



The Phonetic and Phonological Characteristics of Nasal Vowels in French

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Abstract. *This article examines the special role of nasal vowels (voyelles nasales) within the phonetic and phonological system of the French language. Unlike other Romance languages and many members of the Indo-European family, French is distinguished by its nasal vowels. The articulatory mechanism of these vowels is characterized by the lowering of the soft palate, allowing the airflow to pass simultaneously through both the oral and nasal cavities. This process produces a unique acoustic timbre that contributes to the distinctiveness of French phonology. From a phonological perspective, nasal vowels function as independent phonemes with a distinctive meaning-bearing role. Minimal pairs (such as beau "beautiful" and bon "good") clearly demonstrate their semantic significance. Contemporary phonological tendencies reveal neutralization processes, particularly between [œ̃] and [ɛ̃], which indicate a simplification trend in modern French, especially in Parisian speech. The article also discusses orthographic manifestations of nasal vowels, denasalization phenomena, and the challenges they pose for learners of French as a foreign language. Ultimately, nasal vowels are evaluated as fundamental components that ensure the structural integrity, phonetic richness, and dynamic evolution of French. Their study provides valuable insights into both theoretical linguistics and practical pronunciation training.*

Keywords: French language, nasal vowels, phonetics, phonology, articulation

1. Introduction

The phonetic landscape of world languages is distinguished by its diversity, and within this variety, French occupies a unique position, particularly due to its vocalic system. French is one of the languages notable for the richness and distinctiveness of its phonetic structure. In French, pronunciation often differs from spelling. By examining sound production, transmission, and reception, phonetics helps us understand pronunciation and acoustic features. French sounds differ from other European languages, especially due to nasal vowels and distinct consonant pronunciations (Kerimova, 2025, p. 388). These sounds are not only significant for their manner of articulation but also for the functional role they play in the internal structure of the language. We argue that nasal vowels are not merely phonetic variations but independent phonemes

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carrying a distinctive semantic function. In this article, we will analyze the acoustic and articulatory features of these sounds while also focusing on their tendencies of transformation in modern French.

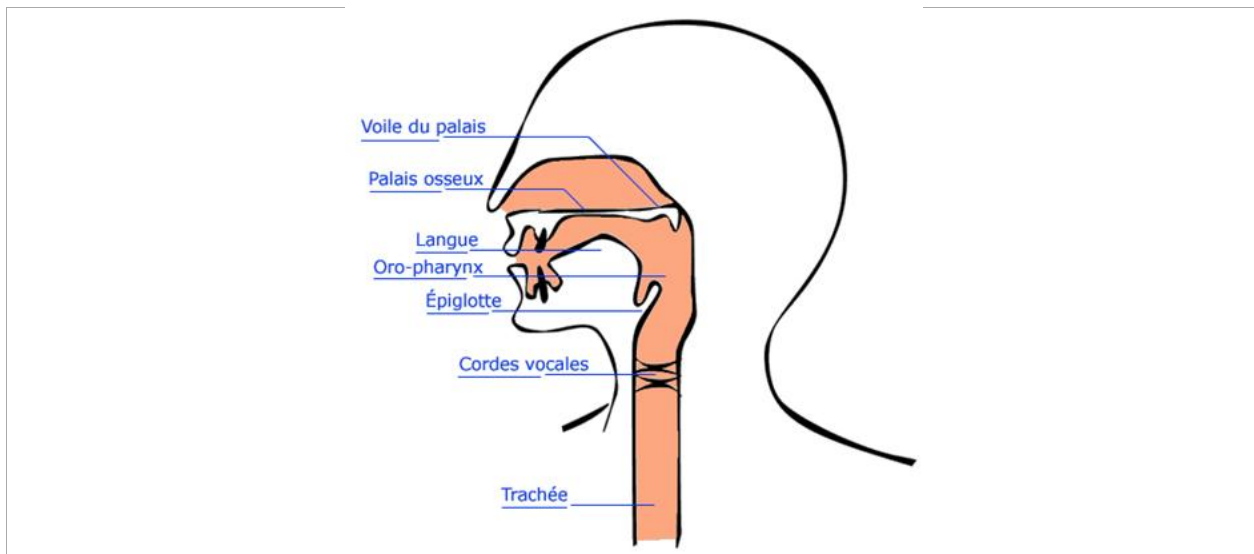
Although French is a widely spoken language worldwide, research conducted within educational institutions on the teaching and learning of French reveals certain weaknesses. In this regard, it is worth examining Özkan Gürses's study in Turkey, which investigated students' independent approaches to learning French: "The study revealed that the students perceived teachers as more responsible than themselves for their learning French. Furthermore, in general the participants' decision-making abilities and use of metacognitive strategies were moderate level and they engaged in limited autonomous language learning activities. Moreover, most of the students were not sufficiently motivated and had difficulties in maintaining their motivation during learning progress. Thus, the results suggest that the majority of the learners of French studying at a university in Turkey did not appear to be highly autonomous learners" (Gürses, 2021, p. 104). As Little points out, "Autonomy is not a synonym for self-instruction" (Little, 2007, p. 15).

These proposed ideas also highlight the necessity for those teaching the French language to explore French phonetics more deeply, in order to reveal the richness and uniqueness of its phonetic structure.

2. Nasal Vowels (Voyelles nasales): [ã], [ẽ], [õ], [œ]

2.1 Phonetic Nature and Articulatory Mechanism

The formation of nasal vowels in French is a complex physiological process. The main factor distinguishing them from oral vowels is the position of the soft palate (le voile du palais).



The position of the velum varies across the nasals, the speakers and the environments. Usually there is a connection between the degree of velum lowering and the position of the tongue in the velar region (Fougeron, 1999, p. 13).



2.1.1 Articulation Process

In oral vowels, the soft palate rises, blocking the nasal cavity, and air flows only through the mouth. In nasal vowels, the soft palate lowers, the airflow bifurcates, passing simultaneously through both the mouth and nose, and this resonance alters the timbre of the sound, producing the specific "nasal" quality. While examining nasal coarticulation typically involves nasality as a single parameter, nasal vowels and speech sounds in general differ along multiple phonetic dimensions (Rodriguez, Pouplier, Alderton, Lo, Evans, Reinisch, & Carignan, 2023, p. 848).

2.1.2 Acoustic Classification

Standard French has four primary nasal vowels, characterized as follows:

[ɛ̃] ex : vin		langue en avant		bouche ouverte, souriante
[ɑ̃] ex : dans		langue un peu en arrière		bouche très ouverte, arrondie
[ɔ̃] ex : pont		langue en arrière		bouche peu ouverte, très arrondie

[ɑ̃]: tongue retracts, mouth opens wide (e.g., *enfant, temps*).

[ɔ̃]: lips rounded, tongue retracts (e.g., *pont, long*).

[ɛ̃]: tongue advances, lips spread (e.g., *vin, pain*).

[œ̃]: tongue advances, lips rounded (e.g., *un, parfum*).

3. Phonological Analysis: Distinctive Function

From a phonological perspective, nasal vowels are independent phonemes in French. Nasalization is not merely a manner of pronunciation but a feature that fundamentally changes meaning.

3.1 Evidence Through Minimal Pairs

Minimal pairs demonstrate their phonemic status:

Oral Phoneme	Nasal Phoneme	Example (Oral)	Example (Nasal)
[a]	[ɑ̃]	<i>bas (low)</i>	<i>banc (bench)</i>
[o]	[ɔ̃]	<i>beau (beautiful)</i>	<i>bon (good)</i>



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[ɛ]	[ɛ̃]	<i>paix (peace)</i>	<i>pain (bread)</i>
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3.2 Modern Phonological Trend: Neutralization of [œ̃] and [ɛ̃]

In contemporary French, especially in Paris and northern regions, [œ̃] tends to merge with [ɛ̃]. For many younger speakers, words like *brin* (twig) and *brun* (brown) are pronounced identically. This process is known as neutralization.

4. Orthographic Representation and Denasalization

Nasal vowels are usually represented in writing by combinations with *n* or *m*. However, when followed by another vowel, nasalization does not occur. For example: Nasal: *plan* [plɑ̃] (plan); Oral (Denasalization): *plane* [plan] ("flat/airplane") — here the final *e* causes the *n* consonant to shift into the next syllable, thereby breaking the nasal vowel.

The nasal vowel [ɛ̃] is almost always written as <in> (or <im> when followed by *p* or *b*). This vowel can appear in all positions within a word, and its graphemic distribution is as follows (Elsaadani, 2022, p. 63):

Table 1. The Nasal Vowel [ɛ̃] — Graphemic Distribution Patterns

Grapheme	Word-initial position	Word-medial position	Word-final position
in	<i>Inviter [ɛ̃vite]</i>	<i>Pincer [pɛ̃se]</i>	<i>Vin [vɛ̃]</i>
yn		<i>Syndicat [sɛ̃dika]</i>	
im	<i>Impossible [ɛ̃posibl]</i>	<i>Simplicité [sɛ̃plisite]</i>	
ym		<i>Symphonie [sɛ̃foni]</i>	<i>Thym [tɛ̃]</i>
ain	<i>Ainsi [ɛ̃si]</i>	<i>Vaincu [vɛ̃ky]</i>	<i>Pain [pɛ̃]</i>
aim			<i>Faim [fɛ̃]</i>
ein		<i>Teinté [tɛ̃te]</i>	<i>Plein [plɛ̃]</i>
eim		<i>Reims [rɛ̃:s]</i>	
éen			<i>Européen [øropɛ̃]</i>
ien		<i>Bientôt [bjɛ̃to]</i>	<i>Bien [bjɛ̃]</i>
yen			<i>Moyen [mwajɛ̃]</i>
oin	<i>Oindre [wɛ̃dr]</i>	<i>Coincer [kwɛ̃se]</i>	<i>Coin [kwɛ̃]</i>

4.1 The [œ̃] Nasal Vowel

The nasal vowel [œ̃] is almost always written with <un>. We have also observed that nasalized vowels slightly differ in formant frequency when compared to oral vowels. These frequency shifts are usually



reinforced for nasal vowels. This is essentially true for front nasals ([ɛ̃], [œ̃]) (de Boer, Islam, & Charis, 2023, p. 3).

Table 2. The Nasal Vowel [œ̃] — Graphemic Distribution Patterns

Grapheme	Word-initial position	Word-medial position	Word-final position
un	<i>Un</i> [œ̃]	<i>Lundi</i> [lœ̃di]	<i>Aucun</i> [okœ̃]
um	<i>Humble</i> [œ̃bl]		<i>Parfum</i> [parfœ̃]

4.2 The [ɔ̃] Nasal Vowel

The nasal vowel [ɔ̃] can occur in all word positions (initial, medial, and final). Its graphemic distribution is presented as follows:

Table 3. Distribution of the Nasal Vowel [ɔ̃]

Grapheme	Word-initial position	Word-medial position	Word-final position
on	<i>Onde</i> [ɔ̃d]	<i>Ronde</i> [rɔ̃d]	<i>Ton</i> [tɔ̃]
om + p/b		<i>Pompe</i> [pɔ̃p]	<i>Rompt</i> [rɔ̃]
om + b	<i>Ombre</i> [ɔ̃br]	<i>Bombe</i> [bɔ̃b]	<i>Plomb</i> [plɔ̃]

4.3 The [ɑ̃] Nasal Vowel

The nasal vowel [ɑ̃] can occur in all word positions (initial, medial, and final). Its graphemic distribution is presented as follows:

Table 4. Distribution of the Nasal Vowel [ɑ̃]

Grapheme	Word-initial position	Word-medial position	Word-final position
<en>	<i>Entrer</i> [ɑ̃tre]	<i>Lentement</i> [lɑ̃tmɑ̃]	<i>Lent</i> [lɑ̃]
 + p/b	<i>Emporter</i> [ɑ̃pɔ̃rte] <i>Embrasser</i> [ɑ̃brase]	<i>Temple</i> [tɑ̃pl]	<i>Temps</i> [tɑ̃]
<an>	<i>Ancre</i> [ɑ̃kr]	<i>Dangers</i> [dɑ̃ʒe]	<i>Dans</i> [dɑ̃]
<am> + p/b	<i>Ampoule</i> [ɑ̃pul] <i>Ambulance</i> [ɑ̃bylɑ̃:s]	<i>Lampe</i> [lɑ̃p] <i>Jambe</i> [ʒɑ̃b]	<i>Adam</i> [adɑ̃]
<aen>			<i>Caen</i> [kɑ̃]
<aon>			<i>Paon</i> [pɑ̃]



Detailed tables above illustrate the distribution of [ɛ̃], [œ̃], [ɔ̃], and [ɑ̃] across different graphemic contexts.

5. Comparative Note with Portuguese

For Portuguese speakers, French nasal vowels are less nasalized. Unlike Portuguese, French nasal vowels do not require complete nasal blockage; air flows freely through both mouth and nose, with the tongue remaining low (Kamoun, 2016, p. 99). Thus, French nasalization is softer and less resonant. The author explains that nasal vowels in French are produced with a weaker nasal resonance compared to Portuguese. In the French variant, air flows freely through both the mouth and nose, without complete nasal closure and without the tongue pressing against the palate.

In nasal vowels, air passes partially through both the nose and mouth, while the tip of the tongue remains lowered. In oral vowels followed by *n*, airflow is directed exclusively through the mouth. For the consonant [n], the tip of the tongue rises to the palate. Examples illustrating nasal/oral contrasts in French morphology include: *Il y a des voisins* — *Il y a des voisines*; *Il y a des Parisiens* — *Il y a des Parisiennes*; *Il y a des paysans* — *Il y a des paysannes* (Charliac, Thierry, Loreil, & Motron, 2003, p. 118).

6. Conclusion

Our investigation into the phonetic and phonological system of French once again confirms that nasal vowels constitute some of the most complex yet fundamental components ensuring the structural integrity of the language. The findings of this study can be summarized under the following key points.

Articulatory uniqueness: As observed, the mechanism of nasal vowel production is based on the lowering of the soft palate and the division of airflow between the oral and nasal cavities. This specific physiological process endows French with a distinctive timbre and acoustic richness that sharply differentiates it from other languages.

Phonological value: Our analysis demonstrates that nasal vowels in French are not merely pronunciation variants but independent phonemes with distinctive (meaning-differentiating) functions. The minimal pairs presented (e.g., *beau* vs. *bon*) clearly show that incorrect articulation of these sounds can damage the semantic structure of the language and lead to serious communicative misunderstandings.

Dynamic development and neutralization: The phonological system of French is not static but subject to transformation over time. In particular, the gradual neutralization of the distinction between [œ̃] and [ɛ̃] in contemporary Parisian French illustrates the tendency of the language toward simplification, in line with the principle of economy. This phenomenon should be regarded as one of the most relevant directions for current linguistic research.

Practical significance: The orthographic representation of nasal vowels and the phenomenon of denasalization remain among the most challenging aspects for learners of French as a foreign language. The phonetic principles and rules outlined in this study can serve as an important resource both for theoretical understanding and for the scientific development of accurate pronunciation habits.

Due to the complications of inferring nasal vowels' oro-pharyngeal shape from acoustics, direct measurement of the oropharyngeal shape has remained of considerable interest to articulatory and acoustic phoneticians. Accurate measurement of oropharyngeal shape in nasal vowels has implications for both



diachronic and synchronic studies of human language (Carignan, Shosted, Fu, Liang, & Sutton, 2015, p. 35).

In conclusion, the system of nasal vowels in French stands as a clear example of the language's centuries-long historical evolution and aesthetic refinement. Deepening research in this field — particularly through laboratory analysis of acoustic changes in modern dialects — opens broad and promising horizons for future linguistic inquiry.

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