

LIAISON AND ENCHAÎNEMENT IN L2 FRENCH: THE ROLE OF INSTRUCTION

Rodica Frimu, The University of Tennessee, Knoxville

This study investigates the role of instruction in the phenomena of *liaison* and *enchaînement* in both *liaison* and non-*liaison* contexts in L2 French. The participants were a group of learners enrolled in a phonetics course ($N=16$), a group of learners enrolled in similar 400-level courses ($N=12$), and a group of native French speakers (NSs) ($N=16$). They read and recorded a set of sentences for a pre-test and a post-test, both containing similar *liaison* and *enchaînement* contexts. Overall both groups of learners tended to behave differently from the NSs. However, on some measures and on some items, the phonetics group showed more changes over time than their peers in a similar 400-level course.

INTRODUCTION

Liaison in French is a complex phenomenon where a latent final consonant is pronounced in certain contexts (syntactic, sociolinguistic) if the following word begins with a vowel. Its frequency is every 16 words (Boë & Tubach, 1992). *Liaison* is usually *enchaînée* or linked, as the consonant surfacing becomes the onset of the first syllable of the vowel-initial word. Unlinked *liaison* is possible in emphatic public speech, but otherwise not common (Encrevé, 1988). *Enchaînement* can also occur and often does independently of *liaison*, with final stable consonants. The sequence *nous avons* [nu.za.võ] (we have) is an example of *liaison enchaînée*, since /z/ is latent, whereas *sept élèves* [sɛ.te.lɛv] (seven students) exemplifies *enchaînement* only, /t/ being stable in this context. In addition, final *schwa* deletion can result in resyllabification of the final consonant (e.g. *langue orale* [lã.go.ɔal] - oral language). If *enchaînement* in *liaison* context is quasi-obligatory, even with hesitation, then *enchaînement* in non-*liaison* context is not obligatory, but preferred. It is determined by prosodic boundaries, being dependent on syntax, rate of speech, and the general tendency of open syllabification in French – 76% as opposed to 40% in English, according to Delattre and Olsen (1969). This study focuses on both *liaison enchaînée* and *enchaînement*. The *liaison* contexts examined here are mostly obligatory, with the addition of a few high-frequency optional *liaisons* that are encouraged in teaching.

Liaison and *Enchaînement* in Previous L2 Studies

The L2 acquisition of *liaison* and *enchaînement* is a complex process. The learner needs to master which consonants are stable vs. latent, and which *liaison* contexts are obligatory, forbidden, or optional. Furthermore, the learner needs to resyllabify the final consonant with *liaison* and also non-*liaison* contexts when appropriate.

The literature on *liaison* perception is unquestionably essential in understanding the L2 learner's acquisition (see Tremblay, 2011; Tremblay & Spinelli, 2014). However, this study focuses on production. In this line of research, Thomas (2002, 2004) shows that obligatory *liaison* counts for about 20% of all pronunciation errors, while 8.5% of *liaisons* lacked resyllabification. Racine (2015) also examined *liaison (enchaînée)*, with two groups of L1 Spanish L2 learners of French.

Interestingly, the rate of *liaison non-enchaînée* was also about 8%. In addition, about 9% of the *liaisons* used non-target-like consonants present in the spelling. Racine suggests that these issues are due to orthographic cues, as they vary with the task type. Howard (2005), analyzing production of obligatory and variable *liaison* with two groups of learners, concluded that some obligatory *liaison* contexts pose more difficulties (e.g. after direct object pronouns, between an adjective and a noun), and that learners produce few optional *liaisons* compared to the NSs. Mastromonaco (1999) also reports infrequent optional *liaison* in L2 production, along with frequent obligatory *liaison*, and low rates of forbidden *liaison*. Similarly to previous studies, 7% of the *liaisons* were not resyllabified. Furthermore, the learners sometimes erroneously pronounced latent consonants in non-*liaison* contexts.

Kennedy et al. (2014) present a detailed investigation of several segmental and suprasegmental measures, including *enchaînement* (operationalized as both resyllabification of a final consonant, and successful vowel-to-vowel transition) and *liaison*, and the role of instruction and awareness. Pre-test and post-test data were collected from 30 participants (various L1s), all enrolled in a 15-week-long course focusing mostly on connected speech. Learners overall used *enchaînement* more frequently on the post-test, although the effect size reported was small.

Sturm (2013) also examined the role of instruction in *liaison*, comparing a group of students who received instruction on the phenomenon in a phonetics class with a group that did not. *Liaison* was considered successful if the correct latent consonant was produced, irrespective of linking. The researcher found that overall the phonetics group performed better with obligatory *liaison* from the very beginning of the semester, suggesting that these students might pay more attention to pronunciation in general. Liakin et al. (2017) also investigated the role of instruction on *liaison* production, using three groups of learners: text-to-speech intervention, instructor intervention, and a control group (no intervention). Pre-test with post-test data comparison shows a significant effect of time, but no group effect. However, some trends showed that the groups that received training outperformed the control group over time.

Given these previous studies, this particular investigation focuses on *liaison* and especially on *enchaînement*, with and without *liaison*, as the latter is a context rarely discussed in the literature.

Research Questions

Does extended instruction of obligatory *liaison* and *enchaînement* result in higher production of obligatory *liaison* and *enchaînement* (in both *liaison* and non-*liaison* contexts) in L2 learners of French (L1 English)?

METHODS

Participants

Two groups of L1 English learners of L2 French and a group of NSs of French participated in the study. The groups of learners were recruited at a large American university. One group of learners ($N=16$) was enrolled in a phonetics class, whereas the other (input-only) group ($N=12$) was enrolled in a different French class of the same level, focusing on culture/literature. The NSs of

French ($N=16$) were all professionals teaching French and recruited from two large American institutions. Their length of stay in the US varied from 1 month to 18 years.

Methodology and procedures

Pre-test and post-test recordings were gathered with the two groups of learners enrolled in two different 400-level courses. All these students were French majors and minors. The pre-test and post-test took place during the first week and last week of classes respectively. The NSs recorded both in one session, as a 14-week interval is not expected to change their performance.

The phonetics group, taught by the researcher (a near-native French speaker), received extensive instruction on both *liaison* and *enchaînement*. *Liaison* was mostly targeted during three lessons around the middle of the semester. *Enchaînement* was introduced early in the semester and its instruction continued throughout the curriculum with frequent listening/perception activities, transcription tasks requiring resyllabification, and oral practice. Both topics were tested on the midterm and the final. The other 400-level courses focused on culture/ literature and were taught by French native instructors. Both groups presumably received similar amounts of linguistic input (≈ 42 hours each).

The items to record were a list of 26 sentences for the pre-test and 30 sentences for the post-test, each containing 12 cases of potential *enchaînement* in non-*liaison* context and 10 cases of *liaison*, where *enchaînement* is normally also expected. For the *liaison* context, the items contained either obligatory *liaison* (8/10 cases) or optional *liaison* (2/10 cases) that occurs with high frequency among NSs and is thus strongly encouraged in teaching. Indeed, as the results will indicate, the NSs produced the *liaison* at 98.12% on both the pre-test and post-test, which supports the quasi-obligatory nature of *liaison* context for all these items.

The items for the pre-test and post-test were not the same, but each item in the pre-test had a corresponding item in the post-test in terms of syntactic relationship between the words where *liaison* and/or *enchaînement* was expected, as well as initial vowel and final consonant. For example, for the obligatory *liaison* context, the pre-test item *mon anniversaire* [mõ.na.ni.vɛʁ.sɛʁ] (my birthday) corresponded to the post-test item *son anniversaire* [sõ.na.ni.vɛʁ.sɛʁ] (his/her birthday). For the *enchaînement*-only context, the pre-test item *sept élèves* /setɛlev/ (seven students), corresponded to the post-test item *sept étudiants* /setetydjã/ (seven students). All items can be found in Appendix 1 and Appendix 2.

The phonetics group did the recordings as part of the curriculum. The learners did not know the research purpose of the recordings and got feedback on other dimensions (mostly at the segmental level). The type of feedback motivated the use of different pre-test and post-test items, to avoid the specific comments from the pre-test influencing the post-test recordings. The pre-test counted for completion, whereas the post-test counted for a small percentage of the final grade. In order to lower anxiety levels, the learners were allowed to redo the post-test after receiving feedback, for a better grade. For research purposes, only the first recording of the post-test was analyzed. The input-only group received 1% on their final grade in their French course.

The data were originally coded by the researcher, then by a trained research assistant who was a NS of French. Intercoder agreement was at 96%. However, given the native speaker status, the coding of the research assistant was used for analysis.

RESULTS

In order to determine if instruction had an effect on *liaison* and *enchaînement* production, the three groups were compared with respect to their pre-test and post-test scores. Table 1 indicates pre-test and post-test target-like final consonant realization in *liaison* context for each group. Repeated measures ANOVA with time as within-subjects factor and group as between-subjects factor revealed a main effect of time, $F(1, 41) = 9.504$, $p = 0.004$, $\eta_p^2 = 0.188$, and a group effect, $F(2, 41) = 4.129$, $p = 0.023$, $\eta_p^2 = 0.168$. Each of the two groups of learners behaved differently from the NSs ($p < 0.001$), whereas the two learners' groups are statistically similar ($p = 0.336$). Given the different changes in score observed in Table 1, a one-way ANOVA was performed considering only this change in score. A group effect was found, $F(2, 41) = 4.129$, $p = 0.023$. LSD post-hoc analyses show that the groups of learners were similar ($p = 0.116$). However, the phonetics group was the only one significantly different from the NSs ($p = 0.007$).

Table 1

Final consonant realization for liaison context

	Pre-test in % with SD	Post-test in % with SD
NSs	98.12 (5.44)	98.12 (4.03)
Phonetics group	62.08 (25.87)	79.37 (15.15)
Input-only group	72.08 (13.72)	78.88 (16.95)

The next element of interest is whether there was a change in linked *liaison* production over time (see Table 2). Only the items where the final latent consonant was produced were included in the calculations, otherwise *enchaînement* would be impossible. Repeated measures ANOVA yielded again a time effect, $F(1,41) = 17.821$, $p < 0.0001$, $\eta_p^2 = 0.303$, and a group effect, $F(2, 41) = 5.257$, $p = 0.009$, $\eta_p^2 = 0.204$. Each of the learner groups behaved differently from the NSs ($p < 0.0001$ for each comparison), and crucially, the two groups of learners behaved differently from each other ($p = 0.024$). This suggests that considering *enchaînement* in *liaison* context, the phonetics group made more gains than the input-only group.

Table 2

Enchaînement rates in liaison context

	Pre-test in % with SD	Post-test in % with SD
NSs	100	100
Phonetics group	71.78 (14.65)	85.44 (18.65)
Input-only group	61.86 (17.92)	71.8 (21.97)

We turn now to *enchaînement* in non-*liaison* context. First, we consider again pronunciation of the final consonant, otherwise linking is impossible. There was no main effect of time ($p = 0.578$) and no group effect ($p = 0.265$). This is not surprising, as all participants are almost at ceiling, indicating that these learners have a good grasp of the final stable consonants (as opposed to the floating ones). An analysis of the linking of these stable final pronounced consonants shows that

a main effect of time did not reach significance ($p = 0.069$), and there was no group effect ($p = 0.138$). A closer examination of Table 3 is indicative of some trends in the phonetics group, with a 12% change in score on *enchaînement* production, whereas the other groups did not change. A one-way ANOVA considering this change in score showed no group effect, $F(2,41) = 2.078$, $p = 0.138$. This indicates that linking in non-*liaison* context is particularly challenging for these L2 learners, including those receiving instruction on the topic.

Table 3

Enchaînement realization of final consonant for non-liaison context

	Pre-test in % with SD	Post-test in % with SD
NSs	94.27 (8.45)	96.35 (6.78)
Phonetics group	60.85 (18.28)	72.59 (15.41)
Input-only group	57.47 (12.23)	57.72 (19.51)

Not all items contributed equally to the main effects found. Considering *liaison*, Table 4 shows the items where most changes occurred in terms of latent consonant pronunciation. Overall, the trends are similar for the two groups of learners on these items, with somewhat more change for the phonetics group, except for the last item, where the input-only group produced less *liaison* on the post-test than on the pre-test.

Table 4

Select items of final consonant realization for liaison context

Pre-test	Post-test	Phonetics group (pre % vs post %)	Input-only group (pre % vs post %)	NSs (pre % vs post %)
Dans une boulangerie	Dans une salle	68 vs 93	75 vs 83	100 both
Ses origines	Ces officiers	56 vs 93	83 vs 100	100 both
C'est un problème	C'est un blog	56 vs 87	58 vs 83	100 both
Très énervée	Très émue	31 vs 62	41 vs 66	93 vs 100
Le premier avril	Le premier avion	37.5 vs 62.5	50 vs 33	100 both

Turning to the linking of *liaison*, again some items contributed to the pattern more (see Table 5). Interestingly, for these items, if the phonetics group always produced more *enchaînement* on the post-test compared to the pre-test, this trend was not true for the input-only group.

Table 5
Select items of enchaînement rates in liaison context

Pre-test	Post-test	Phonetics group (pre % vs post %)	Input-only group (pre % vs post %)	NSs (pre % vs post %)
Mon anniversaire	Son anniversaire	35.71 vs 64.28	41.66 vs 90.9	100 both
Très énervée	Très émue	60 vs 90	80 vs 62	100 both
Le dernier exercice	Le dernier examen	25 vs 75	30.76 vs 16.66	100 both
Le premier avril	Le premier avion	16.66 vs 88.88	50 vs 50	100 both

Finally, the context of *enchaînement* only also rendered some items more susceptible to change (see Table 6). Since linking is not obligatory in this context, it is not surprising to see lower numbers for the whole population. The phonetics group produced more *enchaînement* on the post-test on these items, whereas the input-only group fluctuated in both directions.

Table 6
Select items of enchaînement realization for non-liaison context

Pre-test	Post-test	Phonetics group (pre % vs post %)	Input-only group (pre % vs post %)	NSs (pre % vs post %)
Quatre avril	Quatre avocats	6 vs 38	25 vs 8	100 both
Sept élèves	Sept étudiants	44 vs 75	83 vs 58	93 both
Vieille amitié	Vieille amie	6 vs 56	8 vs 16	88 vs 100
Heureuse occasion	Heureuse année	50 vs 75	8 vs 33	93 vs 87

DISCUSSION

This study focuses on *liaison* and *enchaînement* in L2, comparing a group of learners that received instruction, and a group that did not. Similar to previous studies, rather advanced learners (400-level French) still have difficulties with (quasi)-obligatory *liaison* contexts. Both groups produced more target-like latent consonants in the post-test, which resulted in a significant main effect. Previous studies found that the rate of *liaison non-enchaînée* was approximately 8% (e.g. Mastromonaco, 1999; Racine, 2015), whereas for this study it was 14%-38%. This finding is somewhat surprising. It might be an effect of task (Racine, 2015), since the orthographic cues could have promoted less *enchaînement*. Some final latent consonants or types of items could have posed more difficulty to linking in L2. In addition, the participants knew that pronunciation was in focus, therefore they might have monitored specific segments in French more than the suprasegmentals. Crucially, even though both groups produced more *liaison enchaînée* on the post-test as opposed to the pre-test, the group that received instruction seems to have improved the most, although they also started at a higher rate than the input-only group.

The results for the *enchaînement* context only, where no main effect of time was found, are not too surprising. Kennedy et al. (2004) found only a small size effect of time. Thomas (2002, 2004)

mentioned syllabification issues in French, recommending for teaching to focus more on this aspect of pronunciation. However, of particular interest are the items where the instructed group produced more *enchaînement* on the post-test than the pre-test, as opposed to the input-only group who fluctuated in their *enchaînement* realization. It seems, therefore, that some of the changes at least are driven by item type, such as the examples in Table 6.

The different pre-test and post-test items might have contributed to some of the differences. However, this choice was made in the interest of the learners enrolled in the phonetics class, and was motivated by the feedback those students received on the pre-test. Indeed, some more “difficult” items might have caused more hesitation, resulting in lower rates of *enchaînement*. However, if the main factor for these changes were the relative difficulty of the items, it is unclear for example why *son anniversaire* triggered more *enchaînement* than *mon anniversaire*, or why *sept élèves* vs *sept étudiants* produced changes from 44% to 75% in the phonetics group, whereas the input-only group dropped from 83% to 58%. It seems, therefore, that these changes were mainly produced by other factors than the type of the item. In addition, when studies focus on spontaneous production, participants never produce the same type of items in the same numbers for comparison purposes.

An important aspect for any study on *liaison* is the status of the latent consonant for the L2 learners, mainly determining if they are treated as latent or stable consonants. This is unclear unless there is a comparison with contexts where *liaison* is not possible. If these consonants surface irrespective of context (e.g., the erroneous production of *dans la maison* as [dãzlamezõ] – in the house), then little can be said about *liaison* acquisition, because one can argue that the L2 learner is treating /z/ in *dans* as a stable consonant. Future studies need to address this issue. This study only focused on production obtained through sentence reading. The ultimate purpose of studying *liaison* and *enchaînement* in L2 is to understand how the learners perceive and produce these phenomena in real time, and how research can inform teaching practices. More studies should follow Racine (2015) in identifying the task effects on results.

Finally, the nature of the linguistic input in teaching is unclear, especially with regard to *enchaînement*. At the elementary French level, instructors often make sure to segment the speech at the word level rather than the syllable level. It is therefore unclear what the rate of open syllables during teaching is, and how this affects learners’ perception and production. Adding to Thomas’s suggestions (2002, 2004), teaching would benefit not only from a focus on open syllabification in teaching, but perhaps also in the input. The current results support the importance of linguistics input, along with the extra benefits of focus on pronunciation for *liaison* contexts, while revealing the challenges of connected speech in L2 in non-*liaison* contexts.

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ABOUT THE AUTHOR

Rodica Frimu is an Assistant Professor of French at the University of Tennessee, Knoxville, serving also as the French Language Program Director (lower division). She received her PhD in French Linguistics from Indiana University, Bloomington. Her main research interests are error detection in verbal morphology in L2 French. Recent interests include the acquisition of *liaison* and especially *enchaînement* phenomena, mainly the effect of instruction.

Contact information: rfrimu@utk.edu

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APPENDIX 1

Liaison contexts pre-test and post-test

Context	Pre-test	Post-test
Clitic pronoun and verb	nous achetons...	nous admirons...
Determiner and noun	ses origines mon anniversaire	ces officiers son anniversaire
Mono-syllabic preposition and noun	en effet	en été
Adjective and noun	dans une boulangerie française le dernier exercice le premier avril	dans une salle secrète le dernier examen le premier avion
After monosyllabic adverbs	très énervés	très émue
After <i>c'est</i>	Le verlan est une langue orale.	Le français est une très belle langue.
After <i>est</i>	C'est un problème	C'est un blog

Note. The first eight contexts are generally considered obligatory. The liaisons after *est* and *c'est* are now considered optional, but occur relatively often in the input (see Ågren, 1973 for *est*, and Delattre, 1955 for *c'est*). Moreover, given the neutral style for the reading, the liaisons were produced at a rate of 98.12% by NSs, supporting their status of obligatory or quasi-obligatory liaison.

For space reasons, only the segments containing *liaison* are provided here. All the items recorded were full sentences.

APPENDIX 2

Enchaînement possibility in non-liaison contexts

Pre-test	Post-test
Il sont ensemble depuis cinq ans.	Marie est partie depuis vingt-cinq ans.
Il a gagné beaucoup d'argent.	Il a fermé les rideaux.
On déjeune à quelle heure ?	A quelle heure il a fini son dernier examen ?
Elle est montée au deuxième étage.	Elle est très émue.
Mais qu'est-ce qu'il vient faire ici?	On ne peut pas boire ici.
Mon anniversaire est le quatre avril.	Il a déjà pris six pommes et quatre avocats?
C'est la robe en soie de ma mère.	Nous admirons sa nouvelle robe en laine.
Elle est montée au deuxième étage	Tu ne sais pas la réponse pour le deuxième exercice ?
Le verlan est une langue orale.	C'est un blog original.
Sept élèves ont fini l'examen tôt.	Sept étudiants sur vingt préfèrent la symphonie.
Vieille amitié ne craint pas la rouille.	Voilà une belle surprise: revoir cette vieille amie !
On s'est réuni pour cette heureuse occasion.	Je vous souhaite une bonne et heureuse année.

Note. Full sentences provided here to show the similarity of the syntactic relationship between the words in question on the pre-test and post-test.