

THE FORMATION OF PHONETIC/PHONOLOGICAL UNITS IN NON-RELATED LANGUAGES

Azimova Dilobarxon Berdiali qizi
dilobarkhonazimova@gmail.com
Kokand University

Abstract: The formation and organization of phonetic and phonological units represent fundamental problems in comparative linguistics and phonological typology. Although human languages employ broadly comparable articulatory and perceptual resources, individual languages organize these resources into phonological systems in different ways. This article examines the formation of phonetic and phonological units in non-related languages, focusing on segmental units, syllables, phonological words, stress, tone, and intonation. The study is based on a comparative analysis of theoretical and typological literature in phonetics and phonology. Particular attention is given to the relationship between phonetic substance and phonological structure, the role of distinctive features, and the influence of language-specific organization on the formation of linguistic units. The analysis demonstrates that phonetic units arise from articulatory and acoustic properties of speech, whereas phonological units emerge through the categorization and functional organization of these properties within a particular language system. Cross-linguistic comparison shows that languages may employ similar phonetic resources but assign them different phonological functions. Consequently, the study of non-related languages provides important evidence for distinguishing universal tendencies from language-specific structures and for understanding the interaction between phonetics and phonology.

Keywords: phonetics, phonology, phonological units, phonetic units, non-related languages, phoneme, syllable, stress, tone, intonation, linguistic typology

Introduction

Phonetics and phonology occupy a central position in linguistic theory because they investigate the sound structure of human language from complementary perspectives. Phonetics examines the physical properties of speech sounds, including their articulation, acoustic characteristics, and perception, whereas phonology investigates how languages organize speech sounds into functional systems. The distinction is particularly important in comparative research because languages may use similar physical sounds while assigning them different linguistic functions. The study of phonological units in genetically unrelated languages is therefore significant for identifying both universal and language-specific properties of human speech. Cross-linguistic phonetic research has demonstrated that languages share a number of

recurring articulatory and acoustic tendencies, while simultaneously displaying substantial variation. Chodroff (2025), reviewing research on phonetic universals, notes that cross-linguistic phonetics investigates dimensions along which languages show both stability and variation and that increasing multilingual speech resources have expanded opportunities for comparative investigation. The concept of the phoneme is traditionally regarded as one of the fundamental units of phonology. A phoneme is an abstract linguistic category whose members can be realized through different phonetic forms. Thus, the physical realization of a sound and its phonological status cannot always be treated as identical. Ladefoged's work emphasizes that phonological features are not necessarily in a one-to-one relationship with phonetic parameters, demonstrating the importance of distinguishing phonetic realization from phonological representation (Ladefoged, 2026). Distinctive features constitute another important level in the formation of phonological units. Features such as [$\pm$ voice], [$\pm$ nasal], place of articulation, manner of articulation, and vowel properties provide a means of describing contrasts between phonological segments. The theory of distinctive features has played an important role in phonological analysis since the work of the Prague School and later developments by Jakobson, Fant, Halle, and Chomsky and Halle.

However, phonological organization extends beyond individual segments. Languages organize consonants and vowels into syllables, syllables into larger prosodic units, and these units into words and phrases. Prosodic phenomena such as stress, tone, rhythm, and intonation are especially important in cross-linguistic comparison. For example, Hyman (2006) demonstrates that languages differ in the organization of word-level prosody and that tone and stress represent distinct but potentially interacting types of prosodic systems.

The comparison of non-related languages is particularly valuable because similarities cannot simply be attributed to common genetic inheritance. When unrelated languages display similar phonological structures, such similarities may reflect universal properties of speech production and perception, language contact, functional pressures, or independent historical development. Conversely, significant differences can demonstrate how individual linguistic systems categorize and organize the available phonetic material. The purpose of this article is therefore to investigate the formation of phonetic and phonological units in non-related languages and to identify major similarities and differences in their organization. The study focuses on segmental units, syllable structure, prosodic units, stress, tone, and intonation.

Methods

The research employed a comparative-descriptive method and a theoretical literature-review approach. The analysis was based on established works in phonetics,

phonology, and linguistic typology together with recent research concerning cross-linguistic phonetic variation.

The literature was selected according to four principal criteria:

1. studies dealing with the relationship between phonetic and phonological structure;
2. works addressing distinctive features and phoneme inventories;
3. research concerning cross-linguistic variation in syllable and prosodic structure;
4. studies examining stress, tone, and other suprasegmental phenomena across languages.

The analysis was organized into several levels of phonological organization:

- phonetic parameters and speech sounds;
- phonological segments and phonemes;
- syllables;
- phonological words and prosodic units;
- stress and accent;
- tone and intonation.

The term *non-related languages* is used here to refer primarily to languages that do not belong to the same established genetic family. Examples from typologically different languages are used to illustrate how similar phonetic resources may be organized differently at the phonological level.

The comparative analysis does not attempt to establish a complete typology of all world languages. Instead, it examines selected principles that demonstrate the relationship between universal phonetic properties and language-specific phonological organization.

Results

Phonetic substance and phonological organization. The first result of the comparative analysis concerns the distinction between phonetic substance and phonological structure. Speech sounds are produced through the coordinated activity of the respiratory, laryngeal, and articulatory systems. Their physical properties can be described using parameters such as place and manner of articulation, voicing, duration, fundamental frequency, intensity, and formant structure. However, the presence of a particular phonetic property does not necessarily mean that it represents an independent phonological contrast. A physical difference can be linguistically meaningful in one language but non-contrastive in another. This distinction is fundamental to the analysis of non-related languages.

For example, aspiration provides a useful illustration. In some languages, aspiration can distinguish phonemes, whereas in others it may be a predictable phonetic realization of a particular consonant in a particular environment. Cross-linguistic

phonological analysis therefore cannot be based solely on acoustic or articulatory differences. As typological research emphasizes, phonological inventories need to be examined in relation to their phonetic realization.

Ladefoged (2009) similarly argues that phonological features and their phonetic correlates cannot simply be treated as identical. Phonetic classifications describe properties of actual speech sounds, while phonological representations organize those properties according to the structural requirements of individual languages. Consequently, the formation of phonological units can be understood as a process of linguistic categorization. Speakers perceive a continuous range of acoustic signals but organize them into categories that are relevant to their language.

Formation of phonemes and distinctive contrasts. The phoneme represents a higher level of abstraction than an individual phonetic realization. A phoneme can have several phonetic realizations depending on phonological or phonetic context. The organization of phoneme inventories varies considerably among languages. Some languages possess relatively small consonant and vowel inventories, while others distinguish a much larger number of segments. Moreover, the same phonetic dimensions may participate in different contrasts. Distinctive features provide a systematic way of representing these contrasts. Place of articulation, manner, voicing, nasality, vowel height, vowel backness, and lip rounding may participate in phonological oppositions. Modern research continues to investigate how articulatory and acoustic parameters relate to the representation of lexical distinctions. Ladefoged (2026), for example, discusses the relationship between articulatory properties and distinctive features and emphasizes that the possible combinations of features are subject to structural constraints. The comparison of genetically unrelated languages demonstrates that phonological categories are not simply direct copies of physical sound properties. Rather, each linguistic system selects and organizes contrasts according to its own phonological structure.

The syllable represents another important level in phonological organization. In many languages, syllables are constructed from an onset, nucleus, and coda, although the presence and complexity of these components vary. The nucleus is frequently associated with a vowel or another sonorous segment, while consonants may occur before and after the nucleus. However, syllable structures differ substantially across languages. Some languages permit complex consonant clusters, while others restrict syllables to relatively simple consonant-vowel combinations.

The syllable is particularly important because it frequently functions as the domain of prosodic processes. Stress may be assigned to syllables, tones may be associated with syllables, and phonotactic restrictions may determine which segment combinations are permitted within a syllable. Cross-linguistic comparison therefore shows that the syllable cannot be defined solely in articulatory terms. Its structure is

simultaneously influenced by phonetic properties, phonological constraints, and prosodic organization.

Stress and prosodic organization. Stress is one of the most important suprasegmental phenomena in language. It may be expressed through combinations of increased duration, intensity, pitch, and vowel quality. However, the relative contribution of these correlates differs among languages. For instance, research on Australian languages has shown that languages with similar phonological stress patterns may nevertheless display substantial phonetic variation in the acoustic realization of stress. Babinski (2026) reports that high fundamental frequency and increased vowel duration are common correlates of initial stress in the Australian languages examined, while consonantal lengthening also occurs in some cases. This evidence illustrates an important principle: phonological similarity does not necessarily entail phonetic identity. Two languages may classify stress similarly at the phonological level while implementing it through different combinations of acoustic parameters. The relationship between stress and tone also varies cross-linguistically. Hyman (2006) distinguishes tone and stress-accent systems while noting that languages can combine properties associated with these systems.

Therefore, stress should not be understood as a universal phenomenon with a single phonetic realization. Its formation and interpretation depend on the organization of the individual language.

Tone and intonation

Tone provides one of the clearest examples of the difference between phonetic pitch and phonological function. All speakers produce changes in fundamental frequency, but not every language uses pitch contrasts to distinguish lexical meaning.

In tone languages, pitch patterns may be associated with syllables or other linguistic units and can contribute directly to lexical contrasts. In non-tone languages, pitch may instead function primarily in intonation, information structure, or pragmatic interpretation. Gussenhoven (2004) emphasizes that stress, tone, accent, and intonation are all suprasegmental phenomena but are not equivalent categories. Their linguistic functions and structural properties differ across languages. This distinction is particularly important when comparing non-related languages. A similar acoustic movement in fundamental frequency can have different linguistic meanings depending on the language. In one system, it may distinguish lexical items; in another, it may signal sentence type or discourse-related information.

Phonological word and larger prosodic units

Phonological organization continues above the syllable level. Syllables can form feet, phonological words, phrases, and intonation groups. These units are not necessarily identical to grammatical words. Cross-linguistic research demonstrates that prosodic criteria such as stress placement, tone distribution, rhythm, and phonological

processes can contribute to identifying phonological words. Dixon and Aikhenvald's cross-linguistic discussion shows that stress can serve as one criterion for identifying phonological words in many languages, although it is not universally sufficient. Thus, the formation of phonological units should be viewed as a hierarchical process. Smaller units participate in larger structures, while language-specific rules determine how these units are organized.

Discussion

The results demonstrate that phonetic and phonological units in non-related languages are formed through the interaction of universal physical properties and language-specific structural principles. At the phonetic level, human languages draw upon a common physiological system. Speakers use the vocal tract, larynx, respiratory system, and auditory-perceptual mechanisms available to humans. Consequently, certain articulatory and acoustic patterns recur across languages. Recent work on phonetic universals confirms the existence of strong cross-linguistic tendencies while also emphasizing considerable variation. At the phonological level, however, languages differ in how they categorize these physical properties. A phonetic difference may be contrastive in one language and predictable in another. Similarly, duration, pitch, intensity, and vowel quality can perform different linguistic functions depending on the language.

This observation has important consequences for the comparative study of unrelated languages. Researchers should avoid assuming that formally similar sounds necessarily constitute equivalent phonological units. Instead, comparison should proceed through both phonetic measurement and phonological analysis. For example, the vowel inventories of two languages may contain approximately the same number of categories while differing considerably in their acoustic realization. Conversely, languages with different numbers of phonemes may use comparable articulatory dimensions. The same principle applies to consonants, syllables, stress, tone, and intonation. Another important finding concerns the phonetics-phonology interface. The formation of a phonological unit cannot be explained entirely through physical articulation. Phonological categories are abstract linguistic structures that emerge through patterns of contrast, distribution, and functional organization. Ladefoged's recent work reinforces the observation that phonological features do not map directly onto individual phonetic parameters. The analysis also demonstrates that prosodic units deserve particular attention in comparative linguistics. Stress, tone, and intonation operate over different domains and may interact in language-specific ways. Hyman's typological analysis shows that languages can combine properties associated with stress and tone rather than fitting neatly into a single categorical type.

Therefore, a comprehensive theory of phonological-unit formation should incorporate at least three levels:

First, the articulatory-acoustic level, where physical speech events are produced and perceived.

Second, the phonological-categorical level, where speech events are grouped into contrastive units such as phonemes.

Third, the prosodic-structural level, where segments and syllables are organized into larger units such as feet, phonological words, phrases, and intonation groups.

The comparison of non-related languages is particularly useful because it allows researchers to distinguish similarities caused by general properties of human speech from similarities that result from genetic relationship. At the same time, typological comparison must take into account language contact, geographical convergence, historical change, and sampling limitations.

Recent advances in multilingual speech databases and computational phonetics provide new opportunities for such research. Chodroff (2025) notes that the increasing availability of multilingual speech data and speech-processing technologies is creating new possibilities for studying cross-linguistic phonetic variation systematically.

Conclusion

The formation of phonetic and phonological units in non-related languages represents a complex interaction between universal properties of human speech and language-specific systems of categorization. Phonetic units are grounded in articulatory, acoustic, and perceptual properties, whereas phonological units are abstract categories established through contrast and distribution within individual languages.

The comparative analysis demonstrates that phonemes, syllables, stress, tone, intonation, and phonological words can have both universal tendencies and language-specific manifestations. The same phonetic property may perform different linguistic functions in different languages. Consequently, cross-linguistic analysis should distinguish carefully between the physical realization of speech and its phonological organization.

The study of unrelated languages is particularly important for identifying phonological universals and understanding the diversity of human languages. It demonstrates that languages share a common biological and perceptual foundation but construct different systems from that foundation.

Further research should combine acoustic analysis, articulatory investigation, perception experiments, corpus-based research, and comparative typology. Such an integrated approach would provide a more comprehensive understanding of how phonetic events become organized into phonological units and how these units evolve across unrelated linguistic systems.

References

1. Babinski, S. (2026). Stress in Australian languages: A phonetic typology. *Journal of the International Phonetic Association*, 56, e5. <https://doi.org/10.1017/S0025100325100832> (Cambridge University Press)
2. Chodroff, E. (2025). Phonetic universals. *Annual Review of Linguistics*, 11, 251-273. <https://doi.org/10.1146/annurev-linguistics-011724-121511> (Annual Reviews)
3. Dixon, R. M. W., & Aikhenvald, A. Y. (Eds.). (2002). *Word: A cross-linguistic typology*. Cambridge University Press. (Cambridge Assets)
4. Gussenhoven, C. (2004). *The phonology of tone and intonation*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511616983> (Cambridge University Press)
5. Hyman, L. M. (2006). Word-prosodic typology. *Phonology*, 23(2), 225-257. <https://doi.org/10.1017/S0952675706000893> (Cambridge University Press)
6. Ladefoged, P. (2009). Phonological features and their phonetic correlates. *Journal of the International Phonetic Association*. (Cambridge University Press)
7. Ladefoged, P. (2026). Articulatory features for describing lexical distinctions. *Language*. Cambridge University Press. (Cambridge University Press)
8. Ladefoged, P. (2026). What are linguistic sounds made of? *Language*. Cambridge University Press. (Cambridge University Press)
9. Ladefoged, P., & Maddieson, I. (1996). *The sounds of the world's languages*. Blackwell.
10. Trubetzkoy, N. S. (1939). *Grundzüge der Phonologie*. Travaux du Cercle Linguistique de Prague.
11. Chomsky, N., & Halle, M. (1968). *The sound pattern of English*. Harper & Row.