **n**wa zo]
2. Final consonant pronounced at the end of word1, instead of at the beginning of word2 called "unlinked" *liaison* consonant, example: *ces hôpitaux*	[sɛ**z** o pi to]	[sɛ **z**o pi to]
3. Final consonant pronounced at the beginning of word2 with the wrong consonant**,** example: *second étage*	[s(ə) gõ de taʒ]	[s(ə) gõ **t**e taʒ]

RESEARCH QUESTIONS AND DESIGN

Research in L2 training suggests that L2 training improves students' pronunciation (Blanche, 2004; Derwing & Rossiter, 2003; Elliott, 1994; Leather, 1990; Yates 2003, etc.). Studies have generally shown improvement in pronunciation whatever the approaches and tools used. However, there are no studies on teaching French enchainements and liaisons and very little about teaching English linking (Sardegna, 2011). Sardegna's results (2011, p. 115) show significant short-term and long-improvement in accuracy while reading aloud. Our study analyzes learners' productions before and after intervention and evaluates the results of various teaching components.

Design, materials and procedure

In order to evaluate Francophones' and L2 students' productions of liaisons in certain phonetic and syntactic contexts, I designed a text (Appendix A) which included 51 obligatory liaisons, 17

optional liaisons, 14 forbidden liaisons, and 13 enchainements. The majority of the words were short and frequent.

In order to evaluate the effects of phonetic instruction, three recordings of student linking were elicited (Table 4): one before the lesson (pre-test); a second recording one week later, right after one component of the lesson (test); this second recording made it possible to analyze the effect of individual components, as the length of instruction for each element was different in each group. There was a third recording (post-test) one week after the phonetic training, once all groups had completed the three components of the lesson. The students read the same text for all three recordings.

Because the majority of the L2 participants had studied French for at least 9 years in school, they had heard and practiced the words, word sequences and syntactic structures numerous times already. The phonetic training during this experimental treatment aimed at drawing their attention to a phonetic feature (liaisons and re-syllabification) they may not have noticed or for which they may not have received explicit feedback.

Thus, I anticipated that even a short training of 30 minutes could bring some results.

The phonetic lesson had three components: **explanations** about the linking process and the concept of resyllabification; **repetitions** of sequences within the same phonetic and syntactic contexts, and **corrections**. The training focused on obligatory liaisons, and tackled briefly forbidden liaisons. There was no training with optional liaisons and enchainements.

The study took place during the lab time of a first year French course, and the lab instructors had to follow the curriculum. Moreover, it was necessary to come three times to have the students sign the forms and questionnaires, and do the three recordings (pre-test, test and post-test). Thus I only had 30 minutes to teach the lesson as I already took some time for the rest of the procedure.

In order to determine which aspects of the instruction were potentially the most useful, each group had components of the lesson in a different order, and a different amount of time was allocated to each activity. It was difficult to have corrections if students did not hear the sequences or did not have any explanations first. This is why it was difficult to analyze the role of corrections alone (Lyster, 2004; Lyster & Ranta, 2013; Lyster, Saito & Sato, 2013).

When the students did the post-test, they all showed improvement from the three components of the instruction: explanations, repetitions and corrections. However, each group had more emphasis on one of the three components. Students recorded themselves using CAN8, the system in place in the language lab. I evaluated the recordings according to a precise coding system with 12 possible codes for the pronunciation (or lack thereof) of the liaison consonants. I listened to the same recordings several times. When utterances were not clearly audible or identifiable they were discarded.

Goldvarb software was used to calculate percentages and statistics. I correlated the production of liaisons to personal information from the questionnaires and correlated the productions of liaisons with lexical and syntactic information. Goldvarb is a multivariate analysis tool used primarily in sociolinguistic variation studies (Sankoff, Tagliamonte & Smith, 2005; Tagliamonte, 2006). It determines when independent variables have a significant effect on the dependent variables, and it calculates factor weights.

Participants

I recorded 20 Francophones with a digital recorder Panasonic RR/US750, reading a text aloud:

- 12 majority Francophones: 4 from France, 1 from Belgium, 5 from Quebec, and 2 bilingual subjects having learned French from at least one parent.
- 8 Minority Francophones: 4 Franco-Ontarians and 4 Africans (Senegal, Burundi, Congo, and Mali).

I included Minority Francophones for three reasons. Firstly, I wanted to determine whether participants with more restricted contact with the French language would pronounce fewer liaisons. Secondly, Francophone teachers in school often come from Quebec, Ontario and from African countries. These Francophone teachers potentially served as the L2 learners' linguistic models as students usually hear and practice French only in class. Thus, analyzing the model could partly explain the L2 learners' results. Thirdly, many studies in French only mention native speakers from France. By having a more varied sample of Francophone speakers I thought it may represent more accurately the linguistic reality of the French-speaking communities of Canada.

The 37 Anglophone students were rated at the same intermediate level, had studied French 6-13 years (most of them at least 9 years), were aged 17-19, and were all registered in a first year French course in a Canadian university in Ontario. There were originally four groups, but in group 4, the data was complete for only two students. I ended up analyzing the overall productions of 37 students for general tendencies (whose results can be seen in Figure 1 and 2, and in Tables 5 and 6), but more specifically I looked at the 35 students in the three remaining groups.

Table 4
Procedure of the intervention for each group at Times 1, 2, 3

	Group 1 (N =10)	Group 2 (N =10)	Group 3 (N =15)
	Ethic committee form	Ethic committee form	Ethic committee form
Time 1	Questionnaire Explanations of procedure **PRE-TEST**	Questionnaire Explanations of procedure **PRE-TEST**	Questionnaire Explanations of procedure **PRE-TEST**
Time 2	1. Explanations 15 mn 2. Repetitions 8 mn 3. Corrections 5 mn 4. **TEST** 10 mn	1. Repetitions 15 mn 2. **TEST** 10 mn 3. Explanations 8 mn 4. Corrections 5 mn	1. Repetitions 10 mn 2. Corrections 10 mn 3. **TEST** 10 mn 4. Explanations 8 mn
Time 3	**POST-TEST**	**POST-TEST**	**POST-TEST**

RESULTS AND DISCUSSION

Results before phonetic training

The production of liaisons and enchainements by all participants seems to be correlated to the input which they received (Figure 1). Majority Francophones produced more obligatory liaisons (95.6%) than minority Francophones (85.5%) who in turn produced more than Anglophone students (60.7%). This result supported our initial hypothesis, namely that restricted contact with French would result in restricted productions of liaisons in comparison to majority Francophones.

Anglophones produced fewer obligatory liaisons, optional liaisons and enchainements than majority Francophones. However, Anglophone students produced more enchainements and optional liaisons than minority Francophones, which is, at first, startling. In the text they read, there were several cases of liaisons and enchainements which followed each other. It was nearly impossible to produce all of them because the reader would have to stop to take a breath; it would then be required of the reader to decide which liaison had priority. Given a choice between producing obligatory or optional liaisons, minority Francophones followed the same pattern as majority Francophones and produced obligatory liaisons first. As can be seen in Appendix B, they produced over 95% of obligatory liaisons in 10 syntactic contexts out of 12.

Anglophone students, on the contrary, did not seem to fully master the classification system. The main difficulty of the system is knowing which liaisons belong to which category, because obligatory ones should always be pronounced. The optional liaisons are a matter of style. Furthermore the production of optional liaisons can reduce that of obligatory liaisons, as it is often very difficult to pronounce all possible liaisons.

L2 learners produced a more restricted number of obligatory liaisons (60.7%) but sometimes produced optional liaisons sometimes right after an unpronounced obligatory liaison.

I believe that one can only consider a system to have been mastered if the rules are applied in a systematic way, and not solely applied to individual lexical items. L2 Anglophone students seemed not to fully master the anti-hiatus constraint or the open syllabification system of French. They had some understanding that linking exists but were not able to generalize systematically the production of liaisons within the same syntactic context, as can be seen in Appendix B.

The number of liaisons produced in this study is lower than previous research because I designed the text to test a greater variety of phonetic and syntactic contexts (other studies used an existing text with fewer possible linking contexts or tested spontaneous speech). This system of coding was stricter as to what is considered “correctly pronounced liaison consonants.” Also, Francophones read the same text as Anglophones, in order to compare the same phenomenon.

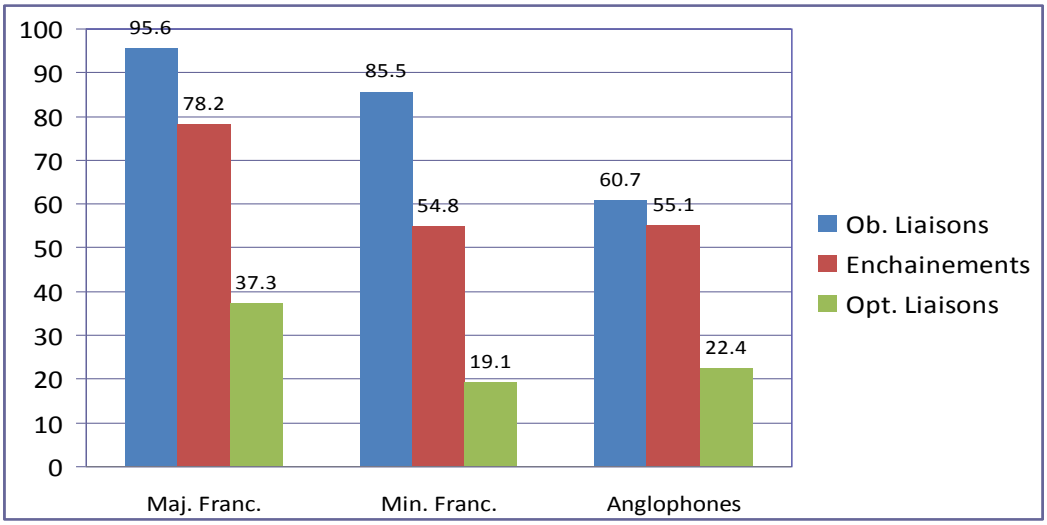

Figure 1. Productions (percentage) of obligatory and optional *liaisons* and *enchainements* by majority Francophones, minority Francophones and Anglophones at Time 1 (before the lesson).

Results after phonetic training

The next question involved the role of phonetic training. The progress following the intervention is noticeable (Figure 2). The students improved their production of obligatory and optional liaisons and enchainements at time 2 and slightly at time 3 in obligatory and optional liaisons. The fact that students produced more enchainements and optional liaisons, even though they did not receive any specific instruction in these domains, suggests a revealing rebound effect. All liaisons and enchainements are united by the same anti-hiatus constraint and open syllabification phonetic system. Students may have started to internalize the system and apply rules to word sequences which they had never heard before in all categories. This indicates that improvement may be possible after a very short amount of training.

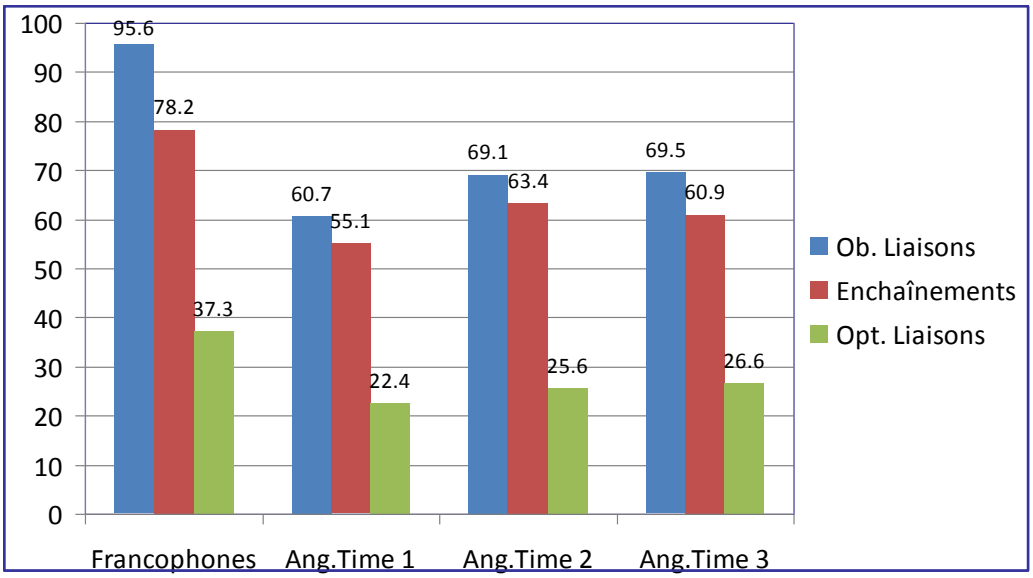

Figure 2. Productions (percentage) of obligatory and optional *liaisons* and *enchainements* by majority Francophones, and Anglophones at Time 1, Time 2 and Time 3.

The L2 learners did not pronounce the liaisons correctly in many instances because they did not attach the liaison consonant to the word2, pronouncing it at the end of word1 instead (Table 5). These liaisons mispronunciations were a subset of overall mistakes, so the percentages seem relatively low. However, the results show that Francophones virtually never pronounce unlinked consonants, except when they hesitate or when they make a pause which forces them to separate the two words (2 cases out of 1020), or to create a particular stylistic effect (Encrevé, 1988).

Table 5
*Production of unlinked **obligatory** liaisons by Francophones and Anglophones*

	Number of unlinked OL	Number of OL possible	%
All Francophones	2	1020	0.20
Anglophones time 1	167	1887	8.85
Anglophones time 2	122	1887	6.47
Anglophones time 3	126	1887	6.68

Table 6 presents overall results for obligatory liaisons for the three times with Goldvarb factor weights. A factor weight greater than 0.5 indicates liaison is favoured while a factor weight (f.w.) less than 0.5 indicates it is disfavoured. "Range" represents the differences between the highest and the lowest factor weight, multiplied by 100.

If we consider the productions of the 37 Anglophone students, we see (Table 6) an improvement at time 2 (69.1 %, f.w. = 0.529) and a slight improvement at time 3 (69.5 %, f.w. = 0.534), suggesting that phonetic training leads to quick and visible progress, which did not seem to be due to mere memorization.

Table 6
Obligatory liaisons, all participants, three times

Time of reading	*Liaison* made	N	%	factor weight
Input: .665				
Time 1	1145	1887	60.7 %	0.437
Time 2	1304	1887	69.1 %	0.529
Time 3	1311	1887	69.5 %	0.534
Range				9
TOTAL	3760	5661	66.4 %	

Results of phonetic training by groups

Even though all three groups were placed into the same class level (first year), their actual oral proficiency may have been quite different as we can see from the pre-test scores. Students had different backgrounds. Some studied French in immersion schools, others in core French, extended French or a combination of two or more of these programs. Some students had more oral practice than others, and different exposure to the language. In this university, students from different school systems are mixed in the same class level, unless they came from Francophone schools. In this case, they are often placed at a higher class level.

However, all groups seemed to improve. Group 1 (Table 7) received all components of the lesson, had the fewest repetitions (8), and the most explanations, but the group's progress was not statistically significant. Students improved slightly, but they seemed to regress the following week. This suggests that explanations may be the least efficient component of the instruction.

It may also mean that with this type of instruction, there is some regression soon after. According to Sardegna (2011, p. 115) "the higher their improvement during the course, the more they decreased in accuracy at T3." Thus, a decrease in accuracy could be part of a learning process, and not necessarily an indication of a regression in the students' learning.

Table 7
Obligatory liaisons, Anglophones, Group 1 (N=10) (explanations, corrections, repetitions)

	Liaison made	**N**	**%**	factor weight
Input: .673				
Time of reading :				
Time 1	325	510	63.7 %	
Time 2	359	510	70.4 %	ns
Time 3	346	510	67.8 %	
Range				
TOTAL	1030	1530	67.3 %	

A comparison of the productions of Group 1 (Table 7), Group 2 (Table 8) and Group 3 (Table 9) shows that Group 2, who had the most repetitions (15 minutes), made the most progress at time 2 (+11.8 %) and significant progress at time 3 (+13.4 %, w.f. = 0.552, range = 13) at the post-test. This suggests that repetitions may play a crucial role in the acquisition of correct pronunciation. It also suggests that with this type of instruction there may be less visible regression. This also indicates that weaker students may be the ones most likely to benefit from instruction.

Table 8
Obligatory liaisons, Anglophones, Group 2 (N=10) (Repetitions)

Time of reading	Liaison made	N	%	factor weight
Input: .611				
Time 1	268	510	52.5 %	0.414
Time 2	328	510	64.3 %	0.535
Time 3	336	510	65.9 %	0.552
Range				13
TOTAL	932	1530	60.9 %	

Group 3 had 10 minutes of repetitions and 10 minutes of corrections, and has the second best results after group 2 (Table 9). The students' progress is significant at time 2 (+7.4 %, f.w. = 0.525) and time 3 (+8.1 %, f.w. = 0.533). Group 1 and group 3 had a similar initial production of 63.7%. Group 3 made more progress than Group 1. Group 1 (with longer explanations) improved the least, and had the most regression at Time 3. Thus, a greater number of repetitions and corrections seem to give better results than do explanations.

The results of the three groups suggest that repetitions may give rise to better results in the short term and, possibly, in the long term as well. Since corrections also provide repetitions, they may complement repetitions while drawing attention to students' productions and encouraging them to compare their production with the target language.

Table 9
Obligatory liaisons, Anglophones, Group 3 (N=15) (Repetitions + corrections)

Time of reading	*Liaison* made	N	%	factor weight
Input: .690				
Time 1	487	765	63.7 %	0.441
Time 2	544	765	71.1 %	0.525
Time 3	549	765	71.8 %	0.533
Range				9
TOTAL	1580	2295	68.8 %	

CONCLUSION

Contrary to previous studies, Anglophone students in our study did not master liaisons at a native-like level. At T1, they produced 60.7% of obligatory liaisons (versus 95.6% for majority Francophones), 55.1% of enchainements (78.2% for majority Francophones) and 22.4% of optional liaisons (37.2% for majority Francophones).

This study shows a continuum between Majority Francophones, Minority Francophones, and L2 learners, suggesting that the greater the input received, the greater the production of liaison. This study also suggests that even a short training of 20-30 minutes can help L2 learners improve their production of liaisons and enchainements. These results are in agreement with those of other studies within the UBM framework (Eskildsen, 2009).

According to this study, repetitions play a more important role than explanations and corrections. Consequently, any linguistic activity which provides repetition may be useful for improving L2 pronunciation.

The study had several limitations. The phonetic training in this study only lasted 30 minutes and requires being replicated over a longer period of time. The post-test needs to be delayed, in order to determine the longer-term effects of instruction. When studying intermediate or advanced L2 learners, it could be useful to separate L2 participants according to their pronunciation level, established earlier by a pre-test. It is possible that the students' initial level plays a role in their progress.

ABOUT THE AUTHOR

Nadine de Moras taught ESL in France for 10 years before teaching French in Canadian universities for the past 17 years. She has been teaching advanced French language and Applied Linguistics at Brescia University College (Western University affiliate) for 6 years. Her doctoral thesis (2011) investigated the role of frequency in L1 and L2 production of *liaisons*, and the role of repetitions, explanations and corrections in L2 pronunciation training. Her research interests include L2 pronunciation acquisition and teaching, all areas of French teaching, pedagogy and material design. Publication: N. de Moras, (2010). *Guide d'écriture*. 1st Edition. Thomson et Nelson. She is currently working on a textbook on oral French, which is to be an introduction to French colloquial language.

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APPENDIX A

Text read by participants with coding symbols. E = linking (*enchainement*); LO: obligatory *liaison*; LF: optional *liaison*; LI: forbidden *liaison*.

1. Cette Anglaise a demandé aux invités les affaires des étudiants.
   E1 E2 LO1 LO2 LO3
2. Tes assistants, mes ouvriers et leurs enfants sont tous nos amis.
   LO4 LO5 LF1 LO6 LO7
3. Un bon ami a dit qu'au moyen-âge, à un certain âge, on chantait en plein air.
   LO8 LO9 LO10 LF2 LO11
4. À mon avis, ton enfant ne fait aucun effort pour s'adapter à son école.
   LO12 LO13 LF3 LO14 LF4 LO15
5. Son premier amour l'a mise devant le fait accompli, ce qui est un léger ennui.
   LO16 LO17 LF5 LO18
6. Ils sont allés au dernier étage de l'ancien édifice, mais ne sont pas allés au premier.
   LF6 LF7 LO19 LO20 LF8 LF9
7. De nouveaux étudiants ont attendu au second étage du grand immeuble.
   LO21 LI1 LF10 LO22 LO23
8. Ses vieux écrits et ses nouvelles idées lui ont valu de belles acclamations.
   LO24 LF11 LO25 LO26
9. Un oiseau aux yeux bleus regarde les oies manger des yogourts dans les yachts.
   LO27 LO28 LO29 LI2 LI3
10. Ces beaux Allemands ont eu de folles aventures grâce à leurs faux-airs de gigolos.
    LO30 LI4 LF12 LO31 E3 LO32
11. Il n'y a pas de sous-entendu : on met un accent aigu sur le « e » d'États-Unis.
    LO33 LF13 LO34 LO35 LO36
12. Cet homme a parlé d'un hôpital où il y avait de vieux habits et de vieilles éponges.
    E4 E5 LO37 E6 E7 LO38 LF14 LO39
13. Des personnes ont écrit des histoires sur ces hôpitaux.
    E8 LF15 LO40 LO41
14. Les handicaps des Hollandais et des Hongrois font d'eux des héros.
    LI5 LI6 LF16 LI7 LI8
15. Deux amis de dix ans se sont vus à six heures devant les trois arbres.
    LO42 LO43 LF17 LO44 LO45
16. Il a vingt trois ans et elle a vingt cinq ans. A neuf heures, il aura cent ans.
    E9 LO46 LO47 LI9 LI10 E10 LO48 E11 LO49 E12 LO50
17. Un héros, un garçon intelligent, a eu cet accident affreux dans un bois immense.
    LI11 LI12 E13 LI13 LO51 LI14

APPENDIX B

Obligatory liaisons and grammatical categories by majority Francophones, minority Francophones and Anglophones at time 1, time 2 and time 3.

Obligatory *liaisons*	Franc.						Ang.								
	maj			min			**T 1**			**T 2**			**T 3**		
Grammatical structure	nb	tot	**%**	nb	tot	**%**	nb	tot	**%**	nb	tot	**%**	nb	tot	**%**
(2) definite article + noun	24	24	**100**	16	16	**100**	50	74	**67.6**	52	74	**70.3**	55	74	**74,3**
(1) demonstrative adjective + noun	12	12	**100**	8	8	**100**	26	37	**70.3**	31	37	**83.8**	30	37	**81.1**
(7) numeral adjective + noun	84	84	**100**	56	56	**100**	178	259	**68.7**	199	259	**76.8**	195	259	**75.3**
(1) preposition + noun	12	12	**100**	8	8	**100**	27	37	**73**	**31**	37	**83.8**	28	**37**	**75.7**
(5) indefinite article + noun	60	60	**100**	39	40	**97.5**	114	185	**61.6**	135	185	**73**	136	185	**73.5**
(2) indefinite adjective + noun	24	24	**100**	15	16	**93.8**	37	74	**50**	44	74	**59.5**	43	74	**58.1**
(3) preposition + article + noun	36	36	**100**	23	24	**95.8**	77	111	**69.4**	79	111	**71.2**	85	111	**76.6**
(7) possessive adjective + noun	83	84	**98.8**	56	56	**100**	222	259	**85.7**	233	259	**90**	237	259	**91.5**
(2) numeral adjective + number	23	24	**95.8**	16	16	**100**	48	74	**64.9**	54	74	**73**	65	74	**87.8**
(16) qualitative adjective + noun	182	192	**94.8**	95	128	**74.2**	289	592	**48.8**	344	592	**58.1**	338	592	**57,1**
(3) noun + adjective	28	36	**77.8**	13	24	**54.2**	56	111	**50.5**	76	111	**68.5**	74	111	**66.7**
(2) ordinal adjective + noun	17	24	**70.8**	4	16	**25**	21	74	**28.4**	26	74	**35.1**	25	74	**33.8**
Total	585	612	**95.6**	349	408	**85.5**	1145	1887	**60.7**	1304	1887	**69.1**	1311	1887	**69.5**