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PRESENTATION/POSTER

FRENCH STEREOTYPICAL ACCENT AND PRONUNCIATION DEVELOPMENT OF /P/, /T/, AND /K/

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This study aims to contribute to research on second language (L2) accent imitation in the native language and its relation to L2 pronunciation development (e.g., Everitt, 2015; Rojczyk, Porzuczek, & Bergier, 2013). Unlike most previous studies, it focuses on stereotypical—rather than authentic—accent and its potential benefits (salience and learner familiarity) for pronunciation improvement. Over three weeks, 14 American learners of French in three groups received pronunciation instruction and based their practice on models speaking English either with a stereotypical French accent (n=5) or an authentic French accent (n=4), or on models who were native speakers of French speaking French (n=6). Learners and native speaker controls recorded their pronunciation of texts they read before and after practice. Words featuring /p/, /t/, or /k/ in initial position were selected and voice onset time (VOT) of the plosives was measured. A subset of the same words was presented to native speaker raters for assessment of accentedness. While listener ratings yield differences that are significant or approaching significance between the control group and the experimental groups, VOT measures do not do so. Results are discussed in terms of perception of accentedness versus acoustic measurement.

INTRODUCTION

Second language (L2) pronunciation has traditionally been taught and learned through the intuitive-imitative approach (Celce-Murcia, Brinton, & Goodwin, 1996). Learners listen to models speaking the L2 and repeat after them, trying to imitate the modeled pronunciation to the best of their ability. Recently, research interest in pronunciation imitation has resurfaced… with a twist: Instead of imitating the L2 accent in the L2, subjects have been asked to imitate the L2 accent while speaking in their native language (L1). This approach was used in several studies, either as a way to measure learner awareness of certain L2 pronunciation features (Flege & Hammond, 1982; Mora, Rochdi, & Kivistö-de Souza, 2014; Neuhauser, 2011; Rojczyk, 2012, 2015; Rojczyk et al., 2013; Sypiańska & Olender, 2013), or as a tool to learn L2 pronunciation (Everitt, 2015). The latter approach is also used in the present study. However, it itself puts a twist on the notion of L2 accent imitation in the L1 by using, as the model for practice, a stereotypical version of the L2 accent. The exaggeration of pronunciation features in a stereotypical accent, as well as the unconscious knowledge about stereotypical accents learners have accumulated through exposure to the media, may make the use of L2 stereotypical accent imitation in the L1 a valuable tool for the teaching and learning of L2 pronunciation. This study is part of a larger one investigating the impact of this approach on the development of several features of French pronunciation. The results for French /ʁ/ were reported in Ruellot (2018). The present study focuses on the French voiceless stops /p/, /t/, and /k/ and tests the impact of training with stereotypical accent on the reduction of their aspiration.

BACKGROUND

Imitation is fundamental to human learning (Nagell, Olguin, & Tomasello, 1993) and remains so all along the lifetime. From learning to tie one's shoes with the guidance of an adult, to fixing a furnace following one of the many tutorial videos available online, the acquisition of skills involves some form of mimicry. Similarly, imitation has always been central to L2 pronunciation acquisition, even when analytic elements, such as the study of phonetics, were incorporated in the late 19th century as a supplement to imitation (Kelly, 1969). With this seemingly simple approach, learners listen to a model speaking the L2 and then repeat what they heard in their best pronunciation. Not only must learners draw on their perception and production skills to replicate the modeled pronunciation, but they also must process—at least to some extent—the grammar and vocabulary in the speech sample to make sense of what they are repeating. The latter aspect of replication mobilizes a part—large or small, depending on the learners' proficiency level—of their working memory, and reduces the resources therein that could be otherwise dedicated to the processing of pronunciation information.

An approach that allows to maximize allocation of processing resources is one where the content to be imitated is not in the target language but in the learner's native language. The imitation of a foreign accent in the native language has been the focus of recent studies in the acquisition of L2 pronunciation. It was used to measure learner awareness of L2 stop consonant voice onset time (VOT), i.e., the length of time between the release of a plosive and the onset of voicing (Lisker & Abramson, 1964). This approach proved effective in assessing learner awareness—both implicit and conscious—that the VOT of /p/, /t/, and /k/ is longer in L2 English than it is in L1 Spanish (Mora et al., 2014) and in L1 Polish (Sypiańska & Olender, 2016), and that it is shorter in L2 Spanish than in L1 English (Flege & Hammond, 1982) and in L2 French compared to L1 German (Neuhauser, 2011). It was also used as a learning tool to improve L2 pronunciation, with mixed results. The approach did not prove effective in helping L1 Anglophone learners of L2 French improve their pronunciation of French /ʁ/ in Ruellot (2018). But it effectively helped L1 Spanish learners increase aspiration of English /p, t, k/ in Everitt (2015). This study set out to determine the extent to which stereotypical accent imitation could also help American learners decrease aspiration of French /p, t, k/. While excessive aspiration may not significantly affect the comprehensibility and intelligibility of L2 French speakers, it remains a strong marker of a foreign accent (Major, 1987; Flege & Eefting, 1987; Riney & Takagi, 1999). Reducing the aspiration of /p, t, k/, by keeping muscles tense to limit air release, might prove easier than improving pronunciation of French /ʁ/, which involves a configuration of articulators (i.e., drawing back the tongue to form a pharyngeal, velar, or uvular constriction) that is absent from the English repertoire.

Using stereotypes for teaching purposes might not *a priori* be considered favorably by pedagogues. After all, stereotypes offer an incomplete and reductive perspective of a people and its culture by selecting some aspects of that culture and grossly exaggerating them. This is also true of stereotypical accents. However, that exaggeration, which renders pronunciation features more salient (Kristiansen, 2003), may in fact help learners become aware of those features so they can begin to process and acquire them (Schmidt, 1990, 1993). Furthermore, learners are generally familiar with stereotypical accents and their characteristics, as they were exposed to them from a young age through animated films and other media (Lippi-Green, 1997) featuring so-called French

characters, such as Warner Brothers' Pepé Le Pew and Steve Martin's Inspecteur Cluzot in *The Pink Panther* (Simonds & Levy, 2006). Harnessing this unconscious knowledge may benefit L2 pronunciation learning of certain features, including the French voiceless stop consonants.

As mentioned above, awareness and development of aspiration of voiceless plosives have mostly been assessed with acoustic measures of VOT (Everitt, 2015; Flege & Hammond, 1982; Mora et al., 2014; Neuhauser, 2011; Rojczyk, 2012; Rojczyk et al., 2013; Sypiańska & Olender, 2013). However, some scholars in the field of pronunciation caution against limiting assessment to acoustic measurement. Thomson and Derwing (2014: 337) explain that "measurable changes are not always noticeable to listeners." Indeed, a study investigating pronunciation acquisition in a child presenting phonological disorders (Maxwell & Weismer, 1982) showed that while the child produced statistically different VOTs for voiced and voiceless stops, the judges perceived all the stops as voiced. As Thomson and Derwing (2014) advise that "in the final analysis, it is what listeners perceive that matters" (p. 337), both VOT measures and native speaker judgements were included in the present study, which was guided by the following research questions:

1. Does practice speaking L1 English with a French stereotypical accent help significantly reduce aspiration of voiceless plosives in L2 French production?
2. Do VOT measures and French native speaker judgments correlate?

METHOD

Participants

Fourteen intermediate students, enrolled in a French pronunciation course at a university in the US, practiced French pronunciation in one of three groups: the Stereotypical accent group (n=5), modeled by native speakers of English speaking English with a French stereotypical accent; the Authentic accent group (n=4), in which the models were French natives speaking English with an authentic (i.e. not exaggerated) French accent; and the French accent group (n=6), which followed the traditional approach of basing pronunciation study and practice on French native speakers speaking French. Six French native speakers additionally participated in the study as controls.

Treatment & sounds

Students took part in three in-class twenty-minute training sessions during which they received explicit instruction (e.g., articulation information) on the following French features: /ʁ/, the front vowels [ø] and [y], vowel stability (i.e., lack of reduction), intonation, and reduced aspiration of /p, t, k/. Although stereotypical accents are familiar to people, pronunciation characteristics remain general and imprecise to most listeners (Honey, 2017). This is why explicit instruction was included in the design of this study, and for all groups so as not to put any one at an advantage. After each session, students practiced their pronunciation of the five features at home by recording themselves imitating their assigned model speaking five sentences. They repeated each sentence at least three times before recording themselves.

Tests and data assessment

All groups were tested before, immediately after, and one week after treatment, reading the same narrative and dialogue in French. For the present study, fourteen words with initial /p, t, k/ were extracted from the narrative and the dialogue at all three times (Table 1). Word initial /p, t, k/ were chosen because of the greater impact of the mispronunciation of sounds occurring at the beginning of a word (Flege & Munro, 1994). The consonants' VOT was measured in Praat (Boersma & Weenink, 2018) by the researcher. Because VOT varies as a function of speech rate, a ratio of consonant to syllable duration was used to "normalize" the data (Summerfield, 1981). The ratio was obtained from dividing the VOT by the duration of the syllable in which the sound appeared (Boucher, 2002). Some of the words were also presented to three French native speakers who all rated the pronunciation of the initial consonant in all the words of that subset using a nine-point Likert-type accentedness scale (Derwing, Rossiter, Munro, & Thomson, 2004; Tanner & Landon, 2009) ranging from 1- Very strong foreign accent to 9- No foreign accent. Data collection is on-going and native speaker rating (NS rating) data is currently limited to 30% of the data, i.e., two of the five words with /p/ and to two of the six words with /t/ (see Table 1 below).

Table 1

Words included in the corpus

Sound	VOT Ratio	NS Rating
/p/	*par* (by), *parce que* (because), *Paris*, *passer* (pass), *pour* (for)	*Paris*, *passer*
/t/	*taches* (spots), *table*, *tapis* (rug), *temps* (time), *tous* (everyone), *tout* (everything)	*taches*, *tout*
/k/	*canapé* (sofa), *courir* (run), *quand* (when)	n/a

RESULTS

Interrater reliability and group differences before treatment

The degree of agreement between native speaker judges was calculated and found to be high: the average measures intraclass correlation coefficient was .830 with a 95% confidence interval from .799 to .857 ($F(404,808) = 5.979$, $p < .001$). A one-way ANOVA revealed no significant differences between the three groups on the pre-test, whether in their rated production or in the VOT ratios, indicating that the groups were similar before treatment (NS ratings: $F(2,11) = .659$, $p = .536$; VOT ratios: $F(2,11) = 1.297$, $p = .312$).

Impact of treatment

To assess the impact of the treatment, two repeated measures ANOVAs were run: one with the participants' VOT ratios for /p/, /t/, and /k/, and one with the NS ratings for /p/ and /t/. Both tests had *Group* as a between-subjects factor and *Time* as a within-subjects factor. Results for VOT ratios indicate no significant difference between groups ($F(3, 16) = 1.789$, $p = .190$), while NS ratings results do ($F(3, 10) = 5.727$, $p = .015$). Bonferroni-adjusted multiple comparisons (Table 2) identify the significant differences: between the native speaker controls and the Authentic and

the Stereotypical groups, i.e., participants who practiced pronunciation following a model that spoke L1 English.

Table 2

Bonferroni-adjusted multiple comparisons for group (NS ratings)

Groups	Mean Diff.	SD	Sig.	95% CI for Diff.	
				Lower	Upper
Authentic - French	-1.253	.774	.818	-3.789	1.282
Authentic - Stereotypical	-.451	.774	1.000	-2.987	2.084
Authentic - Native Speakers	-3.750*	.948	.016	-6.856	-.644
French - Stereotypical	.802	.774	1.000	-1.734	3.338
French - Native Speakers	-2.497	.948	.150	-5.602	.609
Stereotypical - French	-.802	.774	1.000	-3.338	1.734
Stereotypical - Native Speakers	-3.299*	.948	.036	-6.404	-.193

* Significant at the p < .05 level

Results in Table 3 show a significant effect of *Time* for VOT ratios.

Table 3

Tests of within-subjects effects from the repeated-measures ANOVA on VOT ratios and on NS ratings

	VOT Ratios						NS Ratings					
Source	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	0.016	2	0.008	3.803*	0.033	0.192	0.943	2	0.471	0.622	0.547	0.059
Time x Group	0.020	6	0.003	1.616	0.175	0.233	3.175	6	0.529	0.698	0.654	0.173

* Significant at the p < .05 level

Bonferroni-adjusted pairwise comparisons (Table 4) indicate that VOT ratios had significantly increased and were higher at delayed post-test (Post 2) than before treatment (Pre-test), suggesting negative long-term impact of treatment. However, the absence of a significant effect of *Time* for NS ratings suggests that time has no impact on the perceived quality of the pronunciation of /p/ and /t/. These results are discussed below.

Table 4

Bonferroni-adjusted multiple comparisons for tests (VOT ratios)

Test	Mean Diff.	SD	Sig	95% CI for Diff.	
				Lower	Upper
Pre - post 1	-0.011	0.008	0.532	-0.032	0.010
Pre - post 2	-.025*	0.008	0.019	-0.046	-0.004
Post 1 - post 2	-0.014	0.009	0.482	-0.039	0.011

* Significant at the p < .05 level

VOT ratios vs rater judgments

To assess the relationship between VOT ratios and native speaker ratings, a series of Pearson product-moment correlation coefficient were computed. Data collection is on-going, and the results presented here correspond to 30% of the data, which include two of the five /p/ words (*Paris*, *passer* 'to pass'), and two of the six words with /t/ (*taches* 'spots' and *tout* 'all').

Results indicate a significant negative correlation between VOT ratios and listener ratings of /p/: $r(50) = -.76$, $p < .001$, $R^2 = .58$, CI [-.86, -.62]. However, the correlation for /t/, which is also negative, is non-significant: $r(47) = -.15$, $R^2 = .02$, CI [-.42, .12]. These correlations are illustrated in Figures 3 and 4.

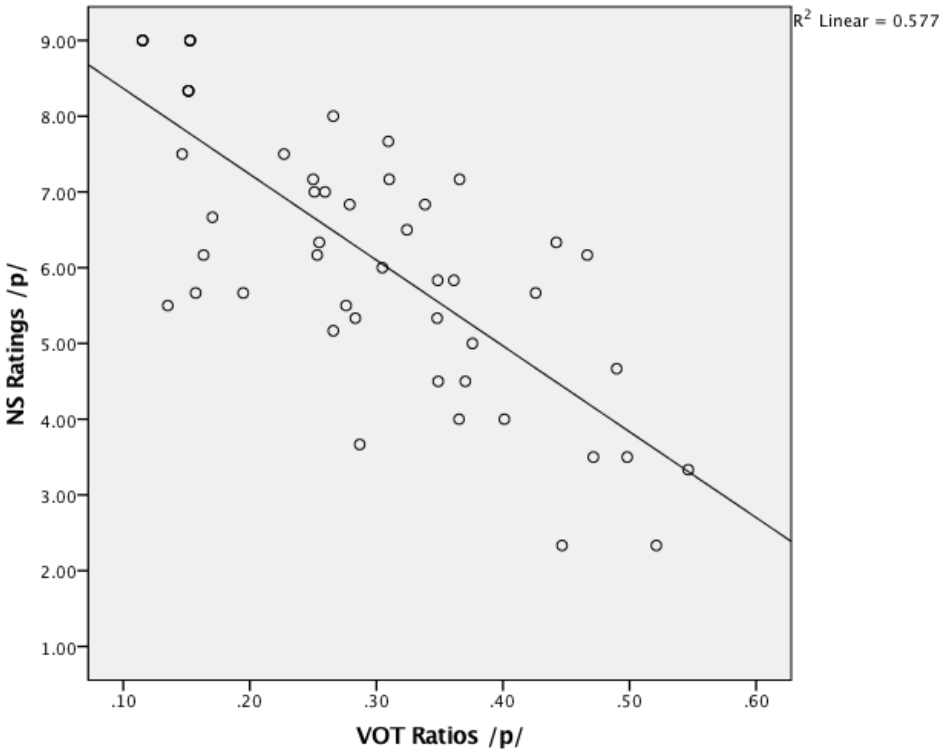

Figure 3. Scatter plot of VOT ratios vs NS ratings for /p/.

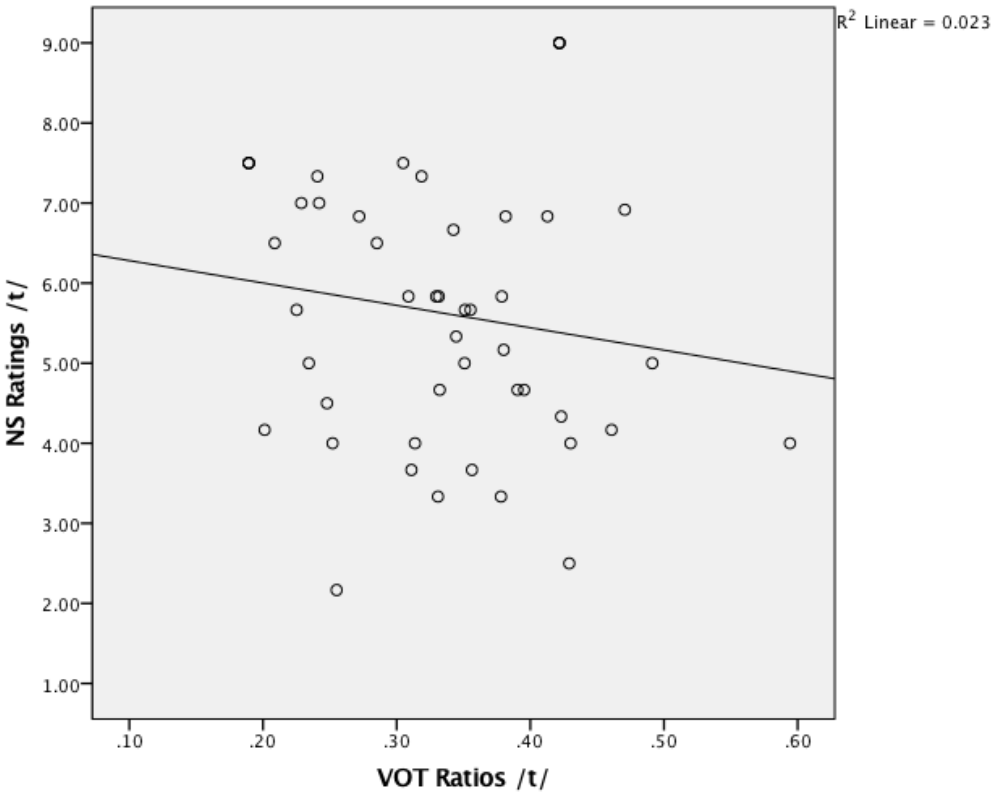

Figure 4. Scatter plot of VOT ratios vs NS ratings for /t/.

Considering that the two words in /p/ (*Paris* and *passer*) had the same environment (i.e., both /p/ followed by /a/) but not the two words in /t/ (*taches* and *tout*, i.e., /t/ + /a/ and /t/ + /u/), separate correlations were run for *taches* and *tout*. A significant correlation for *taches* productions (Figure 5) was found ($r(47) = -.78$, $p < .001$, $R^2 = .60$, CI [-.86, -.68]), but not for the *tout* productions ($r(47) = .16$, $R^2 = .02$, CI [-.18, .48] – Figure 6). The researcher listened to the participants' *tout* productions and heard friction, probably resulting from relaxed muscles and reduced vowel tension, and which may have been made even more noticeable by a vocal tract lengthened in anticipation of the /u/. This finding is further discussed below.

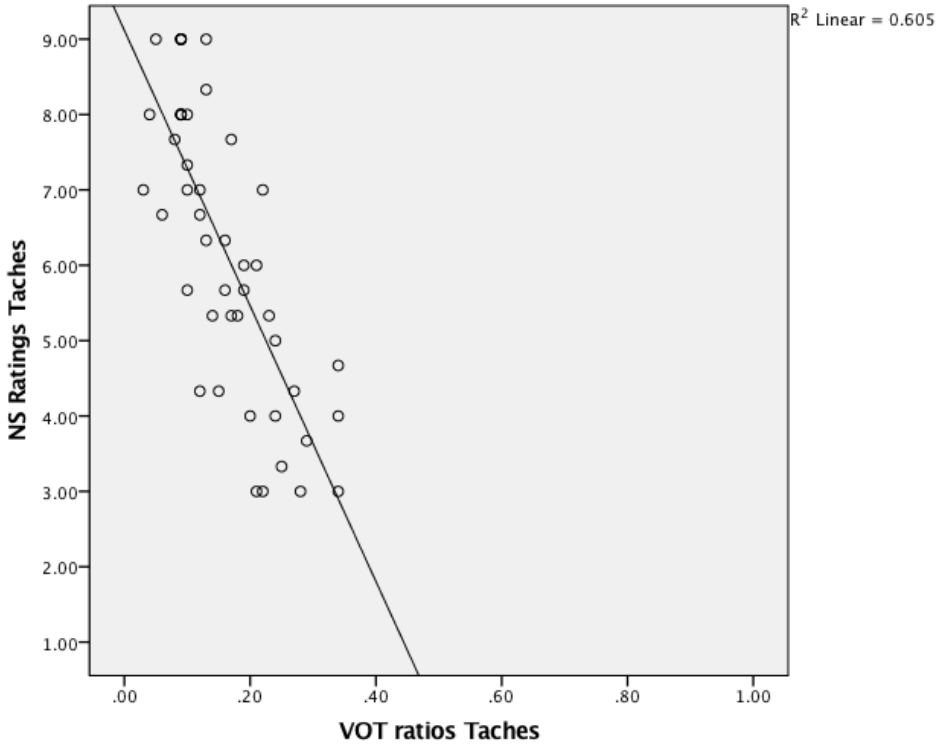

Figure 5. Scatter plot of VOT ratios vs NS ratings for taches productions.

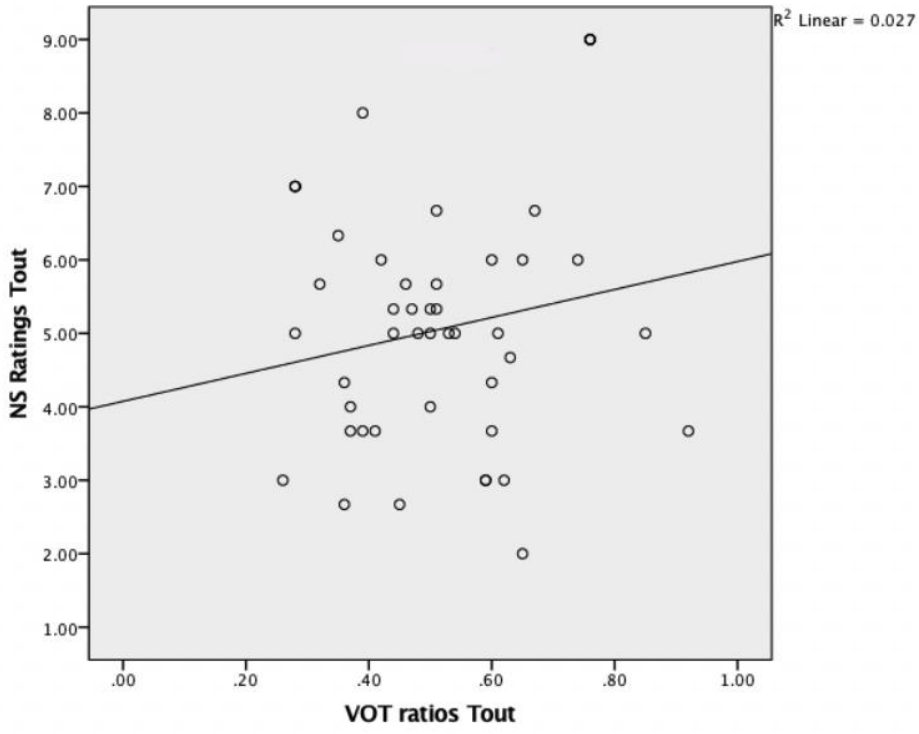

Figure 6. Scatter plot of VOT ratios vs NS ratings for tout productions.

DISCUSSION AND CONCLUSION

Tests were run to determine whether practicing speaking L1 English with a French stereotypical accent helps significantly reduce aspiration of French voiceless plosives. Both the absence of a significant difference between the experimental groups and the control group and a lack of a significant interaction between group and time for VOT ratios might suggest that learners pronounced word initial /p/, /t/, and /k/ with a native-like degree of aspiration before, immediately, and one week after treatment. In other words, as the VOT ratios of their voiceless plosives were comparable to those of the native speaker controls even before treatment, learners did not need to improve their pronunciation of those sounds. Native speaker raters, on the other hand, did not seem to agree and findings would indicate that they perceived the production of the subjects in the Authentic and the Stereotypical groups to be far from native-like before treatment, but also after. Based on native speaker judgements then, imitating an L2 accent—be it exaggerated or not—in the L1 did not help improve pronunciation of French /p, t, k/. Care needs to be taken when interpreting the latter results however, as they may be influenced by the small number of rated tokens analyzed (only four rated tokens per subject against 14 tokens with VOT ratios). Results may be different when the remaining 10 words are rated. If that is the case and the results of ratings align with those of VOT ratios, then these results would be in line with findings by Lord (2005), whose L2 Spanish learners already produced /t/ and /k/ at a native-like level at pre-test. As both the subjects in Lord's and the present study were at the intermediate proficiency level, it may be that voiceless plosives are no longer a pronunciation challenge at the intermediate level, and future studies could investigate the pronunciation features [i] for which practice with a stereotypical L2 accent in the L1 would be beneficial at this level. If the results of ratings do not align with those of VOT ratios, and the Authentic and the Stereotypical groups did fail to improve their pronunciation of the French voiceless plosives, future studies may yield different results with a focus on fewer pronunciation features. Indeed, in a follow-up survey, one participant confided having difficulty processing several pronunciation features at once, while all the others mentioned being grateful for the notes they had taken during training.

While results do show an effect of time for VOT ratios being significantly higher at the delayed post-test than before treatment for the experimental subjects, NS rating results do not. The VOT ratio results could be construed as negative long-term impact of treatment. However, the absence of a significant interaction between time and group indicates that learners still performed at a native-like level one week after treatment. The experimental groups' higher VOT ratios at the delayed post-test could be a case of backsliding (Beebe, 1988), caused by restructuring (McLaughlin, 1987) of the phonetic space as other elements, such as French /ʁ/, vowel stability, and intonation were incorporated. In that case, one week for a delayed post-test may be too early to effectively reflect long-term processing of sounds. Furthermore, as mentioned, the focus on several features at a time may have led learners to information overload, thereby increasing potential for momentary processing confusion. Future studies should arrange for more time between immediate and delayed post-tests, and limit instruction and practice to one feature at a time as in Everitt (2015).

To investigate the relation between VOT ratio measures and native speaker judgements, correlations were run. Significant negative correlations between VOT ratios and NS ratings indicate that as aspiration of /p/ and /t/ decreased towards native-like production, learner

production was also rated more native-like. While this was true for both voiceless plosives followed by /a/, it was not for /t/ when preceding /u/, probably due to friction resulting from relaxed muscle tension and a lengthened vocal tract in anticipation of the /u/. Interestingly, as results for the native speaker controls indicate (Table 5), the level of perceived friction seemed to negatively affect the judgement of native speakers, leading them to give /t/ + /u/ lower ratings even when the VOT ratio was low.

Table 5

Native speaker control data for /t/ + /u/

NS Control	NS rating	VOT ration	Level of perceived friction
1	7.00	0.28	high
2	9.00	0.76	low

As explained, these results are limited to 30% of the data and caution must be used when interpreting them. However, they suggest that, at least for voiceless plosives, both VOT measures and rater judgements—informing both on the duration of aspiration and the degree of muscle tension—are necessary for a comprehensive diagnostic of pronunciation quality.

ABOUT THE AUTHOR

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[i] Including French /ʁ/, as studied in Ruellot (2018), with a larger number of participants and an exclusive focus on the feature.