

Fundamentals of

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# PHONETICS

A PRACTICAL GUIDE FOR STUDENTS



Larry H. Small ■ Chao-Yang Lee

Sixth Edition

# Fundamentals of Phonetics

A Practical Guide  
for Students

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*For  
dB*

*—Larry H. Small*

*For  
My family*

*—Chao-Yang Lee*

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# Preface

The idea to create this book began in 1996 out of the need to have a textbook that would provide sufficient practice to facilitate students' learning of phonetics. It is hard to believe that this text has been revised for this sixth edition over twenty-five years later, now coauthored by Larry H. Small and Chao-Yang Lee.

One of the guiding principles followed when creating the first edition was to ensure that anyone could pick up the book and understand the material. This principle has been followed in all subsequent editions. This sixth edition is quite similar to earlier editions in terms of basic layout and organization. Each chapter has been revised with updated material and new exercises. The book is filled with a wealth of exercises to ensure that students become experts in basic phonetic transcription of American English. Answers to most of the exercises can be found in the back of the book so that students can immediately receive feedback on their progress.

It is not possible to learn phonetic transcription without having an abundance of listening exercises. Therefore, audio recordings of many of the exercises are available as Audio Practice files in the eTextbook. Print book users can now access these Audio Practice files by scanning the QR codes printed in the margins next to the exercises. These recordings are essential in helping students learn the subtleties of pronunciation, both in relation to the segmental and suprasegmental characteristics of speech.

## New to This Edition

- Content has been updated throughout the text to highlight the latest phonetic research and theories. Learning objectives and study questions have also been updated to reflect these content changes.
- The postalveolar place of articulation has been added to the consonant phoneme chart in Chapter 5, *Consonants*, to align with the International Phonetic Alphabet. As a result, /ʃ/, /ʒ/, /tʃ/, /dʒ/, and /ɹ/ are now classified as postalveolar instead of palatal consonants. The glottal stop [ʔ] has been removed from the phoneme chart to reflect the allophonic status of the glottal stop.
- A description of the branches of phonetics is now included in Chapter 1 to illustrate the multifaceted nature of phonetics.
- A description of typical phonological development has been included to contextualize the discussion of speech sound disorders in Chapter 8, *Transcription of Speech Sound Disorders*.
- Multiple skin tones have been included in the anatomical figures presented in Chapters 3, 4, and 5 to represent the diversity of human speakers. Person-first language has been used consistently to highlight equity and inclusion.
- Chapter 7, *Connected Speech*, has been reorganized in terms of segmental and suprasegmental aspects of speech instead of assimilatory, non-assimilatory, and suprasegmental aspects.
- The distinction between normal variation in speech and disordered speech has been clarified throughout the book. Normal variation is highlighted as an inherent and natural part of speech, which is shaped by anatomical (Chapter 3), acoustic (Chapter 6), contextual (Chapter 7), developmental (Chapter 8), and regional/social/ethnic (Chapter 9) factors.
- Chapter 9, *Dialectal Variation*, has been revised and updated with current census data relative to the population demographics of the United States.

- Online resources have been updated to include additional websites that should prove beneficial to students' understanding of phonetics.
- References have been updated to reflect current philosophies and best practices in the speech, language, and hearing professions.

## Pearson eTextbook

The Pearson eTextbook is a simple-to-use, mobile-optimized, personalized reading experience. It allows you to easily highlight, take notes, and review key vocabulary all in one place—even when offline. Seamlessly integrated videos and other rich media will engage you and give you access to the help you need, when you need it. To gain access or to sign in to your Pearson eTextbook, visit <https://www.pearson.com/pearson-etext>.

- **Audio Practice Files.** Eighty-five audio practice files are embedded throughout the eTextbook to help you learn the subtleties of pronunciation in relation to characteristics of speech. These audio examples are connected with various practice exercises and transcription assignments throughout the text, providing you with an opportunity to check your understanding and apply what you have learned.
- **Show/Hide.** A show/hide feature within the eTextbook allows you to compare your responses to Exercises (in-chapter) and Review Exercises (end of chapter) to the solutions provided by the authors.
- **Interactive Glossary.** All key terms in the eTextbook are bolded and provide instant access to full glossary definitions, allowing you to quickly build your professional vocabulary as you are reading.

## Instructor's Manual

The Instructor's Manual is provided as a Word document and includes resources to assist professors in planning their course. These resources consist of key terms, learning objectives, answers to end-of-chapter assignments, and a chapter test bank with answer key.

## PowerPoint® Slides

PowerPoint slides are provided for each chapter and highlight key concepts and summarize the content of the text to make it more meaningful for students. Often, these slides also include questions and problems designed to stimulate discussion and to encourage students to elaborate and deepen their understanding of chapter topics.

## Acknowledgments

L. Small

I must thank the Department of Hearing, Speech and Language Sciences at Ohio University (O.U.) for providing the learning environment necessary for me to become knowledgeable in the area of phonetics while still pursuing my doctoral education many years ago. Because of my continued ties to O.U., I have maintained a friendship with Chao-Yang Lee, who agreed to serve as coauthor, bringing an exciting and fresh perspective to the sixth edition. I cannot thank him enough for his contributions.

I would like to thank all the previous Executive Editors with Pearson—Steve Dragin, Ann Davis, and Aileen Pogran—for their support throughout the first five editions. Many thanks to Director of Product Management Drew Bennett, who has been extremely encouraging and obliging throughout the writing of this text. In addition, we want to extend our thanks to the rest of the editorial team for this edition: Developmental Editor Shea Davis, Content Producer Deepali Malhotra, and Senior Product Manager Rebecca Fox-Gieg.

A final thank-you goes to the reviewers for this sixth edition whose contributions greatly assisted us in the editing process: Nina Santus at the University of Georgia, Julia Thomas Swan at San Jose State University, Robert McKinney at San Diego State University, Sandra R. Ciocci at Bridgewater State University, Sonia Manuel-Dupont at Utah State University, and Stefan A. Frisch at Appalachian State University.

C.-Y. Lee

I am grateful to Larry Small for offering me the opportunity to work with him. I am humbled by my promotion from a reader to an author of the textbook that I have used for years. It is all the more meaningful that the book was conceived at Ohio University, where I am a faculty member.

I would like to thank all my students over the years. Their questions, observations, and genuine interest in learning phonetics motivated me to be a better teacher. A special thanks to Faith Fedele for meticulously reviewing all the exercises in the book and discussing numerous transcription choices with me. I am also grateful to my colleagues in the Department of Hearing, Speech and Language Sciences at Ohio University for creating a supportive environment for professional growth.

I was first exposed to phonetic transcription as a middle school student in Taiwan in the 1980s. My English teacher Ms. Wu used the Kenyon and Knott system to teach us pronunciation. As with anything teenagers are required to learn, it didn't feel fun at first. But being able to decipher phonetic symbols opened up a whole new world. I could look up any word in the dictionary and sound it out. I could also use the phonetic symbols to write down the sounds of a word even when I didn't know its meaning. That was really cool. I think it's that sense of awe that motivated me to pursue what I study and teach today. Thank you, Ms. Wu, for getting me started. I am also grateful to my mentors Sheila Blumstein, Phil Lieberman, and Ken Stevens for showing me the breadth, depth, and beauty of phonetic science.



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# Brief Contents

<b>1</b>	Phonetics: A “Sound” Science	1
<b>2</b>	Phonetic Transcription of English	9
<b>3</b>	Anatomy and Physiology of the Speech Mechanism	41
<b>4</b>	Vowels	53
<b>5</b>	Consonants	110
<b>6</b>	Acoustic Characteristics of Vowels and Consonants	170
<b>7</b>	Connected Speech	199
<b>8</b>	Transcription of Speech Sound Disorders	236
<b>9</b>	Dialectal Variation	282
	References	329
	Answers to Questions	333
	Appendix	379
	Glossary	381
	Index	387

# Contents

Preface	v
<b>1</b> Phonetics: A “Sound” Science	<b>1</b>
Learning Objectives	1
Phonetics and the International Phonetic Alphabet	1
Variation in Phonetic Practice	4
The IPA and Unicode Fonts	6
Chapter Summary	7
Study Questions	8
Online Resources	8
<b>2</b> Phonetic Transcription of English	<b>9</b>
Learning Objectives	9
The Differences Between Spelling and Sound	10
Morphemes, Phonemes, and Allophones	13
Syllables and Their Components	20
Primary Word Stress	25
Broad Versus Narrow and Systematic Versus Impressionistic Transcription	31
Chapter Summary	32
Review Exercises	32
Study Questions	35
Online Resources	36
Assignment 2-1	37
Assignment 2-2	39
<b>3</b> Anatomy and Physiology of the Speech Mechanism	<b>41</b>
Learning Objectives	41
The Respiratory System and Respiration	41
The Laryngeal System and Phonation	43
The Supralaryngeal System and Articulation	45
The Vocal Tract and Resonance	49
Chapter Summary	50
Review Exercises	50
Study Questions	52
Online Resources	52
<b>4</b> Vowels	<b>53</b>
Learning Objectives	53
English Vowel and Diphthong Production	53
Transcription of English Vowels and Diphthongs	57
Chapter Summary	96
Review Exercises	96
Study Questions	101

Online Resources	101
Assignment 4-1	103
Assignment 4-2	105
Assignment 4-3	107
Assignment 4-4	109
<b>5 Consonants</b>	<b>110</b>
Learning Objectives	110
Consonants Versus Vowels	110
Production of English Consonants: Manner, Place, and Voicing	112
Transcription of the English Consonants	114
Chapter Summary	151
Review Exercises	151
Study Questions	155
Online Resources	155
Assignment 5-1	157
Assignment 5-2	159
Assignment 5-3	161
Assignment 5-4	163
Assignment 5-5	165
Assignment 5-6	167
Assignment 5-7	169
<b>6 Acoustic Characteristics of Vowels and Consonants</b>	<b>170</b>
Learning Objectives	170
Time, Frequency, and Intensity	171
Acoustic Characteristics of Vowels and Diphthongs	174
Acoustic Characteristics of Consonants	179
Clinical Application	192
Chapter Summary	194
Review Exercises	195
Study Questions	198
Online Resources	198
<b>7 Connected Speech</b>	<b>199</b>
Learning Objectives	199
Segmental Modifications of Words in Connected Speech	200
Suprasegmental Aspects of Speech	208
Chapter Summary	221
Review Exercises	221
Study Questions	228
Online Resources	228
Assignment 7-1	229
Assignment 7-2	231
Assignment 7-3	233
Assignment 7-4	235
<b>8 Transcription of Speech Sound Disorders</b>	<b>236</b>
Learning Objectives	236
Typical Phonological Development	237
Phonological Processes	240

Using Diacritics to Transcribe Typical and Disordered Speech	250
Using Non-English Phonemes to Transcribe Typical and Disordered Speech in English	261
Suggestions for Increasing Accuracy in Phonetic Transcription	266
Chapter Summary	267
Review Exercises	268
Study Questions	271
Online Resources	272
Assignment 8-1	273
Assignment 8-2	275
Assignment 8-3	277
Assignment 8-4	279
<b>9 Dialectal Variation</b>	<b>282</b>
Learning Objectives	282
Formal and Informal Standard American English	282
Defining Regional Dialects	285
Social and Ethnic Dialects	295
Learning English as a Second Language	298
Accent Modification with English Language Learners	313
Chapter Summary	314
Review Exercises	315
Study Questions	324
Online Resources	324
Assignment 9-1	325
References	329
Answers to Questions	333
Appendix	379
Glossary	381
Index	387

# Chapter 1

# Phonetics: A “Sound” Science



## Learning Objectives

*After reading this chapter, you will be able to:*

- 1.1** Explain the importance of the study of phonetics and the International Phonetic Alphabet (IPA).
- 1.2** State the reasons for variation in phonetic transcription practice.
- 1.3** State the benefits of using a Unicode font for phonetic transcription.

## Phonetics and the International Phonetic Alphabet

**Learning Objective 1.1** Explain the importance of the study of phonetics and the International Phonetic Alphabet (IPA).

As adults, you are all familiar with the speaking process. Speaking is something you do every day. In fact, most people find speech to be quite automatic. It is safe to say that most of us are experts at speaking. We probably have been experts since the time we were 3 or 4 years old. Yet we never really think about the process of speech. We do not, as a rule, sit around thinking about how ideas are formed and how their encoded forms are sent from the brain to the anatomical structures responsible for speech production, such as the teeth, lips, and tongue. Nor do we think about how these anatomical structures (or articulators) move in synchrony to form words. Think about the last party you attended. You probably did not debate the intricacies of the speech process while conversing with friends. Speaking is something we learned during infancy, and we take the entire process for granted. We are not aware of the speech process; it is involuntary—so involuntary that we often are not conscious of what we have said until after we have said it. Those of you who have “stuck your foot in your mouth” know exactly how automatic the speech process is. Often we have said things and we have no idea why we said them.

**Phonetics** is the study of the production and perception of speech sounds. During your study of phonetics, you will begin to think about the process of speech production. You will learn how speech is formulated by our articulators. You also will learn how individual speech sounds are created and how they are combined during the speech process to form syllables and words. You will need to learn to *listen* to the speech patterns of words and sentences to become familiar with the sounds of speech that comprise spoken language. A large part of any course in phonetics also involves how speech sounds are transcribed, or written. Therefore, you also will be learning a new alphabet that will enable you to transcribe speech

sounds. This alphabet, the **International Phonetic Alphabet (IPA)**, is different from most alphabets because it is designed to represent the *sounds* of words, not their spellings. Without such a systematic phonetic alphabet, it would be virtually impossible to capture on paper an accurate representation of the speech sound disorders of individuals seeking professional remediation. Using the IPA also permits consistency among professionals in their transcription of typical or atypical speech.

Phonetics is a multifaceted field of study, containing several interrelated branches. **Historical phonetics** involves the study of sound changes in words. There is a constant mutation over time in the pronunciation of words in all languages. The way we pronounce words in English today is vastly different from the pronunciation of English from 300 to 1700 CE. For instance, between the 14th and 17th centuries, there was a marked evolution in the pronunciation of English long vowels. This change in vowel pronunciation is known as the Great Vowel Shift. Due to this shift in vowel pronunciation, the words we know today as “bite,” “beet,” “bait,” and “boot” were pronounced (prior to 1700 CE) as “beet,” “bait,” “bet,” and “boat,” respectively (Stevick, 1968).

When saying a word, such as “phonetics,” there is an intricate interaction between the lips, the tongue, and the other speech articulators. To more fully understand the process of speech production, it is important to understand the individual role of each of the various speech articulators. **Physiological phonetics** involves the study of the function of the speech anatomy during the process of speaking. The knowledge of the muscles and innervation of the speech anatomy is especially important in fully understanding their operation during the production of speech. **Acoustic phonetics**, on the other hand, focuses on the differences in the frequency, intensity, and duration of the various consonants and vowels. Differences in the acoustic attributes of speech sounds allow listeners to be able to perceive how sounds, syllables, and words differ from one another. For instance, it is the specific acoustic attributes of the initial consonants in the words “mug,” “hug,” “rug,” and “thug” that allow listeners to tell them apart. **Perceptual phonetics** is the study of a listener’s psychoacoustic response (perception) of speech sounds in terms of loudness, pitch, perceived length, and quality. **Experimental phonetics** involves the laboratory study of physiological, acoustic, and perceptual phonetics. Laboratory equipment is used to measure the various attributes of the speech mechanism during speech production as well as to measure the acoustic characteristics of speech. The scope of **clinical phonetics** involves the study and transcription of aberrant speech behaviors, that is, those that vary from what is considered to be “normal” or typical speech. Disordered speech may be found in either children or adults who might have experienced a hearing impairment, fluency disorder, head trauma, stroke, or speech sound disorder.

Considering the breadth and depth of phonetics, the focus of this introductory book is on how foundational knowledge of these interrelated branches can facilitate your learning of phonetic transcription. Some of these branches are discussed in independent chapters (physiological phonetics in Chapter 3, acoustic phonetics in Chapter 6, and clinical phonetics in Chapter 8), whereas information about other branches is infused into the remaining chapters.

Another “sound” science related to phonetics is **phonology**. Phonology is the systematic organization of speech sounds in the production of language. The major distinction between the fields of phonetics and phonology is that *phonetics* focuses on the study of speech sounds, their acoustic and perceptual characteristics, and how they are produced by the speech structures. *Phonology* focuses on the linguistic (phonological) rules that are used to specify the manner in which speech sounds are organized and combined into meaningful units, which are then combined to form syllables, words, and sentences. Phonological rules, along with syntactic/morphological rules (for grammar), semantic rules (for utterance meaning), and pragmatic rules (for language use), are the major rule systems used in production of language.

The idea of studying speech sounds may be an odd idea to understand at first. We generally think about words in terms of how they appear in print or how they

are spelled. We usually do not take the time to stop and think about how words are spoken and how spoken words sound to a listener. Look at the word “phone” for a moment. What comes to mind? You might consider the fact that it contains the five letters: p-h-o-n-e. Or you might think of its definition. You probably did not say to yourself that there are only three speech sounds in the word (“f”-“o”-“n”). The reason you do not consider the sound patterns of words when reading is simple—it is not something you do daily. Nor is it something you were taught to do. In fact, talking about the sound patterns of words and being able to transcribe them is an arduous task; it requires considerable practice. Let’s try another example. How many speech sounds do you think there are in the word “street”? If you answered five, you are correct.

As you will soon find out, the way you believe a word sounds may not be the way it sounds at all. First, it is difficult to forget our notions of how a word is spelled. Second, our conception of how a word sounds is usually wrong. Consider the greeting “How are you doing?” We rarely ask this question with such formality. Most likely, we would say “How ya doin’?” What happens to the word “are” in this informal version? It disappears! Now examine the pronunciation of the words “do” and “you” in “Whatcha want?” (the informal version of “What do you want?”). Neither of these words is spoken in any recognizable form. Actually, these words become the non-English word “cha” in “whatcha.” With these examples, you can begin to understand the importance of thinking about the sounds of speech in order to be able to discuss and transcribe speech patterns.

### Exercise 1.1

The expressions below are written two separate ways: (1) formally and (2) casually. Examine the differences between the two versions. What happens to the production of the *individual* words in the casual version?

#### Formal

1. Are you going to eat now?
2. Can’t you see her?
3. Did you go?

#### Casual

- Ya gonna eat now?  
Cantcha see ’er?  
Ja go?

Phonetics is a skill-based course much like taking a foreign language or sign language course. In many ways, it is like learning a new language because as you learn the IPA, you will be learning new symbols and new rules to represent spoken language. However, the new symbols you will be learning are representative of the *sounds* of English, *not their spelling*. As with the learning of any new language, phonetics requires considerable practice in order for you to become proficient in its use when transcribing speech patterns. This text is designed to promote practice of phonetic transcription principles.

At the beginning of each chapter, several *Learning Objectives* are listed. By reading through the Learning Objectives, you will have a clear idea of the material contained in each chapter and what you should expect to learn as you read through the text and complete the exercises. *Chapter Summaries* at the end of each chapter provide a summary of the *Learning Objectives* in a bulleted format.

By now you may have noticed that exercises are embedded in the text. It is important that you complete the exercises as you go along instead of waiting until after you have completed the chapter. These exercises emphasize particular points by highlighting the material you just completed, thereby assisting in the learning process. If you are unsure of an answer, simply look in the back of the text for assistance in completing the embedded exercises.

At the end of each chapter, you will find a series of *Review Exercises* so that you may gain expertise with the material presented. The Review Exercises help



drive home much of the material discussed in each chapter. All of the answers to the Review Exercises are located at the back of the book. Similar to the embedded exercises, providing the correct answers for the Review Exercises will give you immediate feedback, helping you learn from your mistakes. There is no better way to learn! To aid in the learning process, all new terms are in bold letters the first time they are used. In addition, all new terms are located in the *Glossary* at the back of the book.

*Study Questions* at the end of each chapter will help you explore the major concepts presented. *Online Resources* also are provided to supplement the material presented in the text. *Assignments* at the end of the chapters were designed to be collected by your instructor to test your comprehension of the material. Therefore, the answers for Assignments are not given in the text.

Several conventions are adopted throughout the text. When there is a reference to a particular Roman alphabet letter, it is enclosed with a set of quotation marks: for example, the letter “m.” Likewise, references to a particular word are also enclosed with quotation marks: for example, “mail.” Individual speech sounds are referenced with the traditional slash marks: for example, the /m/ sound. When a word and its transcription are given together, they appear in the following format: “mail” /meɪl/.

*Audio Practice* files provide a wide range of listening exercises to accompany the text. Clinical practice generally requires phonetic transcription of recorded speech samples. Reading words on paper and transcribing them is not the same as transcribing spoken words. The Audio Practice files are designed to increase your listening skills and your ability to transcribe spoken English. Exercises requiring the Audio Practice files are indicated with a speaker icon in the text. The speaker icon will alert you to the presence of an audio file in order to complete the exercise.

## Variation in Phonetic Practice

**Learning Objective 1.2** State the reasons for variation in phonetic transcription practice.

Although the IPA was developed for consistency, not everyone transcribes speech in the same manner. The IPA does allow for some flexibility in actual practice. If you were to pick up another phonetics textbook, you would notice some definite differences in transcription symbols. Therefore, alternate transcription schemes are introduced throughout this text.

One reason transcription practice differs from individual to individual is due to personal habit or the method learned. For instance, the word “or” (or “oar”) could be transcribed reliably in all of the following ways:

/ɔɪ/, /oɪ/, /ɔɹ/, /oɹ/, /ɔ̃ɹ/

All of these forms have appeared in other phonetics textbooks and have been adopted by professionals through the years.

Several years ago I (the first author LHS) was assigned to a jury trial that lasted two weeks. Due to the length of the trial, the judge allowed us to take notes. So that no one could read my notes, I decided to use the IPA! Because I had to write quickly, my transcription habits changed. At the beginning of the trial, I transcribed the word “or” as /ɔɹ/ due to personal preference. By the middle of the trial, I had switched to /ɔɪ/, simply because it was easier to write and more time efficient.

Another difference in ease of use of transcription symbols involves the symbol /r/, traditionally used to transcribe the initial sound in the word “red.” According to the IPA, this sound actually should be transcribed with the symbol /ɹ/. The IPA symbol /r/ represents a *trill*, a sound found in Spanish and other languages but not part of the English speech sound system. Because /r/ and /ɹ/ both do not exist in English, /r/ often is substituted simply because it is easier to write. In previous editions of this text, /r/ was used to represent “r” sounds in English words. However, with the ever-increasing number of Spanish speakers in the United States,

it has become increasingly important that these two symbols remain distinct; that is, /r/ should be reserved for trills, and /ɹ/ should be reserved for “r” sounds, as in the words “red,” “around,” and “street.” Therefore, in this edition, /ɹ/ is used to represent English “r” sounds.

As future speech and hearing professionals, you will be using the IPA to transcribe clients with speech sound disorders. Because the IPA was not originally designed for this purpose, clinicians have varied in their choice of symbols in transcription of speech sound disorders. In 1990, an extended set of phonetic symbols (known as the extIPA) was created as a supplement to the IPA to provide a more standard method for transcription of speech sound disorders (refer to Chapter 8). Similar to the original IPA, the extIPA has not been used consistently among phoneticians, linguists, and speech and hearing professionals.

Is one method of transcription “better” or more correct than another? Some linguists and phoneticians might argue that one form is superior to another based on linguistic, phonological, or acoustic theory. The form of transcription you adopt is not important as long as you understand the underlying rationale for your choice of symbols. In addition, you need to make sure that you are consistent and accurate in the use of the symbols you adopt. Throughout this text, variant transcriptions are introduced to increase your familiarity with the different symbols you may encounter in actual clinical practice in the future.

## A Note on Pronunciation and Dialect

As you read this text and as you attempt to answer the various exercises, please keep in mind that English pronunciation varies depending on individual speaking style as well as on **dialect**.

Individual speaking style is determined by a person’s physical characteristics, conversational purpose, and emotional state. Just as the meaning of a written word can be conveyed by fonts of different sizes, colors, or shapes, the meaning of a spoken word can be conveyed by sounds produced with different speaking styles. For instance, the word “phonetics” may be pronounced with a higher pitch and longer length by one speaker but a lower pitch and shorter length by another speaker. These variations are perfectly natural and acceptable as long as speakers of the language understand the meaning of the word.

A dialect is a variation of speech or language based on geographical area, native language background, and social or racial-ethnic group membership. Dialect involves not only pronunciation of words but also grammar (syntax) and vocabulary usage. As you will learn in Chapter 9, there is no one fixed standard of English in the United States as is the case in other countries. Instead, Americans speak several different varieties of English depending on the region of the country in which they live. Additionally, dialects such as African American English and Mexican American English have particularly strong ties to racial-ethnic group membership even though regional variations do exist among these dialects. The population of the United States contains many foreign-born residents who have learned English as a second language. The dialect of English spoken by foreign-born individuals is affected, at least in part, by their native language. This is because other languages have a different set of speech sounds than those of English. There are sounds that are present in English that are not present in other languages, and vice versa. For example, English has 14 vowels, whereas Spanish has only five vowels. Therefore, when a native Spanish speaker is learning English, it is not uncommon for the speaker to substitute one of the five Spanish vowels for an English vowel that does not exist in the Spanish vowel system, contributing to the person’s “accent.” Similarly, Spanish vowels produced by a native English speaker are likely to be “accented” because of the influence of the English vowels. Research on second-language speech learning shows that the influence of native language is systematic and predictable, but the degree of the influence varies across individual speakers (Wayland, 2021).

Knowledge of individual and dialectal variations is one of the many benefits of learning phonetics. The knowledge helps you identify your own dialect, develop speech sound awareness, and appreciate linguistic diversity. Knowledge of dialects

is also extremely important when establishing a treatment plan for individuals with a communication deficit and whose speech patterns reflect regional or racial-ethnic dialectal variation. Because a dialect should not be considered a substandard form of English, a speech-language pathologist should be concerned only with remediation of clients’ speech sound errors, not their dialects.

The pronunciations used in this text often reflect the first author’s (LHS) Midwest (northern Ohio) pronunciation patterns. This does not mean that alternate pronunciations are wrong! The numerous text and recorded examples, as well as the answer key, may not be indicative of the way *you* pronounce a particular word or sentence. Always check with your instructor for alternate pronunciations of the materials found in this text and in the Audio Practice files.

## The IPA and Unicode Fonts

**Learning Objective 1.3** State the benefits of using a Unicode font for phonetic transcription.

Historically, the typical typewriter or computer did not lend itself well to the IPA. Some keyboard symbols were routinely substituted for IPA symbols simply because typewriters and computer keyboards did not have keys for many of the IPA symbols. For example, the word “dot” was typically transcribed (i.e., typed) as /dat/ instead of the correct form /dɑt/ because it simply was not possible to type the vowel symbol /ɑ/.

You may not know it, but you already have the ability to type IPA symbols with one of the fonts located on your computer. In 1991, the Unicode Consortium was established to develop a universal character set that would represent all of the world’s languages. The consortium continues to publish the Unicode Standard, which in its most recent version—version 15.0.1—covers virtually all of the characters of all the languages of the world, including several character sets for the IPA. In addition, there are character sets for currency symbols, braille patterns, geometric shapes, musical symbols, mathematical symbols, and even emojis.

Version 15.0.1 of the Unicode Standard contains a total of 149,813 characters, including 627 new characters when compared to the previous version of the standard. Each character is mapped to a unique alphanumeric sequence called a *code point*. A code point is a hexadecimal sequence of numbers (0 through 9) and/or letters (“a” through “f”) that uniquely identify each of the characters in the set. Each character also has a unique name. For instance, the code point for the Roman letter “j” is 006A, and its name is “Latin small letter j.” Similarly, the code point for the Greek letter “θ” is 03B8, and its name is “Greek small letter theta.” Since each character in the universal set is linked to an alphanumeric sequence, the word processor and font you select will determine the “look” of each individual character, that is, what appears on your monitor and what is reproduced by your printer. Keep in mind that any one particular Unicode font does not contain all of the code points from the universal set.

The nice thing about Unicode fonts is that they can be used on multiple platforms (e.g., Macintosh, Windows, Linux) and with all word processing software packages. Unicode fonts also can be used when creating HTML documents for online use. In the past, cross-platform fonts did not exist. Also, there was a limit to the number of characters contained in any one font package; most fonts were limited to 256 characters. Fonts of different languages existed separately as well, making it difficult to switch between writing systems in the same document.

Another advantage of using a Unicode font with IPA symbols is that once the symbols have been typed into a particular document, you can switch to a different Unicode font and all of the symbols will remain intact. The only difference in appearance between fonts would be related to a particular font’s size and shape and whether it is a serif or sans serif font. Prior to the utilization of Unicode, it was not possible to switch fonts without obliterating all of the IPA symbols in a document. Trust us, we know!

A number of Unicode phonetic fonts are available online. Many are available for free and are really quite easy to download and use. The phonetic symbols in this text were created with *Charis SIL*, a Unicode font available from SIL International (refer to the “Online Resources” at the end of this chapter). This font contains over 2,000 characters. *Doulos SIL* and *Gentium* are two other Unicode phonetic fonts available for free from the SIL International website.

There are three ways to enter IPA symbols from a Unicode font into a document: (1) make use of software that creates an alternate keyboard layout, (2) enter the code point for each IPA symbol, or (3) insert each symbol individually by using character maps available as part of the Windows and Macintosh operating systems.

The easiest method is to use an alternate keyboard layout. I obtained a specialized keyboard for entering the IPA symbols in this text from the website of University College London Psychology and Language Sciences (refer to the “Online Resources” at the end of the chapter). Once the keyboard was installed, all I had to do to enter the symbol /ʃ/ was to simply type SHIFT + “s.” Without such a keyboard, it would be necessary to type the unique code point for each character (which is a tedious and time-consuming task). In Microsoft Word (Windows), you would have to type the four-character code point, followed by the sequence ALT + “x,” for entry of a particular symbol. For instance, typing the sequence “0283” followed by ALT + “x” will yield the IPA symbol /ʃ/ (without the slash marks). With Mac OS, you would need to go to *System Preferences*; select *Keyboard, Input Sources*; and then *Unicode Hex Input*. Also, select *show input menu in menu bar*. Once *Unicode Hex Input* is selected, hold down the ALT key, and type the code point sequence for the particular phonetic symbol you want. Alternatively, you could use the “insert symbol” function (Windows) or use the “character viewer” (Macintosh) to enter the symbols individually from a character map that shows all of the symbols associated with a particular font. This process is much more tedious and time-consuming.

In addition to these methods, there are also websites (for instance, <https://ipa.typeit.org/>) that allow users to select IPA symbols from a menu, type the symbols in a text box, and copy-paste the symbols to a word processor, email message, or other applications. These web-based services do not require using character maps or installing additional software/keyboards on your computer.

### Exercise 1.2

Configure your computer so that you can enter code points into a text document (refer to the “Online Resources” at the end of the chapter for help). Then enter the following code points and write the corresponding IPA symbols in the blanks provided.

Code Point	IPA Symbol
1. 0259	_____
2. 03B8	_____
3. 028A	_____
4. 0271	_____
5. 0279	_____

## Chapter Summary

- Phonetics involves the study of how speech sounds are produced, how individual speech sounds are combined to form syllables and words, and the instruction of phonetic transcription for manually recording spoken utterances. The International

Phonetic Alphabet (IPA) is a unique alphabet designed to represent the *sounds* of words of a language, not the spelling of words. Use of the IPA permits consistency among professionals in their transcription of typical or atypical speech.

- Variation in phonetic transcription exists for several reasons, including differences in methods learned, personal habit, how strictly the IPA is followed, and which symbols are adopted for transcribing disordered speech.
- The use of a Unicode font is useful when transcribing speech by computer. Unicode fonts provide a universal character set of over 137,000 characters (mapped to a unique alphanumeric code point), including the IPA. Unicode fonts can be used on multiple platforms including Macintosh, Windows, and Linux.

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## Study Questions

1. What is a *phonetic alphabet*?
2. Why is it important to use a phonetic alphabet in transcription of individuals with speech sound disorders?
3. Why is there variation in phonetic transcription from professional to professional?
4. Why is it important to understand how individual speaking style and dialect affect pronunciation?
5. What is the difference between *phonetics* and *phonology*?
6. What is a Unicode font? What are the advantages of using such a font?
7. What are three ways you can enter phonetic symbols into a document using a Unicode font?

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## Online Resources

Search online for *Symbol Codes Home Penn State University*. This website provides several resources related to phonetic fonts and keyboards for both Windows and Macintosh.

Search online for *SIL International*. From the organization’s website, select “Language Services” then under “Resources” click “Software & Fonts” for a vast list of phonetic font resources, including downloads for the Unicode fonts Charis SIL and Doulos SIL.

Search online for *The Unicode Consortium* for information regarding the most current Unicode standard, access to character code charts for all the world’s languages, the IPA, and many different symbol and character sets.

Search online for *Resources and Tools in Speech, Hearing, and Phonetics-UCL* from University College London’s website. From this site, click the link for “More information” under “Phonetics and Phonetic Symbols.” This site has a wealth of information relating to Unicode fonts and keyboarding.

# Chapter 2

# Phonetic Transcription of English

## ✓ Learning Objectives

After reading this chapter, you will be able to:

- 2.1 Explain the differences between spelling and sound in English.
- 2.2 Describe the importance of *morphemes*, *phonemes*, and *allophones* in phonetics.
- 2.3 Define and describe the components of a syllable.
- 2.4 Identify primary stress in words.
- 2.5 Describe the differences between broad and narrow transcription and between systematic and impressionistic transcription.

As you begin your study of phonetics, it is extremely important to think about words in terms of how they sound and *not* in terms of how they are spelled. As you begin your study of phonetics, it is extremely important to think about words in terms of how they sound and *not* in terms of how they are spelled. *The repetition of this first sentence is not a typographical error.* The importance of this concept cannot be stressed enough. You *must* ignore the spelling of words and concentrate only on speech sounds. If you have been troubled in the past with your inability to spell, do not fear—phonetics is the one course where spelling is highly discouraged.

For many, ignoring spelling and focusing only on the sounds of words will be a difficult task. Most of us started to spell in preschool or kindergarten as we learned to read. It was drilled into our heads that “cat” was spelled C-A-T and “dog” was spelled D-O-G. Consequently, we learned to connect the spoken (or printed) words with their respective spellings. Imagine the following fictitious scenario between a parent and child reading along together before bedtime:

“OK, Mary. Now, let’s think about the word ‘cat.’ It’s spelled C-A-T, but the first speech sound is a /k/ as in ‘king,’ the second sound is an /æ/ as in ‘apple,’ and the third sound is a /t/ as in ‘table.’ Notice that the first sound is really a /k/ even though the word begins with the letter ‘c.’ When ‘c’ begins a word, it may sound like /k/ or it may sound like /s/, as in the word ‘city.’ Actually, Mary, there is no phonetic symbol in English that uses the printed letter ‘c.’”

Obviously, this type of interchange would cause children to lose any desire to read!