A verbo-tonal approach to the acquisition of rhythm in L2 French through gestures

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ABSTRACT: This study investigates how Spanish-speaking learners of French can improve rhythm acquisition through the verbo-tonal method (VTM) with pedagogical gestures in oral production tasks. Indeed, French and Spanish differ in the position, domain and function of the primary stress (in French, the primary stress is fixed, oxytone, has a demarcative function and affects the rhythmic group, whereas in Spanish, the lexical stress is free, mostly paroxytone, has a distinctive function and affects the word). The research demonstrates the effectiveness of gestures in helping learners overcome prosodic challenges caused by differences in stress patterns between Spanish and French. Using a two-phase experimental design, the study analyzed acoustic data to compare the rhythmic production of learners with a native French speaker. The corpus chosen was taken from a contemporary French play (Grumberg 2013). The participants were a native French speaker and three Spanish-speaking learners of French. The study was structured in two phases, with a clear distinction in terms of tasks and presentation of the input (Phase I: phonic/listening; Phase II: listening + gestural). Phase I consisted of recording the participants after listening to the whole fragment. After diagnosing the prosodic deviations from the model, Phase II consisted of recording the productions with the facilitating gestural proposal. The acoustic parameter analysed was the mean syllable duration of stressed syllables (primary stress) and unstressed syllables. The results show that for primary stress, the pedagogical gesture effectively attenuated the latency of the typical Spanish trochaic rhythm.
The findings indicate that gestural inputs significantly enhance prosodic accuracy compared to auditory input alone, which is a helpful tool to be used in the classroom in order to make students aware of the specific rhythmic characteristics of French.
Keywords: rhythm, gestures, verbo-tonal method, French as a foreign language, theatre

Un enfoque verbo-tonal sobre la adquisición del ritmo en francés L2 a través de los gestos

RESUMEN: Este estudio investiga cómo los aprendientes hispanohablantes de francés pueden mejorar la adquisición del ritmo aplicando el Método Verbo-Tonal (MVT) con gestos pedagógicos en tareas de producción oral. En efecto, el francés y el español difieren en la posición, el dominio y la función del acento primario (en francés, el acento primario es fijo, oxítono y tiene una función demarcativa, afecta al grupo rítmico, mientras que, en español, el acento léxico es libre, mayoritariamente paroxítono y lleva una función distintiva y afecta a

la palabra). Esta investigación demuestra la efectividad de los gestos para ayudar a los aprendientes a superar las dificultades causadas por las diferencias de los patrones prosódicos entre español y francés. Mediante un diseño experimental en dos fases, el estudio analizó datos acústicos para comparar las producciones rítmicas de estudiantes con respecto a las de un locutor nativo de francés. El corpus se extrajo de una obra de teatro contemporánea francesa (Grumberg, 2013). Los participantes fueron un hablante nativo de francés y tres estudiantes hispanohablantes de francés. El estudio se estructuró en dos fases, claramente diferenciadas en cuanto a las tareas y la presentación del input (fase I: repetición/escucha + fase II: repetición/gestual). La fase I consistió en grabar a los participantes repitiendo el fragmento global tras su escucha. Una vez diagnosticadas las desviaciones prosódicas respecto al modelo, en la fase II se grabó a los participantes con la propuesta gestual facilitadora. El parámetro acústico analizado fue la media de duración silábica de las sílabas acentuadas (acento primario) y de las sílabas no acentuadas. Los resultados muestran que, en lo que respecta al acento primario, el acompañamiento con el gesto pedagógico fue eficaz, por un lado, para atenuar la latencia del ritmo trocaico típico del español y, por otro lado, resultó pertinaz para realzar los patrones rítmicos propios del francés. Esta praxis podría ser traslada al aula para sensibilizar al estudiante sobre las características rítmicas del francés.
Palabras clave: ritmo, gestos, método verbo tonal, francés como Lengua Extranjera, teatro

1. Introduction

There has been an increasing body of research upon prosody through the last 25 years that comes to fill a research gap, as in words of Bolinger (1985, p.3), prosody was considered the "Cinderella of communication", since it was a little-explored area.

Paradoxically, prosody is a key component in oral communication as it may fulfil linguistic, paralinguistic and extralinguistic functions depending on the situation. One of the main functions of prosody is to organise speech: « La prosodie agit avant tout comme un principe organisateur qui assiste la production et la compréhension de la parole[1] » (Di Cristo, 2010, p.101). By organizing speech, prosody, also known as suprasegmentals, goes beyond phonemes. Suprasegmentals correspond to a general term that englobes both a set of abstract categories on the one hand, and on the other hand, a series of acoustic parameters to materialise these categories. These abstract categories correspond to several interlinked subsystems, corresponding to intonation, rhythm and stress. Intonation relies on different rhythmical groups (or prosodic words) and each rhythmical group builds itself around a nucleus or prominence (stress). To make the nucleus or stress salient, speakers use three acoustic parameters, used alone or combined depending on each language: fundamental frequency, intensity and duration (Di Cristo, 2005). As a result, lexical stress or nucleus and rhythm go together as linguistic rhythm is created by alternating stressed periods with unstressed ones.

Although Spanish and French belong to the group of syllabic languages, they differ rhythmically and consequently, in the type of stress each language use. French rhythm is characterized by destressing the isolated words to conserve only the final stress of the rhythmic group as illustrated in the following table:

[1] Prosody acts primarily as an organising principle that assists in the production and comprehension of speech (our translation).

Table 1. Rhythmic groups in French

Isolated lexical word (stress on the last syllable)	Short rhythmic group with primary stress	Larger rhythmic group with primary stress
Chat (cat)	un chat noir (a black cat)	un gros chat noir (a fat black cat)

As we observe in the table above, the French language attributes final stress to a rhythmic group, and to do so, the other lexical words lose their own final stress. This rhythmic propriety of the French language is difficult to imitate for Spanish learners since they tend to keep lexical stress on each word as they do in Spanish.

This is why the work on rhythm in phonetic correction for Spanish speakers learning French has to deal with the perception of rhythmic groups and the manifestations of prominences, especially of the last syllable, which is stressed thanks to the acoustic parameter of duration and consequently, the last syllable of the rhythmic group is longer than the preceding syllables.

In this study, we will focus on rhythm acquisition in French as a foreign language. Rhythm is usually defined as the impression created by alternating strong and weak sequences that repeat themselves in time. Some human activities would be impossible to imagine without the presence of rhythm, such as music, dance, and speech.

In speech, according to Astésano (2001), rhythm comprises three components: prosodic, verbal (syntax and lexicon) and gestural, and the fundamental unit in speech rhythm is the syllable (Patel, 2008). In foreign language acquisition, prosody and both intonation and rhythm are the first elements perceived when hearing another language. Correct prosody is also necessary to help comprehension as prosodic errors affect comprehensibility in a stronger way if we compare them to phonemic errors (Munro & Derwing, 1995, Di Cristo, 2010). Let us record that in a second language-learning context, phonemic perception for adolescents and adults is not easy, since perception in other languages is deeply conditioned by phonological representations in mother tongue that impregnated the speaker since intra-uterine life. This phenomenon is called phonological deafness and was early described by Polivanov (1931). A few years later, Trubetzkoy used the metaphor of the "phonological sieve" to explain that the mother tongue shaped the phonological system a speaker currently uses and underlined the importance of perceiving correctly a phoneme in L2 to pronounce it correctly (Troubetzkoy, 1967).

The Verbo-Tonal Method is directly inspired by the theories of Polivanov and Trubetzkoy and relies on the metaphor of the phonological filter laid by mother tongue in native speakers of all languages. For this reason, the VTM states that a phoneme cannot be reproduced if the students do not perceive it correctly and consequently, the teacher is in charge to make students perceive the specificities of each foreign phoneme with help of prosody and gestures.

The verbo-tonal method was born in the 1950s and was created by Petar Guberina (1913-2005), a professor of French at the University of Zagreb (Croatia) and director of the Laboratory of Phonetics of this institution. His research simultaneously developed in two directions, both the improvement of the pronunciation of Croatian students learning French and the rehabilitation of the hearing impaired after Second War II. The main principles to define VTM take source from the constant interaction between these fields and these two

types of audiences. This method stresses the importance of both prosody and corporeality to help phonation in both cases.

Unfortunately, there is a gap between phonetic research and practice in classrooms as Osorio underlines (2019) since phoneticians are carrying out experiments in phonetic laboratories, which are not directly transposable in the reality of the classroom. Moreover, there is a lack of experiments in the field of didactics of prosody, especially regarding rhythmic acquisition in foreign languages. Thus, studies on the use of gestures for the prosodic correction of an L2 are still scarce. The only study found on the subject (Alazard, Astésano, & Billières, 2012) states its intention to demonstrate empirically whether the use of pedagogical gestures facilitates the reproduction and memorization of prosodic patterns, but without further development in this line of research. In the field of foreign language teaching, other studies in L2 French prosody found that interrogative modality helps reduce over accentuation of Spanish participants and is proved to be a useful resource to achieve a more natural pronunciation (Baqué, Daoussi and Estrada, 2017). Rising intonation helps create more tension, that is to say articulatory energy. In addition to the interrogative modality, gestures are a key concept to improve students' pronunciation. Indeed, according to Guberina (2008), "the rhythm and intonation of speech evolve genetically from movement, both internal and external". In other words, gestuality inherent in speech (as opposed to those semiotic gestures) is intertwined with the rhythmic-intonational movements of speech. In other words, gestures can be helpful to achieve a certain syllabic length in French as a Foreign Language which leads consequently to master the specificities of this language. At the acoustic level, the phonetician Pierre Léon (1992, p.107), in his chapter on stress and rhythm in French, pointed out the importance of the specific duration of stressed syllables: "On constate qu'en français standard, une syllable accentuée est en moyenne deux fois plus longue qu'une syllabe inaccentuée[2]".

To achieve this linguistic goal, the authors hypothesise that the use of pedagogical gestures will improve rhythm acquisition patterns of L2 French in Spanish learners compared to only auditory input.

To test our hypothesis, here we selected some of the main principles of the VTM: first, the importance of the whole body to perceive and produce speech sounds. Then intonation and rhythm are key concepts as rhythm and intonation are the first perceived elements when hearing a foreign language, familiar or not. Moreover, affectivity plays a major role in the classroom (students must feel at ease with the teacher to be able to reproduce gestures). Finally, speech perception and production rely on poly sensoriality (i.e sounds are also perceived by low frequencies through the bones, for instance). This fact is particularly interesting as in words of Guberina (2003/2008), we speak with the whole body. For this reason, he emphasized the use of phonetic rhythms to focus learners' perception, in order to facilitate the correct production in L2. In the case of the VT Method, and as Pavelin & Frankol (2014) had already clarified, these are not the co-verbal gestures included in any of the gestural classifications discussed above, but pedagogical gestures, created ad hoc and with a "facilitating" purpose. They are thus learning procedures based on rhythmic movements of

[2] We notice that in standard French, a stressed syllable is on average twice as long as an unstressed syllable (our translation)

the body. Guberina already realized that these body movements had to share certain characteristics with the sound they accompanied. In this case, he refers to the characteristic of tension, which is a verbo tonal variable as Renard underlined (1979), is proprioceptive and mobilises the whole body to show salience. However, the application of phonetic rhythms has been mainly applied in speech pathology.

2. Methods

The objective of this experiment was to prove the benefits of the Verbo-Tonal Method in L2 pronunciation of French. Furthermore, the authors would underline the great benefits from an early teaching intonation and rhythm, as most methods exclusively rely on articulatory approaches, which do not consider prosodic aspects.

The hypothesis of this research is that pedagogical gestures that intend to enhance prosodic prominences of the rhythmic groups will influence the perception and, therefore, the micromotricity of the phonatory organs to achieve a better sound production in L2 French.

In order to see if gestures could improve production, a two-phase experiment was carried on. To do so, we recorded a native French Speaker who served as a reference speaker and three Spanish students of French as a foreign language performing different tasks (repeating wearing a blindfold with audio input only and then, repeating with audio input and a pedagogical gesture). Recordings allowed us to compare the prosodic deviations and to elaborate a verbo-tonal diagnosis to bring pedagogical gestures to the students. In order to explain the procedure as clearly as possible, we will develop the diagnosis realized with one of the sentences from the theatre corpus used in this experiment.

2.1. Participants

One reference speaker (a male native French speaker aged 70) and three Spanish students of French, two females, and a male aged between 19 and 24 (average: 20 years) took part in this experiment. The three Spanish participants were students from the Faculty of Philosophy and Letters of the Autonomous University of Barcelona. These were three students who, at the time of the experiment, were taking the subject "Functional French II" corresponding to the first year (2nd semester) of the French Studies Degree (or combined with French).

In order to assess the effectiveness of pedagogical gestures, we chose participants from the same academic year (first year of the Combined Studies Degree with French) and their level of French was intermediate, as a university requirement for enrolment in this subject, and consequently ranged from B1 to B2. This academic level seemed to be the most accurate to test the hypotheses, as the students had to repeat sentences in French as a foreign language and imitate gestures, which would be difficult for absolute beginners.

2.2. Corpus

The corpus used to practice with students was part of the French play *Pour en finir avec la question juive* (Grumberg, 2013). This type of corpus was preferred because although it is a written corpus, its main function is to be represented or interpreted in spoken language.

Moreover, it represents a communicative micro-situation which boosts a "mise en train" of gestures (involvement of the body). In this particular case, the dialogues chosen contained interrogative statements (yes/no and wh-questions of different lengths). As we mentioned before, the use of questions helps achieve a more natural pronunciation in L2 French as the interrogative modality carries more tension.

From a lexical and syntactical point of view, the corpus was adapted to the students since we mentioned supra that their level was from B1 to B2. The sentences were easy to understand for them and at the moment of the experiment, we made sure that they understood the meaning of the sentences.

The interrogative sentences selected for this corpus were the following:

1. Vous parlez anglais? (Do you speak English?)
2. Vous parlez quelle langue là-bas? (Which language do you speak there?)
3. Elle l'apprend par Internet? (Is she learning it through the Internet?)
4. Où est-ce que vous sentez cette hostilité? (Where do you feel this hostility?)
5. Les nazis sont revenus? (Have the nazis come back?)
6. Vous, vous allez vraiment rester là? (Are you really going to stay here?)
7. Vous savez pourquoi il faut respecter le jour du shabbat? (Do you know why shabbat must be respected?
8. Vous êtes sûr qu'un enfer soit nécessaire aux juifs dans l'autre monde? (Are you sure about needing hell for the Jewish in the other world?)
9. Je peux vous dire encore quelque chose? (Can I tell you something else?)

There are seven yes/no interrogative sentences (1), (3), (5), (6), (7), (8) and (9) and two wh-interrogative sentences (2) and (4).

In this article, we will develop the incidence of gestures in one particular interrogative sentence, sentence 6:

Vous, vous allez vraiment rester là ? (Are you really going to stay here?)

One of the core ideas of the verbo-tonal method is tension. According to this method, gestures are a helpful mechanism to modulate this gradual variable that cannot be categorized following a dichotomy. In the current study, a stressed syllable is tenser than an unstressed syllable. In other words, by means of different movements (mainly hands and arms) executed simultaneously with speech, students can vary tension and add or erode tension to specific syllables. Furthermore, a phoneme located in an intonational summit is also tenser.

From the point of view of the VTM, this corpus facilitates the acquisition of French as a foreign language since French is a tenser language than Spanish, and to bring tension, the ideal is to use the interrogative modality. Interrogative sentences imply a greater degree of tension in relation to declarative sentences since the speaker is looking forward to getting an answer. The interrogative cues are different. On the one hand, by means of acoustic cues (intonational rise, stress on the wh-question…) and on the other hand by visual cues (corporal expression grabbing the attention of the listener, centrifuge movements seeking for an answer…).

2.3. Research Protocol

As far as research protocol is concerned, the study took part in two phases with a clear differentiation regarding the presentation of the input. Phase I consisted of receiving an audio input of the whole fragment and repeating the heard sentences. Then, recordings were compared with the native speaker's production, in order to seek prosodic deviations and to establish a verbo-tonal diagnosis for the students.

Phase 1

First of all, and in order to facilitate the global comprehension of the theatrical lines, the whole communicative situation was explained to the students ("there are two characters, M. Legrand and M. Lévy, two neighbours who meet in the cafeteria next to their building and start the following conversation").

Then the participant was given the opportunity to listen to the full recording of the same corpus by a prototypical speaker. This first holistic listening was intended to familiarise the learner with the "soundscape" of French, and they wore a blindfold in order to concentrate their psycho-sensory skills on auditory perception. The participant had to repeat the sentences he heard orally. At the end of the session, a perceptual diagnosis of these productions was carried out in order to detect "prosodic errors" and their degree of deviation from the productions of the standard prototypical speaker, which was to enable the gestural correction procedures to be devised and which will be detailed below.

After recording Phase 1, participants were given a two-week break to counteract the learning effect of the sentences they had read. Then they participated in Phase 2.

Phase 2

The main purpose of Phase 2 was to see the incidence of pedagogical gestures on oral production. The participants were filmed to analyse the facilitating gestural proposal.

Unlike the previous phase, the participants not only received a sound input but they had to perform simultaneously with the oral production of each phonic group of the corpus, the gestural instructions designed according to the prosodic errors detected and diagnosed in the previous phase and suggested by the teacher who remained in the recording room in front of them.

Table 2. Research protocol followed during the experiment

Phases	Input
1	Audio (with pauses)
2	Audio + gestures

2.4. Recordings

The recordings took place in a controlled context, in the laboratory of the "Service of Speech Treatment and Sound" (Faculty of Philosophy and Letters of the Autonomous Uni-

versity of Barcelona) during May 2016. The recording software chosen was Adobe Audition CS5.5 and the digitized voice files obtained were in 24-bit WAV PCM format (digital audio format) with a sampling frequency of 44.1 kHz. As for the technical equipment, an Alesis Multimix 8 mixer, a Roland Cakewalk UA-25EX sound card and an Audio-Technica AT 2050 multi-pattern condenser microphone with a frequency response of 20-20,000Hz and a dynamic range of 132dB were used.

As the research focuses on movement and gestural work, it was necessary to use video recording of the subjects to record their posture and gestural behaviour. For this purpose, a Nikon Coolpix p500 camera and tripod were used.

2.5. Variables

2.5.1. Tasks

In this experiment, two different tasks were considered.

In Phase 1, first, the participants had to repeat the segmented audio input they received while wearing a blindfold.

In Phase 2, they had to repeat the audio input and reproduce the gestures the instructor gave them.

2.5.1. Acoustic variables

In this study, we used both acoustic and gestural cues to improve oral pronunciation in French. The acoustic parameter taken into account was the means of duration of primary stress of stressed syllables with respect to unstressed syllables calculated in milliseconds.

Acoustic data was used to confirm the auditory analysis made by Osorio (2019). Obviously, in a classroom context, the teacher will have to rely on auditory cues to establish his verbo-tonal diagnosis.

The acoustic data obtained were analysed with the Praat software (Boersma & Weenink, 2020). For this purpose, an orthographic transcription of each sound file was made and, together with its corresponding orthographic transcription, the EasyAlign plug-in (Goldman & Schwab, 2014) was used to segment the sound sequence, first into words and then into syllables, whose row (Tier) was the relevant one for this study. After each segmentation, the temporal boundaries were checked and corrected manually.

2.5.3. Gestural variables (Gesture parametrization)

The gestures used in this experiment were pedagogical gestures adapted from Laban's gestural typology. As a choreographer, Laban characterized human movement using the following parameters:

- Direction (indirect-direct)
- Weight (strong-weak)
- Speed (sustained-quick)
- Flow (free bound)

These parameters inspired Osorio (2019) to use a series of pedagogical gestures she represented graphically:

Table 3. Graphical representation of gestural characterisation. (Osorio, 2019, p. 184)

Descripción gestual	Representación gráfica
Ascendente-centrífugo-neutro	
Horizontal-centrífugo-laxo-distendido	
Descendente-neutro	
Horizontal-centrífugo-neutro	
Ascendente-centrífugo-neutro	

3. Results

As we pointed out in the experimental protocol, the experimental design responded to the aim of offering strategies to improve acquiring rhythm in French by Spanish-speaking learners. Different conditions were thus envisaged depending on the type of stimulus received (sound recording, gesture) and the kind of task to be performed (reading or repetition of sound input, repetition with gestural input).

We present hereafter the global results for each considered variable.

3.1. Task

Regarding the effect of the Task, all variables taken into account, results showed that audio input and gestural input are the best facilitating strategies to acquire the rhythm of French as a foreign language.

3.2 Acoustic variables

Regarding the acoustic parameter of syllabic duration and taking into account the duration of primary stress, all variables considered, the three Spanish learners showed a lower syllable duration compared to the native speaker. Hereafter we present the mean duration of open syllables, stressed and unstressed, by continuous onset categories for the theatre corpus, as in the example considered: *vous, vous allez vraiment rester là?*" in the two tasks proposed to the three participants.

Table 4. *Results of participants. (source: acoustic analysis mentioned above)*

		Stressed syllable (ms)	Unstressed syllable (ms)
Native speaker		307,5	140,2
Participant 1	Task 1 – audio input	233	147,2
	Task 2 – audio input + gestures	248,5	145,6
Participant 2	Task 1 – audio input	278,5	167
	Task 2 – audio input + gestures	293,5	146,8
Participant 3	Task 1 – audio input	389	146,5
	Task 2 – audio input + gestures	325,5	146,8

Globally, as shown in the table above, the native speaker clearly differentiates unstressed syllables (mean of 140,2 ms) from stressed syllables (307, 5 ms), which is almost twice longer.

Results of Participant 1

On the contrary, for participant 1, in task 1, the mean duration of unstressed syllables was unstressed 147,2 ms, and 233 ms for stressed syllables. In task 2, the mean duration of unstressed syllables was unstressed 145,6 ms, and 248,5 ms for stressed syllables.

Results of participant 2

For participant 2, in task 1, the mean duration of unstressed syllables was unstressed 145,6 ms, and 248,5 ms for stressed syllables. In task 2, the mean duration of unstressed syllables was unstressed 146,8 ms, and 293,5 ms for stressed syllables.

Results of participant 3

For participant 3, in task 1, the mean duration of unstressed syllables was 146,5 ms for unstressed syllables, and 389 ms for stressed syllables. In task 2, the mean duration of unstressed syllables was 146,8 ms for unstressed syllables, and 325,5 ms for stressed syllables.

As the data show, regarding the lengthening of the stressed syllable, all participants get benefits from the audio input, and even more from the audio input coupled with gestures. Indeed, as the data illustrates regarding the native participant, the stressed syllable is expected to be twice longer than the unstressed syllable in French, and participants 1 and 2 show the same progression, as they improve their rhythmic production thanks to the oral input only, but in both cases the stressed syllable remains shorter than the native speaker. Thanks to the oral input and the pedagogical gestures, both reach the expected syllabic duration. However, the third participant reacted differently, in the sense that he produced a longer stressed syllable than the native speaker. Interestingly, thanks to the pedagogical gesture and the oral input, he achieved a more native production and reduced this over duration. These results show many interesting implications regarding teaching because the pedagogical gesture with oral input is an effective strategy i) to make stressed syllables longer and ii) to reduce the over lengthening of stressed syllables, as participant 3 did. Let's have a deeper look to what he did.

3.3. Results of Phase 1

Focusing on the results of the sentence: "Vous, vous allez vraiment rester là?", the recordings from Phase I showed rhythmic issues for Spanish learners. The diagnosis suggested was to insert more tension in the first part of the sentence ("Vous").

In the first stage of the study, two participants tended to produce a shorter syllable than the native speaker. However, the third participant used another strategy. For these reasons, we present the spectrogram below (Figure 1):

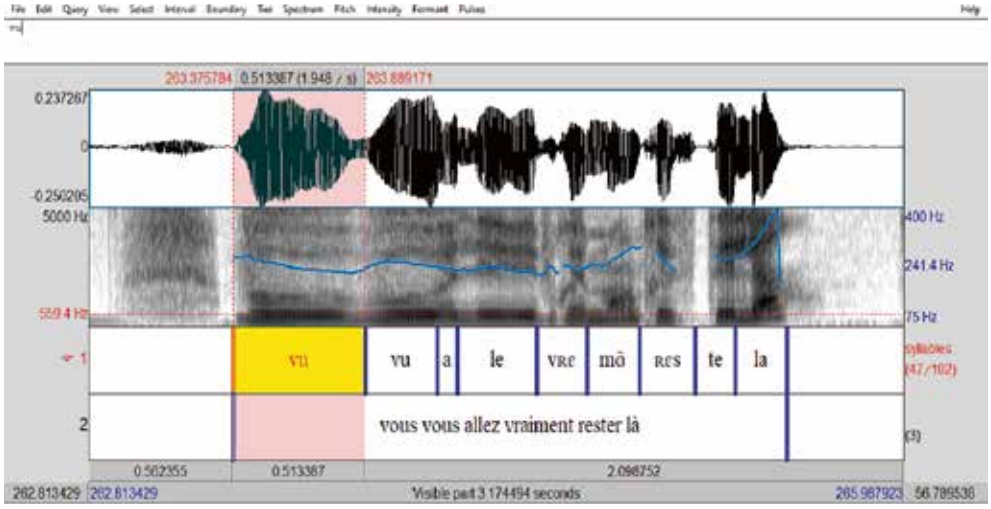


Figure 1. *Spectrogram of Participant 3 saying «Vous, vous allez vraiment rester là?»*

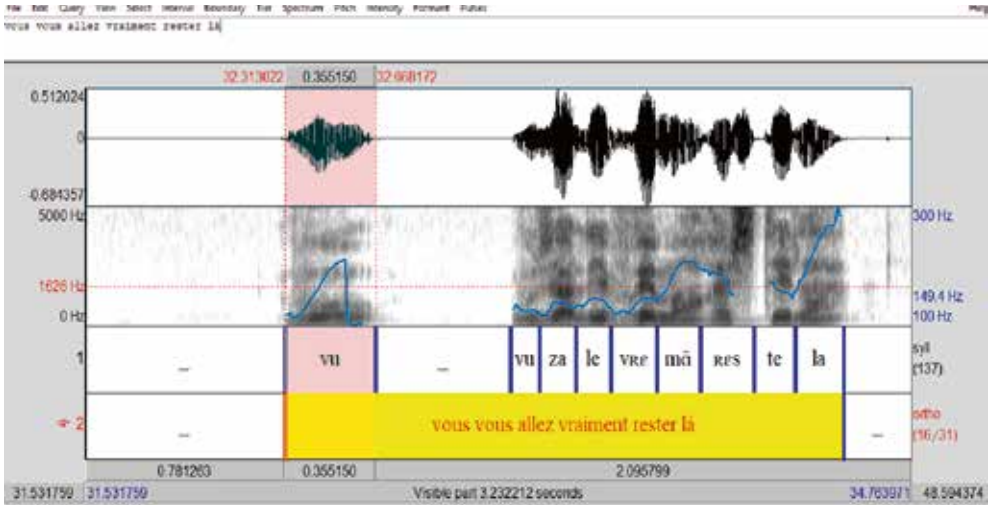


Figure 2. *Spectrogram of the native speaker saying « Vous, vous allez vraiment rester là? »*

According to the spectrogram (Figure 2), instead of making a pause between “vous” and “vous” subject (as produced by the native speaker in Figure 2), this participant lengthens the vowel of the first “vous” and pronounces the second “vous” without any silence in between.

3.4. Results of Phase 2

In verbo-tonal terms, the diagnosis showed a deficit of tension in the realization of the primary stress, which in French is manifested by the duration of the last syllable of the rhythmic group. Once the verbo tonal diagnosis was made and showed a lack of tension, we decided to suggest pedagogical gestures adapted to the case of participants to add more tension, in order to get the rhythmical pattern of French.

First of all, the example of the interrogation “Vous, vous allez vraiment rester là?” is based on two different rhythmic groups:

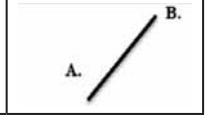
1. First rhythmic group with a final stress on VOUS /vu/, which is a topicalisation pronoun corresponding to a single rhythmic group.

The proposed gesture is made only with the index finger and is energetic. For two reasons: to separate it well from the rest (it is a focused element, independent of the rest both prosodically and syntactically and responds to a very clear communicative intention, with the meaning of “you and not your wife”, for example).

2. The second rhythmic group corresponds to VOUS ALLEZ VRAIMENT RESTER LÀ? vuzalevʀɛmɑ̃ʀɛstela/, with primary stress on LÀ.

The pedagogical gesture suggested is a bottom-up centrifuge gesture and several parts of the body were involved in conveying the idea of syllable length, for example the head, the hand, and the arm. All the pedagogical gestures are reflected in the table below:

Table 5. *Summary of the pedagogical gestures used to correct the prosodic deviations of participants*

Rhythmical group	Pedagogical gesture (part of the body)	Gesture description	Intensity	Graphic representation
Vous,	index finger	Bottom-up centrifuge	Energic gesture	

Rhythmical group	Pedagogical gesture (part of the body)	Gesture description	Intensity	Graphic representation
Vous allez vraiment rester là?	Jointly head, hand and arm	Bottom-up centrifuge	neutral	

In global terms, results showed that an ascending gestuality with a medium degree of force helps to give greater prominence (and thus greater tension) to the informants’ productions and, finally, to reduce the deviations observed in the previous stages of the experimentation with respect to the reference speaker. In other words, the use of the pedagogical gesture

produces a rhythmic structure closer to that of the production of the canonical speaker. Results also showed that only audio input is also a good teaching strategy to work on rhythm, although less efficient than if combined with gestures. All these elements confirm the thesis of the verbo-tonal method on the need to attach great importance to audio inputs in the process of teaching and learning foreign languages.

4. Discussion

The aim of this research was to show the impact of gestures on correct prosodic production in L2 French. Even though the sample size might not be considered representative, the results show a clear tendency that there is a perfect congruence between speech rhythm and body rhythm and that the pedagogical gesture was an efficient strategy to correct a deviant prosodic production.

The Verbo Tonal Method was perhaps the first to postulate not only the primacy of the spoken language but also the priority to be given to rhythm and intonation. As a complement to speaking exercises, the use of theatre in the classroom encourages motivation and promotes students' disinhibition in a more natural environment.

As the results of Phase I showed, all variables taken into account, the repetition task (only audio input with blindfold) next to pedagogical gestures did help students acquire a rhythm closer to the native speaker.

In order to give an interpretation of the results obtained, we observed that two participants followed the same pattern whereas the third was different. These divergent behaviours are expected to be found in the classroom context, that is, for the same stimulus, students can react differently. Indeed, participants 1 and 2 tended to shorten final syllables and the best results were obtained with both audio input and pedagogical gestures.

For participant 1, the combination of audio input and gestures was the most effective to add tension to the final syllable, as the mean stressed syllable duration was 248,5ms, quite close to the native speaker (307,5ms). The Phase I (audio only with blindfold) was less effective to add tension (233 ms).

For participant 2, the combination of audio input and gestures was also the most operational to add tension to the final syllable, as the mean stressed syllable duration was 293,5ms, almost identical to the native speaker (307,5ms). Here again, the audio input was less effective to add tension (278,5ms).

Therefore, for these two participants, pedagogical gesture was the best strategy to correct prosodic deviance and add tension thanks to the iconicity between gesture and speech, where the head, the arm and the hand were involved.

Regarding participant 3, he/she did perceive that final syllables were lengthened in French thanks to the audio input, but he/she lengthened the syllables of the rhythmic groups in excess during Phase I (389 ms) compared to the native speaker (307,5ms). Here again, the pedagogical gesture also made possible to adjust the oral production closer to that of the native speaker thanks to oral input coupled to gestures (325,5 ms) and managed to reduce this excess of duration.

To work on the rhythm or alternation of marked and unmarked elements, the acoustic parameter of duration can hardly be useful for didactic application, since the daily reality

of the classroom does not allow for on-the-spot measurements. That is why, gestures represent a more feasible resource, in addition to oral input, to propose strategies for phonetic correction in a foreign language classroom context. Even if the VTM is not a magic wand, it is a method that adapts to each context and each learner and which each teacher has to appropriate. The real challenge with this approach is to get involved and to let yourself and the student embody by the sound and music of French language.

The research leads to the conclusion that prosodic work must start from the syllable (and therefore not work with isolated sounds, as advocated by the verb-tonal method). The work on rhythm can only be carried out with at least pairs of syllables, in line with what the VTM does with the so-called "non-words" (reduplication of syllables devoid of meaning, making it possible to influence perception without the intervention of the lexical-semantic component). Only this didactic procedure makes it possible to sensitize the learner to the different stress patterns.

In conclusion, working on prosodic structure in class is fundamental because it allows the acquisition of the rhythm of the foreign language and a lot of work needs to be done in this field. Even if the VTM is still unknown and needs training for teachers, it is very useful for improving students' pronunciation, as the recent study from Li and *al.* shows (2023). Unfortunately, too much emphasis weighs on writing in the teaching and learning of French and this study confirms the incidence of oral repetition (without reading) as a facilitating strategy to acquire the specific rhythm of French. Further lines of investigation would be necessary to broaden the sample and to explore to what extend the effects of corrective feedback are stable in time.

5. References

Alazard, C., Astésano, C., & Billières, M. (2012). MULTIPHONIA: A MULTImodal database of PHONetics teaching methods in classroom InterActions. *Proceedings of the Eighth International Conference on Language Resources and Evaluation (LREC-2012)*, 2578–2583. European Languages Resources Association (ELRA).

Astésano, C. (2001). *Rythme et accentuation en français: Invariance et variabilité stylistique.* L'Harmattan.

Baqué, L., Daoussi, S., & Estrada Medina, M. (2017). Acentuación y desacentuación en FLE en un contexto de aprendizaje universitario: ¿Hacia la adquisición del patrón acentual de la L2? *E-AESLA, 3*, 18–29. http://cvc.cervantes.es/lengua/eaesla/eaesla _03.htm

Boersma, P., & Weenink, D. (2020). *Praat: Doing phonetics by computer (Version 6.1.16).*

Bolinger, D. (1985). *Intonation and its parts.* Edward Arnold.

Cutler, A. (2012). *Native listening: Language experience and the recognition of spoken words.* MIT Press.

Di Cristo, A. (2005). Éléments de prosodie. En N. Nguyen, S. Wauquier-Gravelines, & J. Durand (Eds.), *Phonologie et phonétique. Forme et substance.* Lavoisier.

Di Cristo, A. (2010). Le pouvoir de la prosodie ou la revanche de Cendrillon. En L. Baqué & M. Estrada (Eds.), *La langue et l'être communiquant. Hommage à Julio Murillo* (pp. 95–113). CIPA.

Goldman, J.-P., & Schwab, S. (2014). EasyAlign Spanish: A (semi-)automatic segmentation tool under Praat. En Y. Congosto, M. L. Montero, & A. Salvador (Eds.), *Fonética experimental,*

Espacio Europeo de Educación Superior e Investigación, Proc. V Congreso de Fonética Experimental 2011 (pp. 629–640). Arco/Libros.

Grumberg, J. C. (2013). *Pour en finir avec la question juive.* Actes Sud Editions.

Guberina, P. (2008). *Retrospección* (Edición en español y prólogo de Julio Murillo). CIPA.

Léon, P. (1992). *Phonétisme et prononciation du français.* Nathan Université.

Li, P., Bailles, F., Alazard-Guiu, C., Baqué, L., & Prieto, P. (2023). A pedagogical note on teaching L2 prosody and speech sounds using hand gestures. *Journal of Second Language Pronunciation, 9(3)*, 340–349. https://doi.org/10.1075/JSLP.23043.LI

Munro, M. J., & Derwing, T. M. (1995). Foreign accent, comprehensibility, and intelligibility in the speech of second language learners. *Language Learning, 45(1)*, 73–97.

Osorio, M. (2019). *Iconicidad entre habla y gestualidad: Un enfoque verbo-tonal de la enseñanza-aprendizaje del ritmo en francés a hispanohablantes* [Tesis doctoral, Autonomous University of Barcelona]. https://www.tdx.cat/handle/10803/669647 #page=1

Patel, A. (2008). *Music, language, and the brain.* Oxford University Press.

Pavelin, B., & Frankol, D. (2014). Du corps à la parole à la lumière de l'approche verbo-tonale. En M.-J. De Man & S. De Vriendt (Eds.), *Du son à la parole* (pp. 115–123). CIPA.

Renard, R. (1979). *La méthode verbo-tonale de correction phonétique.* Didier.