



Index

- AAC. *See* Augmentative and alternative communication (AAC)
- Abdominal muscles, 6, 7
- Abuse, 161–162
- Academic skills, 150, 220
- Acceleration, 93
- Accent training, 240
- Acetylcholine, 30
- Acoustic analysis, 95–96, 304
- Acoustic immitance, 486–487
- Acoustic neuromas, 480, 483
- Acoustic phonetics, definition of, 70
- Acoustic reflex, 465
- Acoustics, 468–471
- Active sentences, 107
- Adaptation effect, 264–265
- Adjacency effect, 266
- Adolescent Language Screening Test* (ALST; Morgan & Guilford), 179
- Adopted children, 433
- Aerodynamic measurements, 305–306
- Affricates, 82, 210, 218
- African American English (AAE), 420–425, 438, 445, 447
- African Americans, 348, 415
- Agnosia, 363–364
- Agraphia, 363
- AIDS, 382, 447, 612–614
- Air conduction of sound, 472
- Akinesia, 350
- Alaryngeal speech, 315
- Alcohol
- CLD clients and, 446, 447
- dementia and, 377
- dysarthria and, 369
- fetal alcohol effects (FAE), 163–164
- fetal alcohol syndrome (FAS), 162–163
- gastroesophageal reflux and, 313, 319
- Native Americans and, 446
- traumatic brain injury (TBI) and, 391
- Alexia, 363
- Allomorphs, definition of, 106
- Allophones, definition of, 70, 208
- Alternate-form reliability, 530, 567
- Alternating motion rates (AMRs), 374
- Alveolar ducts, 2
- Alveolar ridge, 19
- Alzheimer's Association, 377
- Alzheimer's disease, 349, 372, 378–379
- Alzheimer's Disease Education and Referral Center, 377
- American Academy of Audiology (AAA), 463
- American Idol*, 578
- American Indian Hand Talk (AMER-IND), 191
- American Psychiatric Association (APA), 155, 157, 164
- American Sign Language (ASL), 191, 503–504
- American Speech-Language-Hearing Association (ASHA), 223, 357, 418, 463
- Au.D. and, 463
- clinical certification and, 653–654
- Code of Ethics, 654
- educational accreditation and, 652
- Functional Assessment of Communication Skills for Adults* (AHSA-FACS), 357
- goals of, 648–649

- legislative regulations and, 656–660
- membership categories, 649–650
- multicultural issues' guidelines, 418
- National Outcome Measurement System (NOMS), 661
- orofacial myofunctional disorders (OMD) and, 223
- overview of, 647–650
- speech–language pathology assistants and, 655–656
- speech–language pathology professionals and, 651–652
- American Stroke Association, 348
- American's with Disabilities Act (ADA), 658–659
- Amplitude, 90, 94, 470
- Amsterdam-Nijmegen Everyday Language Test (ANELT; Blomert, Kean, Koster, & Schokker)*, 358
- Amyotrophic lateral sclerosis (ALS), 325, 369, 396
- Angelman, Harry, 624
- Angelman syndrome, 624–625
- Anger, 607
- Angular gyrus, 49
- Ankyloglossia (tongue-tie), 222
- Ankylosis, 324
- Anomia, 354
- Anomic aphasia, 354
- Antagonistic recovery theory, 447
- Anterior belly of digastric muscles, 22
- Anterior sounds, 79
- Anticipatory struggle hypothesis, 271
- Anxiety, 602, 607
- Aorta, 58
- Aperiodic waves and vibrations, 90, 468–469
- Apert syndrome, 625
- Aphasia
 - agnosia and, 363–364
 - agraphia and, 363
 - alexia and, 363
 - Alzheimer's disease and, 349
 - anomic aphasia, 354
 - assessment of, 356–360
 - bilingual populations and, 355–356
 - Broca's aphasia, 349–350
 - conduction aphasia, 353
 - definition of, 348–349
 - fluent aphasia, 351
 - global aphasia, 351
 - mixed transcortical aphasia (MTA), 350–351
 - overview of, 347–348
 - Parkinson's disease and, 349
 - standardized tests and, 356–357, 449
 - strokes and, 348
 - subcortical aphasia, 354–355
 - transcortical motor aphasia (TMA), 350
 - transcortical sensory aphasia (TSA), 352–353
 - treatment, 360–363
 - Wernicke's aphasia, 352
- Aphasia Diagnostic Profiles (ADP; Helm-Estabrooks)*, 357
- Aphonia, 334
- Applied phonetics, definition of, 70
- Approach avoidance, 270–271
- Approximants, 79
- Apraxia of speech (AOS)
 - assessment of, 367
 - definition of, 365
 - neuropathology of, 224, 365
 - overview of, 224–225, 347, 364–365
 - standardized tests and, 367
 - symptoms of, 365–366
 - treatment of, 368
- Arachnoid (“spider web”), 57
- Arcuate fasciculus, 55
- Arizona Battery for Communication Disorders of Dementia (ABCD; Bayles & Tomoeda)*, 384
- Arteriosclerosis, 447
- Arthritis, 324
- Articulation, *See also* Phonation; Resonation; Speech sound disorders
 - African American English and, 421, 424
 - articulation development in children, 215–217
 - articulatory errors, 220–221
 - Asian speakers and, 430
 - assessment and, 621
 - description of, 1
 - dysarthria and, 370, 375
 - fundamentals of, 17–22
 - hard palate and, 21
 - hearing impairments and, 223
 - language impairment in children and, 151–153
 - lip and cheeks and, 24–26
 - mandible and, 21–22
 - manner of articulation, 77, 80–83, 209–210
 - overview of, 71
 - pharynx and, 17–18
 - place of articulation categories, 210
 - soft palate (velum) and, 19–20
 - Spanish speakers and, 426
 - teeth and, 22–23
 - tongue and, 23–24
- Articulatory and phonological skills development, *See also* Phonation; Speech sound disorders
 - articulation development in children and, 215–217

- definitions, 209
- infant development of language skills and, 214–215
- manner of articulation categories, 209–210
- overview of, 207
- phonological development in children, 217–219
- place of articulation categories, 210
- substitution processes, 217–218
- syllable structure processes, 218
- theories of development, 211–213
- theories of development of language skills and, 211–213
- Aryepiglottic muscles, 36
- Aryepiglottic folds, 12–13, 292
- Arytenoid cartilage, 9, 10, 13, 293–295
- Arytenoid muscles, 10, 11, 36, 292–295
- ASHA. *See* American Speech-Language–Hearing Association (ASHA)
- Asian language influence on English, 427–429
- Asian population, 415, 446, 448
- Asperger, Hans, 155
- Asperger's syndrome, 155, 157
- Asphyxia, 482
- Assessment, *See also* Language disorders in children; Standardized tests; Treatment
 - adolescents, 176–181
 - alternative approaches, 167
 - aphasia, 356–360
 - apraxia of speech (AOS), 367
 - articulation disorders, 621
 - authentic assessments, 535
 - biological factors, 170
 - caregiver interaction and, 171–172
 - case history, 517
 - clefts and, 620–622
 - client-specific assessments, 534
 - comprehensive and integrated assessments, 535–536
 - criterion-referenced assessments, 534
 - cultural-linguistic considerations, 436–442, 551–552
 - definition of, 515
 - dementia, 384
 - developmental inventories, 532
 - diagnosis differentiated from, 515
 - dynamic assessments, 535
 - dysarthria, 374–375
 - educational history and, 518–519
 - environmental factors, 170
 - family and, 517–518, 533
 - functional assessments, 532–534
 - guidelines, 171–172, 174, 179–181
 - hearing impairments, 228, 485–491, 520
 - infants and toddlers, 171–172
 - instruments and measures, 171, 173, 174, 177, 179, 181–182
 - interpreters and, 442
 - interview, 520–521
 - language comprehension, 176
 - language sampling, 167–168
 - loudness, 308
 - medical history and, 518
 - morpheme counting rules, 169
 - nonstandard assessment measures, 530–532
 - occupational history and, 519
 - phonation, 308, 309, 620, 621–622
 - pitch, 305
 - play activities, 172
 - portfolio assessments, 535
 - prenatal history and, 518
 - preschool and elementary children, 172–176
 - procedural checklist, 166
 - prognosis and, 519
 - protocols, 168
 - questionnaires, 531
 - rating scales, 531
 - resonance, 308, 622
 - respiration, 308
 - right hemisphere syndrome, 388–389
 - screening, 166–167
 - screening and, 517
 - speech and language sample and, 521–523
 - speech sound disorders, 225–231
 - standard assessment procedures, 516–524
 - standardized assessment, 167
 - stuttering, 272–274
 - swallowing disorders, 398–399
 - team approach, 441
 - traumatic brain injury (TBI) and, 392–393
 - type-token ratio (TTR), 168
 - velopharyngeal function, 620–621
 - voice disorders, 300–309
- Assessment of Preterm Infants' Behavior* (APIB; Als, Lester, Tronick, & Brazelton), 173
- Assimilation, 88
- Assimilative nasality, 311
- Association fibers, 55
- Asthma, 322
- Ataxic CP, 159
- Ataxic dysarthria, 370
- Athetoid CP, 159
- Attention-deficit/hyperactivity disorder (ADHD), 164–165

- Audience size effect, 266
 Auditory agnosia, 363–364
 Auditory attention, 135
 Auditory brainstem response (ABR), 487
 Auditory comprehension, 358, 360–363, 393
 Auditory discrimination, 135, 220, 233
 Auditory feedback, 269
 Auditory memory, 135–136
 Auditory nervous system, 466–467
 Auditory phonetics, definition of, 70
 Auditory processing, 135
 Auditory rate, 136
 Auditory sequencing, 136
 Auditory system
 acoustics, 468–471
 assessment, 485–491
 assistive devices, 499
 audiograms, 475, 477–479, 481, 490, 492
 auditory nervous system, 466–467
 aural rehabilitation, 495
 central auditory disorders, 482–483
 cochlear implants, 497–498
 communication disorder treatments, 491–494
 communication training, 500–504
 cued speech and, 501
 hearing aids, 496–497
 hearing impairments, 223, 228, 473–480
 normal hearing, 472–473
 overview of, 463
 physiology of hearing, 464–467
 retrocochlear disorders, 483–484
 speech reading, 501
 tactile aids, 499
 treatment, 491–504
 Augmentative and alternative communication (AAC),
 190–191
 Aural atresia, 474
 Authentic assessment, 167, 535
 Autism spectrum disorders, 155–157
 Autoclitics, 130
 Autonomic nervous system, 38–40
 Avoidance behaviors, 263, 270, 273
 Axon, 29

 Babbling stage, 214
 Back sounds, 78
 Back vowels, 86–87
 Backing, 218
Bankson Language Test—Second Edition (BLT-2;
 Bankson), 174, 177

 Basal ganglia, 44, 55, 372, 381
 Base morphemes, definition of, 106
 Basic interpersonal communication skills (BICS), 434
 Basilar artery, 58, 59
 Basilar membrane, 466
Battell Development Inventory—Second Edition (BDI-2;
 Newborg), 173
Bayley Scales of Infant Development—Third Edition (BDIS-
 III; Bayley), 173
Behavioral Inattention Test (BIT; Wilson, Cockburn, &
 Halligan), 389
 Behavioral problems, 163
 Behavioral theory in counseling, 603–604
 Behavioral theory of language development, 129–130,
 211–212
 Bel, definition of, 91
 Bell, Alexander Graham, 94, 470
 Bell's palsy, 162
Bells Test (Gauthier, Dehaut, & Joannette), 389
 Bermouli effect, 13
 Bilabials, 80, 210
 Bilateral paralysis, 323
Bilingual Aphasia Test (BAT; Paradis), 357
 Bilingual populations, 239–241, 355–356, 431–433, 435,
 See also Culturally and linguistically diverse (CLD)
 clients
 Bipolar neurons, 29
 Birth defects, 479
Birth to 3 Developmental Scale—Second Edition (ELM
 Scale-2; Coplan), 173
 Birthweight, 162, 632
 Blends, 83
 Blessed Dementia Scale (Hachinsky, Iliff, Zilhka, &
 Associates), 384
 Blom-Singer prosthesis, 318
 Blood supply, cerebral blood supply, 57–60
Boehm Test of Basic Concept—Third Edition (Boehm-3;
 Boehm), 177
 Bone conduction of sound, 472–473
Boston Diagnostic Aphasia Examination—Third Edition
 (BDAE-3; Goodglass, Kaplan, & Baresi), 356
 BOTOX injections, 325
 Bradykinesia, 350
 Brain injury, 157–158, 279, 378
 Brainstem, 41–42, 45, 467
 Breathiness, 299
Brief Test of Head Injury (BTHI; Helm-Estabrooks &
 Hotz), 392
 Broca, Paul, 49
 Broca's aphasia, 349–350

- Broca's area (area 44)
 arcuate fasciculus and, 55
 discovery of, 49
 illustration, 14, 48
 nonfluent aphasia and, 349–350
- Broken words, 257
- Bronchi, description of, 2
- Bronchioles, 2
- Buccinator muscles, 25, 27
- Cancer, 313–317, 324, 445–446
- Canonical/reduplicated babbling stage, 214
- Carbon dioxide, 1
- Caregivers, 111–112, 171–172, 634–635
- Carhart's notch, 476
- Carotid arteries, 58–60
- Cartilage
 arytenoid cartilage, 9, 10, 13
 corniculate cartilage, 9
 cricoid cartilage, 8–11
 cuneiform cartilage, 9–10, 13
 thyroid cartilage, 8–10
- Caudate nucleus, 44, 381
- Center for Disease Control (CDC), 348, 377
- Central auditory function, 269
- Central electroauditory prosthesis (CEP), 498
- Central nervous system (CNS)
 basal ganglia, 44
 blood supply, 57–60
 brainstem and, 41–42
 cerebellum, 45–46
 cerebral ventricles, 56
 cerebrum (cerebral cortex), 46–47
 connecting fibers, 55
 corticobulbar tract, 51, 53
 corticospinal tract, 51–53
 cranial nerves and, 43
 diencephalon, 43–44
 extrapyramidal system, 54
 frontal lobe, 47
 hypothalamus, 44
 illustrations, 47, 48, 52–53
 medulla and, 43
 midbrain and, 42
 occipital lobe, 49
 overview of, 40–41
 parietal lobe, 49
 pons and, 42–43
 protective layers of brain, 56
 pyramidal system, 52–54
 reticular activating system (RAS), 43
 temporal lobe, 49–50
 thalamus, 43
- Central tendency, 589
- Central vowels, 86
- Cerebellum, 14, 45–46
- Cerebral dominance theory, 256
- Cerebral palsy (CP), 159, 223, 369
- Cerebral ventricles, 56
- Cerebrum, 46–47
- Certificate of Clinical Competence in Audiology (CCC-A), 654
- Certificate of Clinical Competence in Speech–Language Pathology (CCC-SLP), 653
- Chemotherapy, 314
- Child-directed speech (CDS), 112
- Childhood apraxia of speech (CAS), 224
- Childhood disintegrative disorder, 155
- Childhood language development
 1–2 years of age, 114–117
 2–3 years of age, 117–118
 3–4 years of age, 118–121
 4–5 years of age, 121–123
 5–6 years of age, 123–124
 6–7 years of age, 125
 7–8 years of age, 126
 birth to 1 year, 112–113
 caregiver role, 111–112
 education and, 127–128
 literary milestones, 127
 morphology, 106, 118–120, 122–126
 motherese, 112
 overview of, 105
 pragmatics, 109–110, 114, 116–118, 121, 123–126
 semantics, 108–109, 117–118, 120, 122–126
 single-word utterances, 115
 syntax and, 107–108, 114, 117, 118–119, 122, 123, 125–126
 theories of language development, 128–137
 two-word utterances, 116
- Chomsky-Halle distinctive features of English consonants, 77
- Chomsky, Noam, 130–132
- Chondroglossus muscles, 24
- Chorea, 382
- Choroid plexus, 56
- Cilia, 466
- Circle of willis, 59
- Clauses, 108
- Clavicular breathing, 308

- Clefts
- articulation disorders and, 219, 619–620
 - assessment and, 620–622
 - classification of, 618
 - cleft lip, 616
 - cleft palate, 219, 310, 445–446, 474, 616–617
 - culturally and linguistically diverse (CLD) clients and, 445–446
 - etiology of, 617–619
 - hearing loss and, 619
 - hypernasality/hyponasality and, 310, 620
 - language disorders and, 620
 - occult submucous cleft, 618
 - phonation disorders and, 620
 - submucous cleft, 310, 618
 - surgical management, 622–623
 - treatment and, 622–624
- Client-centered theory, 602–603
- Client-specific approaches to assessment, 167
- Client-specific assessments, 534
- Clinical Evaluation of Language Fundamentals–Fourth Edition* (CELF-4; Semel, Wiig, & Secord), 177, 179, 182
- Clinical Management of Right Hemisphere Dysfunction* (Halper, Cherney, & Burns), 389
- Closed captioning, 499
- Closed-head injuries, 391
- Cluttering, 281–282
- CO₂ laser surgery, 321, 324
- Coarticulation, 88
- Cochlear implants, 497–498
- Code switching, 433
- Coffee, 323
- Cognitive–academic language proficiency (CALP), 434–436
- Cognitive-behavioral theory, 604–605
- Cognitive connectionism, 135
- Cognitive constructionism, 132
- Cognitive skill impairments, 163
- Cognitive theory, 132–134
- Coloboma, 629
- Commissural fibers, 56
- Communication and Symbolic Behavior Scales* (CSBS; Wetherby & Prizant), 173
- Communicative Abilities in Daily Living–Second Edition* (CADL-2; Holland, Frattali, & Fromm), 357
- Communicative Effectiveness Index* (CET; Lomas), 357
- Communicative potency, 232
- Comparative research, 578
- Complex sentences, 108
- Complex tones, 93
- Compound sentences, 107
- Comprehensive and integrated assessments, 535–536
- Comprehensive Level of Consciousness Scale* (CLOCS; Stanczak & Associates), 392
- Comprehensive Receptive and Expressive Vocabulary Test–Second Edition* (CREVT-2; Wallace & Hammill), 177, 182
- Compression, definition of, 90
- Computerized axial tomography (CAT), 488, 614
- Concordance rates in twins, 259–260
- Concrete operations' stage of cognitive development, 134
- Concurrent validity, 528
- Condensation, definition of, 90
- Conduction aphasia, 353
- Confabulation, 387, 388
- Congenital palatopharyngeal incompetence, 619
- Consensus Auditory-Perceptual Evaluation of Voice* (CAPE-V), 306
- Consistency effect, 265
- Consonant-cluster simplification, 218
- Consonantal sounds, 78
- Consonants
- affricates, 82
 - articulatory and phonological skills development and, 217–218
 - backing and, 218
 - Chomsky-Halle distinctive features of English consonants, 77
 - consonant clusters, 83
 - fricatives, 81–82
 - glides, 82–83, 217
 - glottal replacement, 218
 - liquids, 83
 - manner of articulation and, 80–83
 - place-voice-manner analysis and, 77, 80, 208, 209
 - stops, 82
 - stuttering and, 263
 - syllables and, 75–76
 - voicing and, 80
 - vowels compared with, 76
- Construct validity, 528
- Content validity, 528
- Context and speech sound production, 88–89
- Continuant sounds, 79
- Contralateral motor control, 47
- Contrast approaches, 236
- Contrastive analysis, 535
- Conversion aphonia, 334

- Cooing/goosing stage, 214
- Corniculate cartilage, 9, 294
- Corona radiata, 55
- Coronal sounds, 9
- Corpus callosum, 56, 386
- Corpus striatum, 44
- Correlational research, 579–580
- Cortical areas, 14
- Corticospinal tract, 51–53
- Cough reflex, 9
- Council on Academic Accreditation in Audiology and Speech–Language Pathology (CAA), 652
- Counseling
 - age and, 606
 - behavioral theory, 603–604
 - client-centered theory, 602–603
 - cognitive-behavioral theory, 604–605
 - cultural considerations, 606
 - defense mechanisms and, 607–608
 - eclectic approach, 605
 - gender and, 606
 - overview of, 601
 - psychodynamic theory, 602
 - qualities necessary for effective counseling, 602
 - reactions to communication disorders and, 606–607
 - religion and, 606
- Cranial nerves
 - corticobulbar tract and, 51
 - cranial nerve I (olfactory), 32–33
 - cranial nerve II (optic), 32–33
 - cranial nerve III (oculomotor), 32–33
 - cranial nerve IV (trochlear), 32, 53
 - cranial nerve V (trigeminal), 32–33, 371
 - cranial nerve VI (abducens), 32–33, 53
 - cranial nerve VII (facial), 14, 25, 32–33, 53, 162, 292, 371
 - cranial nerve VIII (acoustic), 32–34, 43, 466–467
 - cranial nerve IX (glossopharyngeal), 32–35, 43, 371
 - cranial nerve X (vagus nerve), 15, 32–33, 35, 43, 53, 292, 371
 - cranial nerve XI (spinal accessory), 32–33, 35–36, 43, 53
 - cranial nerve XII (hypoglossal), 32–33, 36, 38, 43, 53, 371
 - foramina and, 31
 - medulla and, 43
 - mixed nerves, 32
 - recurrent laryngeal nerve (RLN), 15
 - superior laryngeal nerve (SLN), 15
- Craniosynostosis, 625
- Creutzfeldt-Jakob disease, 382
- Cri du chat syndrome, 625
- Cricoarytenoid muscles, 36, 295
- Cricoid cartilage, 8–11, 293–295
- Cricopharyngeus muscle, 18
- Cricopharyngeal myotomy, 401
- Cricothyroid muscles, 10, 36, 294
- Criterion, definition of, 534
- Criterion-referenced assessments, 167, 534
- Cross-sectional method, 579
- Crouzon syndrome, 625
- Csg system, definition of, 91
- CSL (Computer Speech Laboratory), 95
- Cued speech, 501
- Cul-de-sac resonance, 311
- Culturally and linguistically diverse (CLD) clients
 - adoption and, 433
 - African American English (AAE), 420–425
 - ASHA guidelines, 418
 - Asian language influence on English, 427–429
 - assessments and, 436–442
 - barriers to service delivery, 446
 - bilingual populations, 239–241, 355–356, 415
 - cognitive–academic language proficiency (CALP), 434–436
 - communication disorders, 445–446
 - counseling and, 606
 - cultural considerations, 416–418
 - demographics, 415–416
 - dialects of American English, 419
 - interpreters and, 442
 - language-learning disabilities, 429–436
 - medical conditions and, 445–449
 - second-language acquisition, 431–433
 - Spanish-influenced English, 422, 425–427
 - speech-language characteristics of, 419–429
 - standardized tests and, 421, 422, 437–440
 - treatment, 443–449
- Cuneiform cartilage, 9–10, 13, 294
- Cup forceps surgery, 321
- Cytomegalovirus, 480
- Deaffrication, 218
- Deafness, 473
- Deceleration, 93
- Decibel (dB), 91, 94, 470, 471
- Deciduous teeth, 23
- Declaratives, 107
- Deductive method, definition of, 564
- Deep structure, 131

- Defense mechanisms, 607–608
 Deglutition disorders. *See* Swallowing disorders
 Delayed auditory feedback techniques (DAF), 277
 Deletions, 221
 Demands and capacities model of fluency disorders, 271
 Dementia
 Alzheimer's disease, 378–379
 assessment of, 384
 classifications, 377
 frontotemporal dementia (FTD), 379–380
 Huntington's disease and, 381
 infectious dementia, 382–383
 management of, 384–385
 overview of, 347, 377
 Parkinson's disease and, 380–381
 prevalence, 377
 standardized tests and, 384
 symptoms, 378–382
 vascular dementia, 383
 Dendrites, 29–30
 Denial, 607
 Density, definition of, 91
 Dental deviations, 222
Denver II (Frankenburg, Dodds, Archer, Shapiro, & Bresnick), 174
 Depalatatization, 218
 Dependent variables, 568–569
 Depressor anguli oris muscles, 25
 Depressor labii inferioris muscles, 25, 27, 35
 Descriptive phonetics, definition of, 70
 Descriptive research, 576–581
 Determinism, definition of, 564
Detroit Tests of Learning Aptitude—Fourth Edition (DTLA-4; Hammill), 177
 Developmental apraxia of speech (DAS), 224
 Developmental inventories, 532
 Developmental (normative) research, 578–579
 Developmentally disabled/delayed children, 154
 Devoicing, 218, 221
 Diabetes, 447
 Diacritical markers, 73–75
 Diadochokinetic rate, 222, 374
 Diadochokinetic test, 367
 Diagnosogenic theory, 270
 Diagnostic “pie,” 432
 Diaphragmatic-abdominal breathing, 308
 Diaphragm, 3, 6
 Diary studies, 211
 Diencephalon, 43–44
 Dieticians, 610
 Diffuse injury, 158
 Digastric muscles, 12, 26, 295
 Digital Sona-Graph 5500, 95, 304
 Diplegia, 159
 Diplophonia (double voice), 300
 Diphthongs, 87, 208
Disability Rating Scale (DSR; Rappoport, Hall, Hopkins, & Associates), 392
 Discrete trials, 184–185
 Disorientation, 387
 Displacement, definition of, 91, 608
 Distinctive feature analysis, 76, 77, 208, 209
 Distinctive features approach (DFA), 235–236
 Dopamine, 30
 Double voice, (diplophonia), 300
 Down syndrome, 378, 626
 Drug abuse, 162–164, 391, 447
 Drug toxicity, 369, 377, 478
 Dura mater (“tough mother”), 57
 Dynamic assessment, 167, 535
 Dyne, definition of, 91
 Dysarthria
 assessment of, 374–375
 ataxic dysarthria, 370
 basal ganglia and, 44
 communicative disorders and, 369–370
 flaccid dysarthria, 371
 hyperkinetic dysarthria, 371–372
 hypokinetic dysarthria, 372
 mixed dysarthrias, 375
 neuropathology, 223–224, 369
 spastic dysarthria, 372–373
 standardized tests and, 375
 traumatic brain injury (TBI) and, 393
 treatment, 375–376
 unilateral upper motor neuron (UUMN) dysarthria, 373–374
 Dyskinesias, 44
 Dysphagia. *See* Swallowing disorders
 Dysphasia, 347
 Dystonia, 369, 396

 Ear anatomy, 464–467
 Echoics, 130
 Echolalia, 154
 Education of the Handicapped Act (P.L. 94–142), 657
 Elasticity, definition of, 91
 Electrocochleography (ECoG), 487
 Electroencephalography (EEG), 614
 Electroglottography (EGG), 305

- Electromyography (EMG), 305, 399
 Electrophysiological audiometry, 487–488
 Elfin-face syndrome, 631
 Ellis, Albert, 604
 Embolus, 348
 End buttons, 29–30
 Endolymph, 466
 Endoscopy, 303–304, 398
 English as a foreign language (EFL), 239–241
 Epenthesis, 218
 Epiglottis, 9, 13, 16, 292, 293
 Epithelium, 12, 292
 Esophagostomy, 401
 Esophagus, 16
 Ethics, 654
 Eustachian tubes, 20, 465
 Ex post facto (retrospective) research, 577
 Exhalation, 1, 2
 Exclamatory sentences, 107
 Expansion, 185, 362
 Expansion stage, 214
 Experiment, definition of, 568
 Experimental phonetics, definition of, 70
 Experimental research, 568–576
 Expressive language delays, 151
Expressive One Word Picture Vocabulary Test, Spanish Bilingual Edition–2001 (Brownell), 182
 Extension, 185–186
 External intercostal muscles, 5
 External otitis, 474
 Extrapyramidal system, 44, 54
 Extrinsic laryngeal muscles, 12
 Eye-blink encoding, 191
 Eye contact, 112, 150, 163, 170
- Facial recognition deficits, 387
 Facilitated communication, 192
 Fading, 185
 False vocal folds, 292
 Family
 assessment of communication disorders and, 301, 517–518, 533
 counseling and, 601
 stuttering and, 259, 260, 266–267, 272
 treatment involvement, 183
 Fasciculi, 55
 Fast mapping, 109
 Fetal alcohol effects, 163–164
 Fetal alcohol syndrome (FAS), 162–163, 446
 “Fight-or-flight” situations, 39–40
- Figurative language, 180
 Final consonant deletion, 218
 Fingerspelling, 504
 Fissure of Rolando, 46
 Fissures, 46
 Flaccid dysarthria, 371
 Fluency disorders, *See also* Language disorders in children; Phonation disorders; Speech sound disorders; Voice disorders
 adaptation, 264–265
 adjacency effect and, 266
 approach avoidance and, 270–271
 assessment of, 272–274
 audience size effect and, 266
 avoidance behaviors and, 263, 270, 273
 breathing abnormalities and, 262
 cerebral dominance theory, 256
 cluttering, 281–282
 concordance rates in twins, 259–260
 consistency effect and, 265
 delayed auditory feedback techniques (DAF) and, 277
 direct stuttering reduction method, 278–279
 etiology, 256
 family and, 259, 260, 266–267
 fluency description, 254
 fluency reinforcement, 277
 fluency shaping, 275–276
 forms of, 257
 gender and, 259
 hearing impairments and, 494
 incidence, 258–259
 loci of stuttering, 263–264
 motor behaviors and, 262
 negative emotions and, 263, 270
 onset and development, 261
 operant behavior and, 270
 overview of, 253
 prevalence of, 258–260
 psychopathology (neurosis) and, 255–256, 266–267, 271, 279–380
 spontaneous recovery, 261
 stimulus control, 264–266
 stuttering description, 254–258
 theoretical and clinical significance of, 258
 theories of stuttering, 267–272
 treatment, 274–276
 Fluent aphasia, 351
Fluharty Preschool Speech and Language Screening Test–Second Edition (Fluharty-2; Fluharty), 174
 Focal injury, 158

- Focused stimulation, 186
 Focusing, 312
 Foramen ovale, 34
 Foramina, 31
 Force, definition of, 91
 Formal operations' stage of cognitive development, 134
 Formant frequency, definition of, 91
 Fragile X syndrome, 626
 Free morphemes, definition of, 106
 Frequency, 91, 93–94, 468, 470
 Freudian theory, 271, 274, 602
 Fricatives, 81–82, 210
 Front vowels, 85–86
 Frontalis muscles, 35
 Fronting, 217, 221
 Frontotemporal dementia (FTD), 379–380
Fullerton Language Test for Adolescents (2nd ed.) (FLTA-2; Thorum), 182
 Function words, 154, 264
 Functional articulation disorders, 219
Functional Assessment of Communication Skills for Adults (ASHA-FACS; Frattili, Thompson, Holland, Wohl, & Ferketic), 357
 Functional assessments, 532–534
Functional Communication Profile (FCP; Sarno), 357
 Functional units, 129
 Fundamental frequency, 91, 96

Galveston Orientation and Amnesia Test (GOAT; Levin, O'Donnell, & Grossman), 392
 Gastroesophageal reflux, 313, 319, 321, 323
 Gastrostomy, 401
 Gastrostomy tubes, 627
 Gender
 - articulatory skills and, 219
 - cluttering and, 281
 - counseling and, 606
 - dementia and, 378
 - laryngeal cancer and, 313
 - Parkinson's disease and, 380
 - phonation disorders and, 335–336
 - speech sound disorders and, 219
 - strokes and, 348
 - stuttering and, 259
 - traumatic brain injury (TBI) and, 390
 Generative phonology theory of language development, 213
 Genetic hypothesis of stuttering, 268
 Genetic syndromes
 - Angelman syndrome, 624–625
 - Apert syndrome, 625
 - Cri du chat syndrome, 625
 - Crouzon syndrome, 625
 - Down syndrome, 626
 - Fragile X syndrome, 626
 - Hurler's syndrome, 626
 - Landau-Kleffner syndrome, 627
 - Moebius syndrome, 627
 - overview of, 624
 - Pierre-Robin syndrome, 627
 - Prader-Willi syndrome, 627–628
 - as risk factor for language disorders, 150
 - Russell-Silver syndrome, 628
 - Tourette syndrome, 628–629
 - Treacher Collins syndrome, 629
 - Trisomy 13, 629
 - Turner syndrome, 630
 - Usher syndrome, 630
 - Velocardiofacial syndrome, 630–631
 - Williams syndrome, 631
 Genioglossus muscles, 12, 24, 38, 295
 Geniohyoid muscles, 12, 22, 38, 295
 Geriatric voice, 297
 Germany, 281
 Gestural AAC, 191–192
 Glial cells, 28
Glasgow Coma Scale (Teasdale & Jennett), 392
 Glides, 82–83, 210, 217
 Global aphasia, 351
Global Deterioration Scale (Reisberg, Ferris, deLeon, & Crook), 384
 Glossoptosis, 627
 Glottal fry, 299–300
 Glottals, 80, 210, 218
 Glottis, 10, 293, 299
 Government binding theory, 131
 Grammar deficiencies, 150, 188
 Grammatic transformation, 131
 Grammatical morphemes, definition of, 106
 Granuloma, 317–319
 Grief, 607
 Group research designs, 569–571
 Guilt, 607
 Gyrus, 46, 47, 49, 52

 Hard of hearing, 473
 Hard palate, 16, 19, 21
 Harmonics, 96
 Harshness of voice, 299
 Hawthorne effect, 584–585

- Health Insurance Portability and Accountability Act (HIPAA), 660
- Health literacy, 610
- Hearing aids, 496–497
- Hearing impairments, *See also* Auditory system; Treatment of hearing impairments
- articulation and, 223
 - assessment, 228, 485–491, 520
 - auditory training, 500–501
 - aural rehabilitation, 495
 - birth defects and, 479
 - clefts and, 619
 - cochlear implants, 497–498
 - conductive hearing loss, 473–476
 - cued speech, 501
 - deafness, 473
 - hard of hearing, 473
 - hearing aids, 496–497
 - medically fragile infants and, 634
 - mixed hearing loss, 480
 - nonverbal communication (sign language), 191, 503–504
 - oral language training, 502
 - otitis media and, 446, 475–476
 - otosclerosis and, 476
 - sensorineural hearing loss, 476–480
 - speech reading (lip reading), 501
 - tactile aids, 499
 - voice training and, 502–503
- Hearing level (HL), definition of, 94
- Hemangioma, 319
- Hemiplegia, 159
- Hemorrhagic strokes, 348, 447
- Henry Benjamin International Gender Dysphoria Association (HBIIGDA), 335
- Herpes simplex, 480
- Hertz (Hz), definition of, 91
- Heschl's gyri, 49
- Heuristic communication, 116
- High-amplitude sucking paradigm, 214
- High sounds, 79
- Hispanic population, 415, 445, 447, 448
- HIV (human immunodeficiency virus), 382, 482, 612–614
- Hmong refugees, 448
- Hoarseness, 298–299
- Hodson and Paden's cycles approach, 238
- Holophrastic speech, 114–115
- Holoprosencephaly, 629
- Hormones, 333, 335
- Human immunodeficiency virus (HIV), 382, 482, 612–614
- Huntington's disease, 369, 381
- Hurler's syndrome, 626
- Hydration therapy, 331
- Hydrocephalus, 162
- Hyoglossus muscles, 12, 24, 26, 38, 295
- Hyoid bone, 8–9, 12, 292, 293
- Hyperkeratosis, 319
- Hypernasality, 308, 310, 312, 370, 620, 623–624
- Hypertelorism, 625
- Hypertension, 445, 447
- Hypokinetic dysarthria, 372
- Hyponasality, 308, 310–313, 370, 620
- Hypothalamus, 44
- Hypotheses, definition of, 564
- Hysterical aphonia, 334
- Iconic symbols, 190
- Idiopathic disorders, 219
- Illocutionary behavior, 114
- Imaginative communication, 116
- Impedance, definition of, 91
- Imperatives, 107
- Incidental teaching, 186
- Incomplete sentences, 257
- Independent variables in research, 568–569
- Individuals with Disabilities Education Act (IDEA), 437, 658
- Indole-3-carbino, 321
- Inductive method, definition of, 564
- Infectious dementia, 382–383
- Infectious disease specialists, 610
- Inferior alveolar nerve, 34
- Inferior longitudinal muscles, 24
- Inferior peduncle, 42
- Information-processing language development theory, 134–136
- Informative communication, 117
- Inhalation, 1–2
- Innermost intercostal muscles, 7
- Instruction, 185
- Instrumental communication, 117
- Intensity, 89, 90, 470–471
- Interactional communication, 117
- Intercostal muscles, 5, 6, 7
- Interdisciplinary teams, 523
- Interferon medication, 321
- Interjections, 257
- Interjudge (interobserver) reliability, 529, 567

- Internal intercostal muscles, 5, 6, 7
 Internal oblique abdominis, 7
 International Phonetic Alphabet (IPA), 72, 73
 Interneurons, 30
 Interrogatives, 107
 Interrupted sounds, 79
 Intrahemispheric fibers, 55
 Intrajudge (intraobserver) reliability, 529, 567
 Intralexical pauses, 257
 Intraverbals, 130
 Intrinsic laryngeal muscles, 10–12, 294
 Intuitive stage of cognitive development, 133–134
Iowa Pressure Articulation Test, 621
 Ischemic strokes, 348
 Isolation, 161
- Jitter, 298
 Joint reference, 114
 Joint routines, 187
 Juncture, 89
- “Kangaroo care,” 634
 Kanner, Leo, 155
 Kay Elemetrics Corporation, 95, 304, 312, 332
 KayPENTAX Corporation, 621, 624
- L-dopa (levodopa), 325
 Labialization, 221
 Labiodentals, 80, 210
 Labyrinths, 466
 Lamina propria, 12, 292
 Laminography, 614
 Landau-Kleffner syndrome, 627
 Language, definition of, 70, 105, 208
 Language acquisition device (LAD), 130
 Language development theories, *See also* Childhood language development
 behavioral theory, 129–130, 211–212
 cognitive theory, 132–134
 generative phonology theory, 213
 information-processing theory, 134–136
 linear vs. nonlinear phonology theories, 213
 nativist theory, 130–132
 natural phonology theory, 212
 social interactionism theory, 136–137
 structural theory, 212
 Language disorders in children, *See also* Assessment; Fluency disorders; Phonation disorders; Speech sound disorders; Treatment of language disorders in children; Voice disorders
 abuse and neglect and, 161–162
 attention-deficity/hyperactivity disorder (ADHD), 164–165
 autism spectrum disorders, 155–157
 brain injury and, 157–158
 cerebral palsy and, 159
 clefts and, 620
 culturally and lingually diverse (CLD) clients, 445–446
 drug/alcohol abuse of parents and, 162–164
 hearing impairments and, 500–504
 intellectual disabilities and, 154–155
 overview of, 149–150
 poverty and, 160–161
 risk factors, 150
 specific language impairments (SLI), 151–153
 types of, 150
 Language limitations, 150
 Language loss, 433
Language Processing Test—Elementary (LPT3; Richard & Hanner), 177
 Laryngeal trauma, 321
 Laryngeal web, 321–322
 Laryngectomy, 314, 316–317
 Laryngitis, 329–330
 Laryngomalacia, 319–320
 Laryngopharynx, 17–18
 Laryngoscopy, 301–303, 398
 Larynx
 biological functions, 9
 extrinsic laryngeal muscles, 12
 illustration of, 3
 intrinsic laryngeal muscles, 10–12, 295
 phonation and, 8–9
 stuttering and, 268
 voice disorders and, 291–295
 Lateral (external) pterygoid muscles, 22
 Lateral sounds, 78
 Lateral ventricles, 56
 Latissimus dorsi, 7
 Lee Silverman Voice Treatment, 325
 Left-hand manual alphabet, 191
 Legislative regulation of speech–language pathology
 American’s with Disabilities Act (ADA), 658–659
 Education of the Handicapped Act (P.L. 94–142), 657
 Health Insurance Portability and Accountability Act (HIPAA), 660
 Individuals with Disabilities Education Act (IDEA), 437, 658
 Social Security Act (SSA), 659–660

- Lenticular nucleus, 44
 Leukoplakia, 319
 Levator anguli oris, 25, 27
 Levator costarum brevis, 6
 Levator labii superioris, 25, 27
 Levator labii superioris alaeque nasi muscles, 25, 27
 Levator scapulae, 6–7
 Levator veli palatini muscles, 20, 36, 465
 Levels of evidence, 585–587
 Levels of measurement, 590
 Linear vs. nonlinear phonology theories of language development, 213
 Lingua-alveolars, 80, 210, 217
 Linguadentals, 80, 210
 Lingual frenulum, 24
 Linguopalatals, 80, 210
 Linguavelars, 80, 210
 Lip reading, 501
 Lips
 articulation and, 24–26
 cleft lip, 616
 lip muscles, 25
 vowel position characteristics, 84–85
 Liquids, 83, 210
 Lisps, 221
 Literacy skills
 academic skills and, 150
 assessment, 359
 socioeconomic status (SES) and, 161
 treatment of language disorders in children and, 179, 183, 189–190
 Liver, 2
 Loci of stuttering, 263–264
 Locutionary stage, 114
 Logarithmic scale, 470
 Lombard effect, 333
 Longitudinal fissure, 33, 46
 Longitudinal research, 578–579
 Loudness, 89, 94, 298, 332–333, 470
 Low sounds, 79
 Lungs, 2–3, 16

 Magnetic resonance imaging (MRI), 488, 614
 Mainstream American English (MAE), 419
 Malocclusions, 23, 222
 Mand-model, 186
 Mandible, 21–22
 Mandibular branch of cranial nerve V, 33
 Mands, 129
 Manner of articulation, 77, 80–83, 209–210

 Manometric assessment, 399
 Manual guidance, 185
 Manual sign systems, 191
 Marked sounds, 208
 Masseter muscles, 22, 34
 Maxillary branch of cranial nerve V, 32
 Maximum phonation time (MPT), 296, 309
 McDonald's sensory-motor approach, 234–235
 Mean fundamental frequency (MFF), 296–297
 Mean length of utterance (MLU), 175
 Meaning, 108
 Medial (internal) pterygoid muscles, 22
 Medical imaging techniques, 614–615
 Medical speech-language pathology
 craniofacial anomalies, 615–624
 health literacy, 610
 infectious disease control, 612
 medical imaging techniques and, 488, 614–615
 overview of, 608–609
 practice of speech-language pathologists, 609–610
 roles of medical team specialists, 610–611
 Medically fragile infants, 632–635
 Medulla, 42, 52–53, 372
 Memory, 135–136, 163
 Meniere's disease, 480
 Meninges, 57
 Mentalis muscles, 25, 27
 Metalinguistic awareness, 238
 Metaphon therapy approach, 236–237
 Metathesis, 218
 Microdontia, 628
 Micrognathia, 630
 Midbrain, 42, 52
 Middle peduncle, 42, 45
Mini Inventory of Right Brain Injury, 2nd edition
 (MIRBI-2; Pimental & Knight), 388
 Minimal competency core, 535
Minnesota Test for Differential Diagnosis of Aphasia
 (MTDDA; Schuell), 356
 Mixed nerves, 32
 Mixed transcortical aphasia (MTA), 350–351
 MKS system, definition of, 91
 Modeling, 185
 Moebius syndrome, 369, 627
 Moment of stuttering, 255
 Monoplegia, 159
 Morpheme, 106, 119
 Morphology
 African American English and, 421–425
 Assessment and, 169, 173, 175

- childhood language development, 118, 120, 122–126
 language disorders in children and, 154
 terminology definitions, 106
- Motherese, 112
- Motor cortex, 47–48
- Motor fibers of cranial nerve V, 33
- Motor neurons, 30, 54
- Mucosal wave action, 14
- Multidisciplinary teams, 523
- Multilingual Aphasia Examination (MAE; Benton & Hamsher), 357
- Multiple sclerosis (MS), 325, 369, 396
- Multiple treatment of interference, 585
- Muscles
- abdominal muscles, 6, 7
 - anterior belly of digastric muscles, 22
 - aryepiglottic muscles, 36
 - arytenoid muscles, 36, 292–295
 - buccinator muscles, 25, 27
 - cricopharyngeus muscles, 18
 - cricothyroid muscles, 10, 36, 294, 295
 - depressor anguli oris muscles, 25, 27
 - depressor labii inferioris, 25, 35
 - digastric muscles, 12, 26, 295
 - extrinsic laryngeal muscles, 12
 - frontalis muscles, 35
 - genioglossus muscles, 12, 26, 38, 295
 - geniohyoid muscles, 12, 22, 38, 295
 - hyoglossus muscles, 12, 24, 26, 38, 295
 - innervation and, 6–7
 - intercostal muscles, 5, 6, 7
 - internal oblique abdominis muscles, 7
 - intrinsic laryngeal muscles, 10–12
 - laryngeal muscles, 10–12, 295
 - lateral (external) pterygoid muscles, 22
 - latissimus dorsi muscles, 7
 - levator anguli oris muscles, 25, 27
 - levator costarum brevis muscles, 6
 - levator labii superioris alaeque nasi, 25, 27
 - levator labii superioris muscles, 25, 27
 - levator scapulae muscles, 6–7
 - levator veli palatini muscles, 20, 36, 465
 - lip muscles, 25
 - mandible muscles, 22
 - masseter muscles, 22, 34
 - medial (internal) pterygoid muscles, 22
 - mentalis muscles, 25, 27
 - mylohyoid muscles, 12, 22, 295
 - nasalis muscles, 35
 - oblique arytenoid muscles, 10, 11, 294
 - occipitalis muscles, 35
 - omohyoid muscles, 12
 - orbicularis oculi muscles, 35
 - orbicularis oris muscles, 25, 35, 57
 - palatoglossus muscles, 20, 26, 36
 - palatopharyngeus muscles, 20, 36
 - pectoralis major muscles, 6
 - pectoralis minor muscles, 6
 - pharyngeal constrictor muscles, 18, 26
 - pharynx muscles, 18, 36
 - platysma muscles, 25, 27, 35
 - posterior auricular muscles, 35
 - posterior belly of digastric, 22
 - primary motor cortex and, 47
 - procerus muscles, 35
 - pterygoid muscles, 34
 - quadratus lumborum muscles, 7
 - rectus abdominis muscles, 7
 - respiration and, 5–7
 - respiration muscles, 6–7
 - rhomboideus major muscles, 7
 - risorius muscles, 25, 27
 - salpingopharyngeus muscles, 18, 20
 - serratus anterior muscles, 6
 - serratus posterior inferior muscles, 7
 - serratus posterior superior muscles, 6
 - soft palate muscles, 20
 - stapedius muscle, 465
 - sternocleidomastoid muscles, 6, 37
 - sternohyoid muscles, 12
 - sternothyroid muscles, 12
 - styloglossus muscles, 24, 26, 38
 - stylohyoid muscles, 12, 26, 295
 - stylopharyngeus, 18, 26
 - subcostal muscles, 7
 - superior auricular muscle, 35
 - suprahyoid muscles, 12
 - temporalis muscles, 22
 - tensor tympani muscle, 465
 - tensor veli palatini muscles, 20, 34, 465
 - thomboideus minor muscles, 7
 - thoracic muscles of inspiration, 6
 - thyroarytenoid (TA) muscles, 10, 36, 292, 294
 - thyrohyoid muscles, 12
 - thyropharyngeus muscles, 18
 - tongue muscles, 24, 38
 - transverse arytenoid muscles, 10, 11, 294, 295
 - transversus abdominis muscles, 7
 - transversus thoracicus muscles, 7
 - trapezius muscles, 6, 37

- vocalis muscle, 10
zygomatic muscles, 25, 27, 35
- Muscular dystrophy, 396
- Myasthenia gravis, 325, 369, 396
- Myelin sheath, 29–30
- Myelinated axonal fibers (white matter), 55
- Mylohyoid muscles, 12, 22, 295
- Myoelastic–aerodynamic theory, 13
- Naming skills, 358–359, 361, 393
- Narrative skills training, 187–188
- Narratives, 110
- Nasal cavity, 16, 18
- Nasal glide stimulation, 313
- Nasal sounds, 79
- Nasalance, 312
- Nasalis muscles, 35
- Nasalization, 221
- Nasals, 80–81
- Nasogastric feeding, 401
- Nasogastric tubes, 627
- Nasometer, 312
- Nasometer (KayPENTAX Corporation), 621, 624
- Nasopharynx, 17, 18
- National Aphasia Association, 348
- National Institute of Neurological Diseases and Stroke, 348, 377
- National Institute on Aging, 377
- National Outcome Measurement System (NOMS), 661
- National Student Speech-Language-Hearing Association (NSSLHA), 650
- Native Americans, 260, 438, 446
- Nativist theory of language development, 130–132
- Natural frequency, definition of, 91
- Natural phonology theory of language development, 212
- Naturalness, 208
- Negative emotions, 263, 270
- Neglect, 161–162
- Nenotal intensive care units (NICUs), 632–635
- Nerve-muscle pedicle reinnervation, 324
- Nerves. *See* Cranial nerves
- Nervous system, *See also* Central nervous system (CNS); Peripheral nervous system (PNS)
auditory nervous system, 466–467
autonomic nervous system (ANS), 38–40
cranial nerves, 31–36
neurons and, 28–30
overview of, 28, 30
spinal nerves, 37–38
- Neural transmission, definition of, 30
- Neuritic plaques, 378
- Neuro-assisted (aided) AAC, 192
- Neuroanatomy, definition of, 28
- Neurofibrillary tangles, 378
- Neuroglia, 28
- Neurology, definition of, 28
- Neuronal loss, 378
- Neurons
anatomy of, 28–29
axon and, 29
dendrites and, 29–30
end buttons, 29–30
interneurons, 30
motor neurons, 30, 54
myelin sheath, 29–30
node of Ranvier, 29
sensory neurons, 30
synapses, 30
varieties of, 29
- Neuropathologies
aphasia, 347–363
apraxia, 347, 364–368
dementia, 347, 377–385
dysphasia, 347, 369–377
right hemisphere syndrome, 347, 386–390
swallowing disorders, 395–401
traumatic brain injury (TBI), 347, 390–395
- Neurophysiology, definition of, 28
- Neurosensory Center Comprehensive Examination for Aphasia* (NCCEA; Spreen & Benton), 357
- Neurosurgeons, 610
- Neurotransmitters, definition of, 30
- Newton's Laws of Motion, 91
- Node of Ranvier, 2–30
- Nominal scales, 590
- Noniconic symbols, 190
- Nonphonemic diphthongs, 87
- Nonverbal communication skills, 150
- Noonan syndrome, 630
- Norm-referenced tests, 524
- Norms, 215, 524
- Nurses, 610
- Oblique arytenoid muscle, 10, 11, 294
- Obstruents, 79
- Occipital lobe, 49
- Occipitalis muscles, 35
- Occlusion, 23
- Occult submucous cleft, 618
- Occupational therapists, 610

- Octave, definition of, 91
 Olfactory tract, 33
 Oliodendroglia, 28
 Omissions, 221
 Omohyoid muscles, 12
 Open-head injuries, 391
 Operant behavior, 270
 Ophthalmic branch of cranial nerve V, 32
 Oral cavity, 16–18
 Oral-motor coordination skills, 222
 Orbicularis oculi muscles, 35
 Orbicularis oris muscles, 25, 27, 35
 Organ of Corti, 466
 Orofacial myofunctional disorders (tongue thrust),
 222–223
 Oropharynx, 17–18
 Orthographic symbols, 72, 73
 Oscillation, definition of, 91
 Ossicular, 476
 Ossicular chain, 465
 Otitis media, 446, 475–476
 Otolaryngologists, 610
 Otosclerosis, 476
 Otospongiosis, 476
 Oval window, 465
 Overbite, 222
 Overextended words, 109, 115, 151
 Overtones, 96
 Oxygen, 1
- Palatoglossus muscles, 20, 24, 26, 36
 Palatopharyngeus muscles, 20, 36
 Pantomime, 191
 Papilloma, 320–321
 Paradoxical vocal fold motion (PVFM), 322–323
 Parallel talk, 188
 Paraplegia, 159
 Parasympathetic branch of ANS, 40
 Parkinsonism, 380
 Parkinson's disease, 325, 349, 369, 372, 380–381, 396
 Pars opercularis, 48
 Pascals (pa), 94
 Passive sentences, 107
 Pauses, 257
Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn),
 177, 528, 530
 Pectoralis major, 6
 Pectoralis minor, 6
 Pediatricians, 611
 Peduncles, 42
- Perception, 69, 89
 Perceptual problems, 152
 Perilymph, 466
 Periodic vibrations, 93, 468–469
 Peripheral nervous system (PNS)
 cranial nerves, 31–36
 foramina and, 31
 inferior alveolar nerve, 34
 overview of, 31
 spinal nerves, 37–38
 Perlocutionary behavior, 114
 Personal communication, 116
 Pervasive developmental disorders, 155
 Pharmacists, 611
 Pharyngeal constrictor muscles, 18, 26, 36
 Pharyngeal fricatives, 221
 Pharyngeal nerve, 36
 Pharyngeal plexus, 35
 Pharyngeal tonsils (adenoids), 18, 19
 Pharyngostomy, 401
 Pharynx, 15–17, 17–18
 Phonation, *See also* Articulation; Articulatory and
 phonological skills development; Speech sound
 disorders
 aryepiglottic folds, 12–13
 Bernoulli effect, 13
 cover-body theory of phonation, 292
 cricoid cartilage and, 8–11
 gender issues, 335–336
 hyoid bone and, 8–9
 language impairments in children and, 151–153
 larynx, 8–9
 myoelastic–aerodynamic theory, 13
 overview of, 71
 phonological development in children, 217–219
 polyps, 328–329
 trachea and, 8–9
 ventricular folds, 12–13
 vocal folds and, 9, 12–13
 voice disorders and, 309
 Phonation disorders
 alaryngeal speech, 315
 assessments and, 308, 309, 620, 621–622
 cancer and, 313–317, 324
 clefts and, 620
 dysarthria and, 370, 375
 gastroesophageal reflux disease (GERD), 323, 329
 granuloma, 317–319
 hemangioma, 319
 hyperkeratosis, 319

- laryngeal trauma, 321
 laryngeal web, 321–322
 laryngectomy and, 314, 316–317
 laryngomalacia, 319–320
 leukoplakia, 319
 neurological diseases, 325–326
 papilloma, 320–321
 paradoxical vocal fold motion (PVFM), 322–323
 pitch disorders, 333–334
 psychogenic voice disorders, 334–335
 spasmodic dysphonia, 324–325
 subglottal stenosis, 320
 traumatic laryngitis, 329–330
 ulcers, 318, 323, 329
 vocal fold thickening, 329
 vocal nodules, 327–328
 vocally abusive practices, 326–327
- Phonation stage, 214
- Phonemes, definition of, 70, 208
- Phonemic, definition of, 70, 208
- Phonemic diphthongs, 87
- Phonetic adaptations, 88
- Phonetic transcription, 72–75
- Phonetics, definition of, 69–70, 70
- Phonological process approach (PPA), 237–238
- Phonological processing, 135, 217
- Phonology, definition of, 70
- Physical therapists, 611
- Physiological phonetics, definition of, 70
- Pia mater (“tender mother”), 57
- Piaget, Jean, 132–133, 137
- Pick’s disease, 372, 379–380
- Pierre-Robin syndrome, 627
- Pitch
 frequency and, 93–94
 gender reassignment and, 335–336
 overview of, 89
 voice disorders and, 298, 306, 308, 333–334
- Place of articulation, 77, 80
- Place-voice-manner analysis of speech sounds, 77, 80, 208, 209
- Plastic surgeons, 611
- Platysma muscles, 25, 27, 35
- Polio, 397
- Polyps, 328–329
- Phonological awareness, 127
- Pons, 42–43, 52–53, 372
- Porch Index of Communicative Ability (PICA; Porch), 357
- Portfolio assessment, 167, 535
- Positron emission tomography (PET), 614–615
- Posterior auricular muscles, 35
- Posterior belly of digastric muscles, 22
- Posterior cerebral arteries, 58
- Poverty, 160–161, 220, 448
- Pragmatics
 assessment and, 173–175, 178–181
 language development in children and, 109–110, 114, 116–118, 121, 123–126
 language problems in children and, 152
 traumatic brain injury (TBI) and, 393
- PRAXIS
 certification and, 672
 exam tips, 674–675
 overview of, 667–668
 study tips, 673
 topic areas, 668–672
- Precentral gyrus, 47, 52
- Preconceptual stage of cognitive development, 133
- Predictive validity, 529
- Premature birth, 150
- Prenatal factors
 birthweight, 162, 632
 cerebral palsy (CP) and, 159
 drug and alcohol exposure, 162–164
 language disorders in children, 150, 154
- Presbycusis, 480
- Presbyphonia, 297
- Preschool Language Assessment Instrument–2* (PLAI-2; Blank, Rose, & Berlin), 173
- Preschool Language Scale–4* (PLS-4; Zimmerman, Stein, & Pond), 173
- Preschool Language Scale–4* (PLS-4; Zimmerman, Steiner, & Pond), 174
- Pressure, definition of, 91
- Presuppositions, 116
- Pretests, definition of, 570
- Primary auditory cortex, 48, 49–50
- Primary intracranial tumors, 348
- Primary motor cortex (Area 4), 14, 47, 48
- Primary syllable stress, 88
- Print knowledge, 127
- Prion, 383
- Procerus muscles, 35
- Production of sounds, 69
- Prognosis, 519
- Progressive assimilation, 218
- Progressive dementia, 377–378
- Progressive supranuclear palsy, 369, 372
- Projection, 608

- Projection fibers, 55
 Prompting, 185
 Prosody, 88
 Prospective studies, 577
 Prosthodontists, 611
 Psychiatrists, 611
 Psychoacoustics, definition of, 90
 Psychodynamic theory, 602
 Psychopathology (neurosis), 255–256, 266–267, 273
 Psychosexual developments, 256
 Pterygoid muscles, 34
 Puberty, 296, 333
 Pulmonary specialists, 611
 Pure-tone audiometry, 485–486
 Purkinje cells, 29
 Putamen, 381
 Pyramidal system, 47, 52, 52–54
- Quadratus lumborum, 7
 Quadriplegia, 159
 Questionnaires, 531
 Quick incidental learning, 109
 Quiet breathing, 2
- Radiation therapy, 314
 Radiologists, 611
Rancho Los Amigos Levels of Cognitive Function (Hagen & Malkamus), 393
 Randomized clinical trials, 586
 Rarefaction, definition of, 90
 Rate of speech, 89
 Rating scales, 531
 Rationalization, 607
 Reaction formation, 608
 Reading skills, 358, 359, 362, 393
 Reauditorization, 189
 Recasting, 189
Receptive-Expressive Emergent Language Test—Third Edition (REEL-3; Bzoch, League, & Brown), 173
Receptive One-Word Picture Vocabulary Test—2000 (ROWPVT-2000; Brownell), 177
 Recruitment, 477
 Rectus abdominis, 7
 Recurrent laryngeal nerve (RLN), 15, 35, 292, 324
 Reduplication, 218
 Reflection, definition of, 90
 Regressive assimilation, 218
 Regulatory communication, 116
 Reinforcement, 132, 542–544, 603
 Reissner's membrane, 466
- Reliability, 529–530, 566–567
 Religion, 606
 Repetitions, 257, 358
 Repression, 608
 Research
 - aphasia in bilingual populations, 355–356
 - articulation development in children, 215–217
 - attention-deficit/hyperactivity disorder (ADHD), 165
 - attrition and, 583
 - central tendency and, 589
 - comparative research, 578
 - correlational research, 579–580
 - definition of, 564
 - descriptive research, 576–581
 - developmental (normative) research, 578–579
 - ethnographic research, 580–581
 - evaluation of, 581–587
 - evidence-based practice and, 516
 - ex post facto (retrospective) research, 577
 - experimental research, 568–576
 - group designs, 569–571
 - hypotheses, 565
 - levels of evidence for evidence-based practice, 585–587
 - maturation and, 583
 - reliability of measurements, 566–567
 - scientific method, 563–568
 - single-subject designs, 571–575
 - speech sound acquisition, 216
 - statistical regression, 582–583
 - statistics principles, 587–590
 - stuttering, 269
 - subject selection biases, 583–584
 - survey research, 577–578
 - validity and, 566, 581–585
 - variables and, 568–569, 588–589
- Resonance, definition of, 90
 Resonation, *See also* Articulation
 assessments and, 308, 622
 description of, 1
 dysarthria and, 370, 375
 fundamentals, 15–17
 hypernasality and, 308, 370
 hyponasality, 308, 370
 nasal cavity and, 16
 oral cavity and, 16–18
 overview of, 71
 pharynx and, 15–17
 resonance disorders, 308, 309–313
 soft palate (velum) and, 16

- source-filter theory and, 16
 treatment of hearing impairments and, 494
 vocal folds and, 16
- Respiration**
 bronchi and, 2
 description of, 1
 dysarthria and, 369
 expiration, 7
 inhalation, 1, 6–7
 lungs and, 2–3
 muscles of, 5–7
 overview of, 71
 rib cage and, 5
 speech energy and, 1
 spinal column and, 3–4
 sternum and, 4
 structural framework, 1–5
 trachea, 3
 voice disorders and, 308
- Response-contingent feedback, 185**
- Reticular activating system (RAS), 43**
- Retrocochlear disorders, 483–484**
- Retroflex, 83**
- Rett syndrome, 155**
- Reversible dementia, 377–378**
- Revisions, 257**
- Rhomboideus major, 7**
- Rhomboideus minor, 7**
- Rhotic, 79, 83**
- Rib cage, 5, 6**
- Right hemisphere damage (RHD), 386**
- Right Hemisphere Language Battery, 2nd edition (RHLB-2; Bryan), 388*
- Right hemisphere syndrome, 347, 386–390**
- Risorius muscles, 25, 27**
- Rochester method, 504**
- Root morphemes, definition of, 106**
- Rosetti Infant–Toddler Language Scale (Rosetti), 173*
- Round sounds, 79**
- Rubella, 480**
- Russell-Silver syndrome, 628**
- Safety alerting devices, 499**
- Salpingopharyngeus muscle, 18, 20**
- SCERTS model, 157**
- Schwann cells, 28**
- Scientific method, 563–568**
- Screening, 517**
- Screening Test of Adolescent Language (STAL; Prather, Beecher, Stafford, & Wallace), 179*
- Second-language acquisition, 431–433**
- Secondary (metastatic) tumors, 348**
- Secondary or weak syllable stress, 88**
- Seeing Essential English (SEE), 504**
- Selective recovery theory, 448**
- Self-talk, 189**
- Semantic relations, 115**
- Semantics**
 assessment and, 175, 178, 180
 language development in children and, 114–115, 117–118, 120, 122–126
- Semicircular canals, 466**
- Semilogitudinal procedure, 579**
- Semivowels, 82–83**
- Senile plaques, 378**
- Sensory neurons, 30**
- Sensory substitution method, 499**
- Sentences, 107–108, 152, 359**
- Sequenced Inventory of Communication Development–Revised (Hendrick, Prather, & Tobin), 175*
- Sequential bilingual acquisition, 436**
- Sequential motion rates (SMRs), 374**
- Serratus anterior muscles, 6**
- Serratus posterior inferior muscles, 7**
- Serratus posterior superior muscles, 6**
- Sessile polyps, 328**
- Shaping, 185**
- Shimmer, 298**
- Shprintzen, Robert, 630**
- Shprintzen syndrome, 630**
- Sibilants, 79**
- Sickle cell anemia, 447**
- Sign language, 191, 503–504**
- Signing Exact English, 504**
- Silent period, 432–433**
- Silent prolongations, 257**
- Simple harmonic motion, 90, 93**
- Simultaneous bilingual acquisition, 435–436**
- Singers, 2**
- Single-photon emission computed tomography (SPECT), 615**
- Single-subject designs in research, 571–575**
- Single-word utterances, 115, 359–361**
- Sinusoidal motion, definition of, 90**
- Skinner, B. F., 129**
- Social communication, 150**
- Social interaction/attachment, 129, 163**
- Social interactionism theory, 136–137**
- Social Security Act (SSA), 659–660**
- Social workers, 611**

- Socioeconomic status, 160–161, 220, 448
- Soft palate (velum), 16, 18–20
- Soma, 29
- Somatosensory cortex (areas 1, 2, 3), 14, 48
- Sonorant sounds, 79, 82–83
- Sound, definition of, 90, 92
- Sound pressure level (dB SPL), 94–95
- Sound prolongations, 257
- Sound spectrograph, 95
- Sound spectrography, 304
- Sound waves, 90, 93, 469–470
- Source-filter theory, 16
- Spanish-influenced English, 422, 425–427
- Spasmodic dysphonia, 324–325
- Spastic CP, 159
- Spastic dysarthria, 372–373
- Specific language impairments (SLI), 151–153
- Speech audiometry, 486
- Speech–language pathology and audiology professions, 651
- Speech reading, 501
- Speech science
 - acoustics, 90–91
 - anatomy and physiology and, 71
 - context and speech sound production, 88–89
 - definitions, 69–70
 - phonetic transcription and, 72–75
 - phonetics and, 69–70
 - speech sounds, 75–88
 - study of sound, 92–95
- Speech sound disorders, *See also* Articulatory and phonological skills development; Fluency disorders; Language development theories; Resonance; Treatment; Voice disorders
 - academic performance and, 220
 - ankyloglossia (tongue-tie), 222
 - articulatory errors, 220–221
 - assessment of, 225–231
 - assimilation processes and, 218
 - auditory discrimination skills and, 220
 - birth order/sibling status and, 220
 - dental deviations and, 222
 - devoicing, 221
 - English as a foreign language (EFL) and, 239–241
 - fronting and, 221
 - functional articulation disorders, 219
 - gender and, 219
 - hearing loss and, 223
 - intelligence and, 220
 - labialization, 221
 - lisps, 221
 - nasalization, 221
 - neuropathologies, 223–225
 - omissions/deletions, 221
 - oral-motor coordination skills, 222
 - oral structural variables and, 221–222
 - orofacial myofunctional disorders (tongue thrust), 222–223
 - overview of, 219
 - pharyngeal fricatives, 221
 - socioeconomic status (SES) and, 220
 - stridency deletions, 221
 - substitutions, 221
 - treatment, 232–239
 - treatment of hearing impairments and, 493–494
 - unaspirated sounds, 221
 - vocalic errors, 221
- Speech sounds
 - affricates, 82
 - consonants, 75–83
 - distinctive feature analysis, 76
 - fricatives, 81–82
 - glides, 82–83
 - language impairments in children and, 151
 - liquids, 83
 - manner of articulation and, 80–83
 - manner of production, 78
 - nasals, 80–81
 - place-voice-manner analysis, 77, 80–83
 - stops, 82
 - syllables and, 75–76
 - voicing and, 80
 - vowels, 84–87
- Spinal column, 3–4, 39, 57
- Spinal motor neurons, 29, 54
- Spinal nerves, 37–38
- Split-half reliability, 530, 567
- Standardized tests, *See also* Assessment; specific tests
 - adolescent language disorders assessment, 177, 179, 181–182
 - alternatives to, 440–442
 - aphasia, 356–360, 449
 - apraxia of speech (AOS), 367
 - cautions for use of, 525–526
 - child language disorder assessment, 167
 - construct validity and, 439
 - culturally and linguistically diverse (CLD) clients and, 421, 422, 437–440
 - definition of, 524
 - dementia, 384

- distributions and, 526
- dysarthria, 375
- limitations of, 525
- principles of, 524–530
- reliability of, 529–530
- speech sound disorder assessment, 229–231
- types of scores, 526–527
- validity of, 527–529
- Stanford-Binet Intelligence Scales—Fifth Edition (SB5; Roid)*, 528
- Stapedectomy, 476
- Stapedius muscle, 465
- Statistical regression, 582–583
- Statistics principles, 587–590
- Stenosis, 474
- Stereotypes, 417
- Sternocleidomastoid muscles, 6, 37
- Sternohyoid muscles, 12
- Sternothyroid muscles, 12
- Sternum (breastbone), 4
- Stimulability, 228–229
- Stops, 82, 218
- Strain-strangle, 299
- Stridency deletions, 221, 235
- Stridency of voice, 300
- Strident sounds, 79
- Strokes
 - African Americans and, 445–446
 - aphasia and, 347
 - dysarthria and, 369, 372
 - dysphagia and, 396
 - gender and, 348
 - stroke recovery theories, 447–448
 - types of, 348
- Strong cognition hypothesis, 132
- Structural theory of language development, 212
- Stuttering. *See* Fluency disorders
- Styloglossus muscles, 24, 26, 38
- Stylohyoid muscles, 12, 26, 295
- Stylomastoid foramen, 35
- Stylopharyngeus muscle, 18, 26
- Subcortical aphasia, 354–355
- Subcostal muscles, 7
- Subglottal stenosis, 320
- Subglottic pressure, 9
- Submucous cleft, 310, 618
- Substantia nigra, 42, 44, 53, 381
- Substitutions, 217–218, 221
- Successive recovery theory, 448
- Sulcus, 46
- Superior auricular muscle, 35
- Superior laryngeal nerve (SLN), 15, 292
- Superior longitudinal fibers, 55
- Superior longitudinal muscles, 24
- Superior peduncle, 42, 45
- Supplementary motor cortex (area 6), 14, 47
- Suppression, 608
- Suprahyoid muscles, 12
- Supramarginal gyrus, 49
- Suprasegmentals, 88–89
- Surface structure, 131
- Survey research, 577–578
- Swallowing disorders
 - assessment of, 398–399
 - etiology, 396
 - normal swallow compared with disordered swallow, 396–397
 - overview of, 395–396
 - treatment, 399–401
- Syllabics, 79
- Syllabification, 76
- Syllables
 - articulatory and phonological skills development and, 218
 - consonants and, 75–76
 - language impairments in children and, 151
 - stress and, 88
 - vowels and, 75–76, 88
- Sylvian fissure, 46
- Synapses, 30
- Synergistic and differential recovery theory, 447
- Syntactic problems, 152
- Syntax
 - African American English and, 421, 423
 - assessment of child language disorders and, 173, 175, 178, 180
 - childhood language development, 114, 117–119, 122, 123, 125–126
 - language disorders in children and, 152, 154
 - overview of, 107–108
- Syphilis, 480
- Tactile agnosia, 364
- Tacts, 130
- Tadoma method, 499
- Taste buds, 23
- Taxoplasmosis, 480
- Teeth, 19, 22–23, 222, 628
- Teflon injections, 401
- Telecommunication devices for the deaf (TDDs), 499

- Telegraphic speech, 152
- Temporal auditory processing, 135
- Temporal bones, 465
- Temporal gyrus, 49
- Temporal lobe, 49–50, 467
- Temporalis muscles, 22, 34
- Temporomandibular joint, 22
- Tense sounds, 79
- Tensor tympani muscle, 465
- Tensor veli palatini muscles, 20, 34, 465
- Test for Auditory Comprehension of Language—Third Edition* (TACL-3; Carrow-Woolfolk), 177
- Test of Adolescent/Adult Word Finding* (TAWF; German), 182
- Test of Adolescent and Adult Language—Fourth Edition* (TOAL-4; Hammill, Brown, Larsen, & Wiederholt), 182
- Test of Early Language Development—Third Edition* (TELD-3; Hresko, Reid, & Hammill), 177
- Test of Language Development—Intermediate: Fourth Edition* (TOLD-I:4; Hammill & Newcomer), 177, 182
- Test of Language Development—Primary: Fourth Edition* (TOLD-P:4; Newcomer & Hammill), 177
- Test of Problem Solving 2-Adolescent* (TOPS-2; Boweres, Huisingsh, & LoGiudice), 182
- Test of Visual Neglect* (Albert), 389
- Test of Word Finding—Second Edition* (TWF-2; German), 177
- Test-retest reliability, 530, 567
- Thalamus, 43, 55
- Theory, definition of, 564
- Thoracic breathing, 308
- Thoracic cavity, 2
- Thoracic muscles of inspiration, 6
- Thrombus, 348
- Thrombus strokes, 348
- Thyroarytenoid (TA) muscles, 10, 36, 292, 294
- Thyrohyoid muscles, 12
- Thyroid cartilage, 8–10, 292, 293
- Thyropharyngeus muscle, 18
- Thyroplasty type I, 324
- Time delay, 186–187
- Tobacco, 313, 321
- Token Test for Children—Second Edition* (TTFC-2; McGhee, Ehrler, & DiSimoni), 177
- Tomography, 614
- Tongue
 - ankyloglossia (tongue-tie), 222
 - consonants and, 78–79, 83
 - illustration, 19
 - orofacial myofunctional disorders (tongue thrust), 222–223
 - overview, 23–24
 - tongue muscles, 24, 38
 - vowels and, 85, 208
- Tongue muscles, 24, 38
- Tonsils, 18, 19
- Tourette syndrome, 628–629
- Trachea
 - description of, 3
 - illustration of, 3, 8, 16, 293
 - phonation and, 8–9
- Training, *See also* Treatment
 - accent training, 240
 - auditory discrimination/perceptual training, 233
 - communication training for hearing impairments, 500–504
- Transcortical motor aphasia (TMA), 350
- Transcortical sensory aphasia (TSA), 352–353
- Transdisciplinary teams, 523
- Transformation, 131
- Transformation generative theory of grammar, 131
- Transgender, 335
- Transmitting medium, definition of, 90
- Transverse arytenoid muscle, 10, 11, 294, 295
- Transversus abdominis, 7
- Transversus thoracicus, 7
- Trapezius muscles, 6, 37
- Traumatic brain injury (TBI), 158, 279, 347, 369, 390–395, 482
- Traumatic laryngitis, 329–330
- Treatment, *See also* Assessment; Training
 - aphasia, 360–363
 - auditory system, 491–504
 - autism, 157
 - behavior therapy, 334–335
 - booster treatments, 549–550
 - clefts and, 622–624
 - cultural-linguistic considerations, 551–552
 - culturally and linguistically diverse (CLD) clients, 443–449
 - definitions, 537–538
 - dysarthria, 375–376
 - evidence-based practice and, 515–516
 - fluency disorders, 274–276, 280, 282
 - follow-up, 549
 - hypernasality, 312
 - hyponasality, 312–313
 - maintenance programs, 548–549

- neurological disease, 326
- outline of steps in treatment, 550–551
- overview of treatment process, 545–550
- paradigm for communication disorders, 538
- reinforcement and, 542–544
- right hemisphere syndrome, 389–390
- sequence of treatment, 547–548
- swallowing disorders, 399–401
- terminology, 539–542
- traumatic brain injury (TBI), 393–395
- voice disorders, 327, 330–335
- Treatment of hearing impairments
 - amplification, 495–498
 - assistive devices, 499
 - aural rehabilitation, 495
 - cochlear implants, 497–498
 - fluency disorders, 494
 - general principles, 491–492
 - hearing aids, 496–497
 - language disorders, 493–494
 - resonance disorders, 494
 - speech disorders, 493
 - tactile aids, 499
- Treatment of language disorders in children, *See also*
 - Language disorders in children
 - augmentative and alternative communication (AAC), 190–192
 - basic behavioral techniques, 185
 - discrete trial procedures, 184–185
 - expansion, 185
 - extension, 185–186
 - facilitated communication, 192
 - family and, 183
 - focused stimulation, 186
 - joint routines, 187
 - literacy skills training, 189–190
 - milieu teaching, 186–187
 - narrative skills training, 187–188
 - overview of, 182–183
 - parallel talk, 188
 - reauditorization, 189
 - recasting, 189
 - self-talk, 189
 - whole-language approach, 189
- Treatment of speech sound disorders
 - contrast approaches, 236
 - distinctive features approach (DFA), 235–236
 - linguistic approaches, 235–238
 - McDonald's sensory-motor approach, 234–235
 - metaphon therapy approach, 236–237
 - overview of, 232–233
 - phonological process approach (PPA), 237–238
 - Van Riper's traditional approach, 233–234
- Trigeminal neuralgia, 33
- Trisomy 13, 629
- Trochlear nucleus, 53
- Tumors, 348, 480, 483
- Turn-taking skills, 112
- Turner syndrome, 630
- Twins, 259–260
- Two-word utterances, 116
- Tympanic membrane, 464
- Tympanometry, 487
- Type-token ratio (TTR), 168
- Ulcers, 318, 323, 329
- Unaspirated sounds, 221
- Underextended words, 109, 151
- Underlying deficits, 151
- Unilateral paralysis, 323
- Unilateral upper motor neuron (UUMN) dysarthria, 373–374
- Unipolar neurons, 29
- Unmarked sounds, 208
- U.S. Bureau of the Census, 415, 416, 425
- U.S. Department of Health and Human Services, 660
- Usher syndrome, 630
- Utah Test of Language Development—Fourth Edition* (UTLD-4; Mecham), 177
- Uvula, 19
- Validity, 439, 527–529, 566, 581–585
- Valleculae, 13
- Van Riper's traditional approach, 233–234
- Variables in research, 568–569, 588–589
- Variagated/nonreduplication babbling stage, 214
- Vascular dementia, 383
- Velar fronting, 217
- Velocardiofacial syndrome (VCFS), 630–631
- Velocity, 91, 93
- Velopharyngeal closure, 16, 19
- Velopharyngeal inadequacy (VPI), 310
- Velum (soft palate), 16, 18–20, 311
- Ventricular folds, 12–13, 292
- Verbal behavior acquisition, 129
- Vertebral arteries, 58
- Vestibular system, 466
- Videofluorographic assessment, 399
- Videofluoroscopy, 609, 615, 621
- Videostroboscopy, 304–305

- Vineland Adaptive Behavior Scales—Second Edition*
(Sparrow, Cicchetti, & Balla), 173
- Visual agnosia, 364
- Visual aids, 313
- Visual associative cortex, 48
- Visual cortex, 48
- Visually reinforced head turns, 214
- Visuoperceptual deficits, 387
- Vocabulary, 108
- Vocal fold thickening, 329
- Vocal folds
 illustration, 10, 293, 299
 layers, 12
 mucosal wave action, 14
 phonation and, 9, 12–13
 resonance and, 16
 voice production and, 292
- Vocal nodules, 327–328
- Vocal punctuation, 89
- Vocalic sounds, 78
- Vocalis muscle, 10
- Vocalis muscles, 12
- Vocalization, 217
- Voice disorders, *See also* Fluency disorders; Language disorders in children; Speech sound disorders
 assessment, 300–309
 breathiness, 299
 cover-body theory of phonation, 292
 diplophonia (double voice), 300
 gastroesophageal reflux, 313, 319, 321, 323
 glottal fry, 299–300
 harshness, 299
 hearing impairments and, 502–503
 hoarseness, 298–299
 hypernasality, 308, 370
 hyponasality, 308, 370
 jitter, 298
 larynx and, 291–295
 loudness disorders, 332–333
 neurological diseases, 325–326
 phonation and, 309
 pitch and, 298, 308
 psychogenic voice disorders, 334–335
 quality and, 298–300
 resonance and, 308–313
 respiration and, 308
 shimmer, 298
 strain-strangle, 299
 stridency, 300
 vocally abusive practices, 326–327
 voice changes in life span, 296–297
 volume and, 298, 308
- Voice onset time, 96
- Voice onset time (VOT), 268
- Voice termination time, 96
- Voice therapy, 325
- Voicing, definition of, 77
- Voicing assimilation, 218
- Volume of speech, 89
- Von Recklinghausen disease, 483
- Vowels
 articulatory and phonological skills development and, 217–218
 back vowels, 86–87
 central vowels, 86
 consonants compared with, 76
 diphthongs, 87, 208
 distinctive feature analysis, 84, 208, 209
 front vowels, 85–86
 overview of, 84
 production of, 208
 stuttering and, 263
 suprasegmentals, 88
 syllables and, 75–76
 tongue placement and, 85, 208
 vocalization, 217
 vowel position characteristics, 84–85
- Vygotsky, Lev, 136–137
- Weak cognition hypothesis, 134
- Wernicke-Korsakoff syndrome, 377
- Wernicke's aphasia, 352
- Wernicke's area, 48, 50, 55, 352, 363
- Western Aphasia Battery (WAB; Kertesz), 356
- White matter, 55, 57
- Whole-language approach, 189
- Williams syndrome, 631
- Wilson's disease, 369
- Woodcock Language Proficiency Battery—Revised*
(WLPB-R; Woodcock & Muñoz-Sandoval), 182
- Word definition skills, 180
- Word-finding/retrieval, 151–152, 180
- Word knowledge, 109
- Word-relation problems, 180
 The WORD Test 2—Elementary (Bowers, Huisingsh, LoGiudice, & Orman), 177
- World knowledge, 109
- Writing skills, 359, 362–363, 393
- Zygomatic minor, 25, 27