# A Coursebook on Aphasia and Other Neurogenic Language Disorders

Fourth Edition



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# Preface to the Fourth Edition

The first edition of this book on aphasia and other neurogenic communication disorders was one of the first to be developed as a *coursebook*—a new format for teaching and learning. Instructors and students alike have liked this format because it makes both teaching and learning a bit easier and more efficient than the traditional lecture method.

The *coursebook* format was originally designed as an effective instructional package that reduced the amount of note taking needed. The coursebook also reduced the variability in the accuracy and completeness of notes students take. The use of this type of book promotes class discussion as the students are not as busy taking notes in the class as they otherwise would be.

My students who have used this book (and this *type* of book) for the first time in a course on aphasia and related communication disorders gave me much positive feedback. Students have found the course-book a valuable means of integrating textbook information with class notes they take. They have a single source of information that is easier to study than (literally) a text on the one hand and the class notebook on the other. They have expressed a preference for this type of book for all of their courses. I would like to thank them for their comments and suggestions. I also welcome feedback from instructors who use this coursebook.

The first two editions of this coursebook were written as a supplement to regular textbooks. As was the third edition, this fourth edition is written as a stand-alone textbook on courses in aphasia and other neurogenic communication disorders, whether offered at the undergraduate or graduate level. Nonetheless, this new textbook retains the coursebook format so the instructors can make lec-

ture notes and students can write down instructor's notes on the right half of each page of the text.

The text has been divided into four parts. Part I deals with various forms of aphasia, essential neurological concepts, neurodiagnostic procedures, and assessment and treatment of aphasic communication disorders. Part II addresses communication disorders associated with right hemisphere damage and their clinical management. Part III is concerned with traumatic brain injury and its nature, assessment, and treatment. Finally, Part IV of the text is devoted to varieties of dementia and their assessment and clinical management.

All chapters have been thoroughly revised and expanded to make them comprehensive, current, and clinically detailed. I have added new information to most chapters to reflect recent developments in the study, assessment, and treatment of communication disorders associated with neurologic diseases and trauma.

I am gratified that many instructors and students have found this innovative tool of teaching and learning useful. I am thankful for the many positive comments I have received from instructors across the country.

I am very pleased that this new edition is being published by Plural, the leading publishing house in communication disorders and related medical specialties. I would like to thank the able editorial department headed by an able editor, Valerie Johns. Her kind and continuous help is greatly appreciated. I would also like to thank Kalie Koscielak for her excellent help throughout the development process. Angie Singh, the President of Plural, has been a friend and supporter for decades. I thank her and all her efficient staff at Plural.



# **PART I**

**A**PHASIA

# PREVALENCE, DEFINITION, AND CLASSIFICATION OF APHASIA

# **Chapter Outline**

- Prevalence of Aphasia and Associated Diseases
- Definitions of Aphasia
- Fluent and Nonfluent Aphasias
- General Symptoms of Aphasia
- What Aphasia is Not
- References

# **Learning Objectives**

After reading the chapter, the reader will:

- Summarize research on prevalence of aphasia on various populations and ethnocultural groups
- Describe the varieties of aphasia definitions
- Describe the most salient symptoms of aphasia
- Distinguish the clinical conditions that may be confused with aphasia

Prior to the 1850s, problems similar to what is now called *aphasia* were recognized but poorly understood. It was variously called *aphonia* or *speech amnesia*. Systematic scientific study of aphasia began in the mid-1800s. Paul Broca (1824-1880), a French neurosurgeon and physical anthropologist, was the first to offer clinical and pathological evidence relating the frontal lobe and left brain to language production. Broca has been credited with the famous statement, "We speak with the left hemisphere" (Benton & Anderson, 1998).

Broca described a speech impairment characterized by reduced fluency, agrammatic and telegraphic speech, many language production errors, but only a limited impairment of language comprehension. This impairment came to be known as *Broca's aphasia*.

The brain damage Broca described was especially evident in the lower, posterior portion of the left frontal lobe at the junction of lateral and central fissures. The area is concerned with motor speech function and soon came to be known as *Broca's area* (also known as Brodmann's areas 44 and 45). Broca thus became an enduring name in aphasiology.

Another enduring name in aphasiology is that of Carl Wernicke (1848-1905), a German neuropsychiatrist. He was the first to describe a type of aphasia that in many ways contrasted the symptoms of aphasia that Broca described. His patients spoke fluently and grammatically, but their speech did not make much sense. The persons had severe problems in understanding spoken language. Based on his clinical studies and autopsies of patients who have had language disturbances, Wernicke concluded that a lesion in the posterior portion of the left superior temporal gyrus caused the symptoms he had observed. This portion of the brain came to be known as Wernicke's area, and the type of language problem he described was accorded the name Wernicke's aphasia.

Together, the works of Broca and Wernicke established the now generally accepted two broad types of aphasia: the fluent and the nonfluent. Since the publication of those two pioneers, additional types of aphasia have been identified.


# Prevalence of Aphasia and Associated Diseases

To understand the prevalence of aphasia, one needs to understand the prevalence of underlying diseases and pathologies. A **cerebrovascular accident** (**CVA**), popularly known as a **stroke**, is frequently an immediate cause of aphasia. Heart diseases and strokes are closely related, however, to produce a combined effect on either prevalence.

Published health statistics have a lag of three to four years. The reader should consult such sources as the National Center for the Health Statistics and the American Stroke Association for the latest figures available. A 2016 update on heart diseases and stroke compiled by the American Heart Association (2016), in conjunction with the Center for Disease Control (CDC), has been published in the journal *Circulation*. Based on such sources of health statistics, prevalence of aphasia may be summarized as follows:

- Strokes are the third leading cause of death in the United States (coronary heart disease is #1, cancer is #2); combined, heart diseases and strokes are the number 1 cause of death; in 2002, for every 100,000 persons in the United States, about 56 deaths occurred due to stroke.
- Mortality rates differ across the types of strokes; 8% to 12% of ischemic (blockage of blood) strokes and 37% to 38% of hemorrhagic (bleeding in the brain) strokes result in death.
- About 700,000 new cases of stroke are reported each year; of these 327,000 men (47%) are males and 373,000 (53%) are females; on average a stroke occurs every 45 seconds; 2.5% of total males and 2.6% of total females in the country may have a stroke in a given year.
- Stroke is a leading cause of disability in the U.S. In excess of 300,000 persons who suffer strokes are permanently disabled.
- After age 55, the incidence of strokes increases rapidly during each decade of life; about two thirds of all strokes are associated with age

65 and older; between the ages of 45 and 54, 1.2% of men and 2.1% of women have a stroke; but at age 75+, 12% of men and 11.5% of women have a stroke.

- At comparable age levels, men have a higher risk of stroke; men's stroke incidence is 1.25 times higher than women's; however, because of increased longevity, more women than men have strokes; each year, about 40,000 more women than men have strokes; also, more women than men die of stroke; of every five deaths due to strokes, two are men and three are women.
- About 1 million people (i.e., 1 in 250 individuals) in the United States have aphasia.
- Annually, about 80,000 new cases of aphasia are reported in the United States.
- About 15% of the survivors of one or more strokes need institutional care; stroke patients constitute a large number of older people admitted to nursing homes.
- Ischemic strokes (due to interrupted blood supply, described later) are more common than hemorrhagic (bleeding in the brain) strokes; 88% of all strokes are ischemic; 9% are intracerebral hemorrhage; and 3% are subarachnoid hemorrhage.
- Broca's aphasia is more common in younger persons and Wernicke's aphasia in older persons.
- Prevalence of Wernicke's and global aphasia is higher in women than in men.

# Prevalence of Aphasia and Associated Diseases in Ethnocultural Groups

The prevalence of aphasia and related diseases vary across ethnocultural groups. The differential prevalence of aphasia in different ethnocultural groups may partly or substantially be a function of their varying health and socioeconomic status. Payne (2014) has reviewed variations in health status that affect strokes and cardiovascular diseases in the general population and in major ethnocultural groups. The previously cited report from The American Heart Association (2016) is also a comprehensive source for stroke demographics.


- Compared with whites, African Americans have nearly twice the risk of first stroke; the age-adjusted stroke incidence rates per 100,000 persons is 167 for white males, 138 for white females, 323 for African American males, and 260 for African American females.
- Death rates due to stroke differ among the major ethnic groups on whom statistics are available. African American males have the highest death rates due to strokes; Hispanics and American Indians/Alaska Natives have the lowest.
- African American women tend to have strokes at an earlier age than white women.
- Women with aphasia from all ethnocultural groups combined outnumber all men with aphasia.
- Ischemic attacks, transient attacks, and extracerebral strokes are more common in whites than in other groups.
- South Asians (people from the Indian subcontinent) living in the United States have higher incidence of strokes (and heart diseases) than whites.
- Whites have a higher prevalence of ischemic strokes than Hispanics.
- Whites have higher prevalence of heart diseases than African Americans or Hispanics.
- Native Americans tend to have more hemorrhagic strokes than whites.
- Compared to whites, Hispanics and African Americans tend to have strokes at earlier ages.
- In the age range of 44 to 55 years, more African Americans than whites die of strokes. Black and Hispanic younger adults in the age range of 20 to 44 years also have higher incidence of strokes than whites of similar age.
- African Americans, Asians, and Hispanics are more prone to intracerebral hemorrhagic strokes than whites; these strokes are associated with higher mortality rates.
- Mortality rate from strokes in Hispanics after age 65 is lower than that in whites; this is attributed partly to Hispanic people's typically lower blood pressure.

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- Risk factors for strokes in African Americans, from the highest to the lowest, are high blood pressure, smoking, high cholesterol levels, obesity, poor diet, and lack of exercise.
- Risk factors for Native Americans and Alaska Natives, from the highest to the lowest, are high blood pressure, smoking, lack of exercise, alcohol consumption, diabetes, and malnutrition.
- Risk factors for Hispanics, from the highest to the lowest, are lack of exercise, obesity, eating habits, alcohol, smoking, and high blood pressure.
- Risk factors for Asian and Pacific Islanders, from the highest to lowest, are lack of exercise, smoking, obesity, high-sodium diet, high cholesterol levels, alcohol, high blood pressure, and diabetes.
- The first strokes in African Americans produce more severe effects than they do in whites.
- Regardless of severity levels of their strokes, African Americans require more recovery time to return to normal activities. Eventually, African Americans tend to have lower recovery levels than whites. One reason for this is the lack of social resources including transportation to the clinics and hospitals and supplemental in-home care that African Americans experience.
- Increased risk of having strokes in nonwhite persons may partly be due to lack of health care; compared to white males, a higher percentage of nonwhite males report no treatment for such underlying causes as hypertension.
- Disability arising from strokes is greater for African American females and progressively lower for white females, black males, and white males.
- Disabilities due to strokes in Native Americans may often go undiagnosed or untreated.

Reliable data on prevalence of aphasia and related neurologic diseases in ethnocultural groups are limited. Different studies often report contradictory data. White men are more often oversampled in studies and women and ethnoculturally diverse

groups are typically underrepresented. Therefore, all generalizations about prevalence of aphasia and related diseases in ethnocultural groups must be treated with caution.

# Strokes and Aphasia in the Young

Strokes do occur in children, although much less frequently than in adults. In a 10-year period, California hospitals admitted 2,278 children who had had strokes. In a four-year period, hospitals in Northern Manhattan treated 74 young patients with stroke (Jacobs, Boden-Albala, Lin, & Sacco, 2002). Generally:

- Boys are about 28% more likely than girls to have a stroke.
- As in adults, ischemic strokes are more common in children than are the hemorrhagic strokes.
- Infants (up to 1 year) are more likely to have ischemic strokes whereas teens (ages 15–19 years) are more likely to have subarachnoid hemorrhage.
- Stroke risk factors in children are poorly understood, although some children who have strokes have a history of head trauma, which is more common in boys than girls.
   Sickle cell disease is another risk factor in children.
- Black children have a higher risk of stroke than white children. Although Asian and white children run the same risk, Hispanic children have the lowest risk for strokes.

# **Definitions of Aphasia**

Aphasia is loss or impairment of language skills in adults who have had a history of language skills within the range of normal variations. The loss is rarely total and, therefore, the term impairment may be more appropriate. Spoken language, understanding spoken language, reading, and writing may all be impaired to varying extents. To be considered as aphasia, the impairment should be associated with recent cerebral pathology or trauma in people who

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have mastered their language. Some children's failure to master their language is not aphasia (Hegde & Freed, 2017).

Definitions of aphasia vary. The varied definitions may be briefly summarized under four categories:

- Nontypological definitions. These definitions reject the notion of different types of aphasia. Schuell, Jenkins, and Jimenez-Pabon's (1964) early definition that aphasia is "a language deficit that crosses all modalities and may be complicated by other sequelae of brain damage" (p. 113) suggests a single disorder. Darley (1982), a severe critic of aphasia classification into types, defined aphasia as "an impairment, as a result of brain damage, of the capacity for interpretation and formulation of language symbols" (p. 42). Darley and others who contend that different syndrome identification is a useless activity believe that such identification is a result of the varying degrees of severity of aphasia and differences in the associated neuropathologies and symptoms they produce. Benson and Ardila (1996), who believe that aphasia is an overly classified disorder, define it simply as "the loss of or impairment of language caused by brain damage" (p. 3), although such a simplified definition makes it difficult to distinguish aphasia from the effects of traumatic brain injury and dementia.
- **Typological Definitions.** These definitions are currently popular, thanks to the impressive Broca and Wernicke legacies. Neuroanatomical descriptions also support a classification based on different patterns of pathologies and associated neurological and communication impairments. Goodglass and Kaplan's (1983) definition that "aphasia refers to the disturbance of any or all of the skills, associations and habits of spoken or written language, produced by injury to certain brain areas that are specialized for these functions" (p. 5) is typological. The definition refers to disturbance in any or all skills and thus suggests different varieties, depending on the constellation of disturbances. The definition also refers to brain areas that specialize in language functions.

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