

Auditory Processing: Glossary of Terms

Central auditory processing is a fast-evolving area of clinical practice, especially in Department of Veterans Affairs (VA) and Department of Defense (DOD) health facilities. Specialized terminology may be used in related reports, referrals, and treatment notes. This glossary is designed to support students and clinicians working to improve their service or research in this area.

acoustics. Properties of a medium that determine how sound is transmitted through it.

amplification device. A device, such as a hearing aid, that makes sound louder.

Auditory Rehabilitation for Interaural Asymmetry (ARIA). A type of dichotic listening therapy.

audiologists. Healthcare professionals who evaluate, diagnose, treat, and manage hearing loss, auditory processing dysfunction, balance disorders, and tinnitus in individuals of all ages.

audiogram. A graph that visually represents the results of a pure-tone hearing test.

audiometry. Measurement of the range and sensitivity of a person's sense of hearing.

auditory processing/central auditory processing. What your brain does with what your ears hear (e.g., perception, interpretation).

auditory closure. Ability to complete distorted or missing parts of an acoustic signal and recognize the message in its entirety.

background noise. Any extraneous sound(s) that is not the sound(s) of primary interest.

binaural. Bilateral (both ears) presentation of an auditory signal.

binaural integration. Ability to identify and combine (integrate) two different or competing stimuli presented simultaneously to both ears (binaural).

binaural interaction. Processing of interaural time and intensity differences that occur when the same auditory signal is presented simultaneously to both ears; critical for sound localization in individuals with normal hearing sensitivity,

and for hearing-impaired listeners using bilateral hearing aids or cochlear implants.

binaural separation. Ability to process an auditory message presented to one ear while ignoring a separate message presented simultaneously to the opposite ear.

bottom-up processing. Sensory information analysis without influence of prior knowledge, context, experience; opposite of “top-down processing.”

central auditory processing disorder (CAPD/APD). A diagnosis made when individuals have normal hearing sensitivity and meet the diagnostic criteria for auditory processing disorder as defined by the American Academy of Audiology (AAA) or the American Speech and Hearing Association (ASHA).

cognition. Mental processes that take place in the brain, including but not limited to attention, memory, and language processing.

consonant clusters. Two or more consonants succeeding each other (e.g., *str*) with no vowel in between.

decibel. Unit of measurement of sound intensity (loudness).

dialect. Variations in grammar, vocabulary, or pronunciation that are specific to a particular region or social group.

dichotic digits test (DDT). Evaluates the ability to repeat numerical digit groups that are presented simultaneously to the right and left ears.

dichotic listening. Process of receiving different auditory messages presented simultaneously to each ear.

dichotic listening therapy. Technique of presenting dichotic speech stimuli (consonant-vowel syllables, words, digits, or sentences) while adjusting stimulus intensity in the stronger ear to assist the weaker ear in speech perception; begins with softer intensity in the stronger ear and progresses to louder intensity.

Dichotic Interaural Intensity Difference (DIID) therapy. A type of dichotic listening therapy.

duration pattern test. A test of auditory pattern identification in which an individual is asked to listen to patterns of tones and detect the duration differences between them.

ear advantage. Ability to process speech stimuli more accurately in one ear than the other; can be a strong indicator of hemispheric dominance for language, is age dependent in children.

ENT. Otolaryngologist, a doctor of otolaryngology; specializes in injuries, illness, and conditions involving the ears, nose, and throat.

filtered speech. Speech that is distorted, filtered to limit audible frequencies; used to measure sound processing abilities and auditory closure.

frequency. Sound pitch; measured in hertz (Hz), frequency value describes how often a sound wave pattern repeats itself over a specified time interval.

frequency pattern test. A test of auditory pattern identification, in which an individual is asked to listen to patterns of tones and verbally label them as high or low, in the correct order of presentation.

gap detection (threshold). Minimum perceivable gap length between two stimuli when they can be heard as two sounds.

Gaps in Noise (GIN) test. A test of auditory processing designed to measure temporal resolution, in this case is the ability to detect changes in the duration of intervals of silence (gaps) embedded in broadband noise.

hertz (Hz). Unit of measurement for frequency (pitch).

intonation. Changing of vocal pitch (rising or falling), typically to denote attitude, emotion, or emphasis.

Listening and Communication Enhancement (LACE). An interactive, computerized auditory training program intended to improve listening and communication skills.

low-gain hearing aids (LGHA). Hearing aids that provide a small amount of amplification to soft and moderate level sounds.

masking. Occurs when the perception of a sound is disrupted by the presence of another sound (“masker”); can be used to reduce effects of distracting or environmental noise.

masking level difference (MLD) test. A test that employs in-phase and out-of-phase signals at various signal-to-noise ratios, to determine the listener’s ability to better detect a signal when it is 180 degrees out of phase (vs. a broadband noise). Clinical use involves signals of spondaic words or a 500 Hz tone.

minimal pairs. A pair of words that differ by only one feature (place, manner, voice) or phonological element.

monaural. Unilateral presentation (to one ear only) of an auditory signal.

monaural low redundancy (tests). Tests that employ speech signals degraded by frequency alteration, time compression, or reverberation.

MRI of IAC. Magnetic resonance imaging of the internal auditory canal.

neuropsychologist. A psychologist who specializes in understanding the relationship between the brain and behavior.

otoscopy. Visual examination of the auditory canal and the eardrum using an otoscope.

peripheral hearing loss. Hearing loss that results from damage to peripheral auditory structures, including the outer or middle ear (conductive hearing loss) or the cochlea (sensorineural hearing loss).

phoneme. Smallest unit of perceptually distinct sounds.

phonemic awareness. A subcomponent of phonological awareness; the ability to identify and manipulate individual phonemes, or the smallest units of speech, in spoken words.

phonological awareness. Ability to recognize, identify, and manipulate units of sound.

prosody. A rhythmic pattern in speech.

pitch. Degree of highness or lowness of a sound stimulus; perceptual correlate of frequency.

pure tone. Sound that consists of one single frequency.

QuickSIN. A speech-in-noise (SIN) test that assesses the ability to understand speech in the presence of competing background noise, such as multi-talker babble; provides a measure of signal-to-noise ratio (SNR) loss.

remote microphone system. Wireless system consisting of input source, transmitter, and receiver; designed to overcome acoustic signal degradation caused by background noise, distance, or reverberation.

signal-to-noise ratio (SNR). A mathematical way to compare the level of a desired signal to the level of background noise.

speech-language pathologist (SLP). Healthcare professional who works with all age groups to prevent, assess, diagnose, and treat deficits in communication (including auditory processing), language production, and swallowing.

speech sound disorder. Any difficulty or combination of difficulties involving perception, motor production, or phonological representation of speech sounds and speech segments.

sound localization. Ability to identify the directional origin of a sound.

speech sound classification. The distinctive features of speech sounds based on how they are produced. Includes ‘place’ (where the sound originates in mouth and throat), ‘manner’ (how air is shaped to make the sound), and ‘voice’

(whether vocal folds make contact to make the sound). Refer to the International Phonetic Alphabet chart.

Staggered Spondaic Words (SSW) test. A dichotic test that requires the listener to identify two two-syllable (spondaic) words presented partially overlapping in time between the two ears.

stress (word stress, syllable stress). A more intense (louder) or higher-pitched sound compared to surrounding sounds; usually denotes emphasis.

syllable. Unit of pronunciation having one vowel sound, with or without surrounding consonants; forms the whole or a part of a word.

temporal discrimination. Ability to determine that two sequential sensory stimuli are separated in time.

temporal masking. Masking (obscuring of one sound by another) that occurs when a signal and a masker are not presented simultaneously.

temporal processing. Perception of sound over time.

temporal resolution. Ability to detect small and sudden changes in sound stimuli.

temporal sequencing. Processing of two or more auditory stimuli in order of occurrence in time.

time compressed speech. Speech presented in a much shorter (compressed) time interval than it normally would be in real time.

tinnitus. Perception of sound (e.g., tone or buzzing) when no sound is present in the surrounding environment.

top-down processing. Influence of knowledge, environment, and/or prior experience on perceived sensory information; opposite of “bottom-up processing.”

volume. Quantity or power of sound; degree of loudness.