Index

abnormal crowding hypothesis, visual deficits and, 78 academic achievement intervention strategies based on, 142 IO levels and, 19 risk identification for reading disability and, 135 working memory intervention and, 62-63 academic skills dyslexia diagnosis and, 21 working memory intervention and, 62-63 ACID profile (arithmetic, coding, information, and digit span subtests), 20-21 Adi, Y., 155–156 advocacy groups, definitions of dyslexia and, 6-7 age-based dynamics dyslexia and, 6-7 genetics of dyslexia and, 111, 119-121 genetics of reading disability and, 111, 115 interventions in reading disability and, 137 - 138rapid automatized naming and, 50 resistance to intervention and, 139-149 in risk identification for reading disability, 131-132 Ahissar, M., 12-13, 64-65, 78-79, 83-85 Albion, E., 155-156 allophonic perception, reading disability and, 67-68 Al Otaiba, S., 131-132, 135 alphabetic principle, risk identification for reading disability, 133-134 alphanumeric systems, rapid automatized naming and, 50-51 alternative interventions for dyslexia, 152-160 American Academy of Ophthalmology, 155-156 American Academy of Pediatric Ophthalmology and Strabismus, 155-156 American Academy of Pediatrics, 155-156 on visual stress, 73-74

American Association of Certified Orthoptists, 155-156 American Psychiatric Association (APA), dyslexia classification and, 8 American Psychological Association, resistance to reform in, 23 analytical validity, genetics of dyslexia and, 111, 115, 119-121 anchoring deficit hypothesis, dyslexia and, 78–79 Andrist, C. G., 177 Anglocentric focus in dyslexia research, 7 angular gyrus dyslexia linked to, 2-3 reading-brain model research and, 91-93 assessment of dyslexia overview of, 123-165 specialist skills for, 149-151 assistive listening devices auditory processing training and, 68 reading disability remediation, 151-152 asymmetric tonic neck reflex, dyslexia linked to, 152-155 "attentional blink" phenomenon, 74-81 attentional factors in dyslexia, 86-87 in reading disability, 74-81 attention-deficit hyperactivity disorder (ADHD) auditory processing and, 66 dyslexia and, 12-13 reading disability and, 160-164 auditory cortex ectopias functional magnetic resonance imaging studies, 99-101 reading-brain model research and, 91-93 voxel-based morphometry of, 95-96 auditory interventions, for dyslexia management, 157-158 auditory processing causal relationships in, 66-67

current research issues in, 81

260 Index

functional magnetic resonance imaging studies, 99-101 intervention programs for dyslexia and, 157 - 158phonological awareness and, 64-68 visual processing influence on, 71-72 automaticity deficits dyslexia and, 81-83 interventions for improvement of, 136-139 automatic word recognition, phonological deficit hypothesis and, 44 Baddeley, A. D., 57-58 balance/postural stability, dyslexia and, 81-83 Barth, A. E., 134-135 Beattie, R. L., 65-66 behavioral difficulties dyslexia and, 12, 36-38 genetics and, 118 reading disability and, 177-182 training studies in improvement of, 104-105, 107-110 Ben-Yehuda, G., 12-13 Berlin, Rudolf, 2 Bertrand, D., 54 biochemical factors in dyslexia, 170-171 magnetic resonance spectroscopy studies, 103 - 104biofeedback interventions, for dyslexia and reading disability, 158-159 biological factors in dyslexia, 26-27, 36-38, 170 - 171science and politics of, 175-177 Bishop, D., 64-65 Blomert, L., 51-52 Bogliotti, C., 67-68 bottom-up processing attentional factors, 74-81 auditory processing and, 64-68 deficits in, 78-79 philosophical debate over, 124-129 brain anatomy current and future research on, 107-110, 172 diffusion tensor imaging of, 96-97 magnetic resonance imaging of, 94-95 reading-brain model of dyslexia, 93-97 voxel-based morphometry, 95-96 brain-damaged students, phonological deficit hypothesis and, 47 brain function combined PET/fMRI brain imaging of, 101 - 102cross-linguistic braining imaging studies,

current and future research issues on, 107 - 110current and future research on, 172 dyslexia linked to, 3-4 electrophysiological studies, 102-103 functional magnetic resonance imaging, 99-101 magnetic resonance spectroscopy studies, 103 - 104magnetoencephalography studies, 103 perceptual-motor training and, 152-155 positron emission tomography studies, 99 postmortem studies, 91-93 reading-brain model and, 89-91 studies of, 97-104 brain plasticity, functional magnetic resonance imaging studies, 99-101 Breteler, S., 158-159 British Dyslexia Association, 1-4, 32 British Psychological Society, Working Party on dyslexia, 8-9 Broadbent, William (Sir), 1-2 Brooks, G., 5-6, 36 Bruder, J., 67-68, 71 Butterworth, B., 32 Butterworth and Kovas, 32 candidate genome regions current and future research on, 119-121 gene identification, 115 molecular studies of reading disability, 112 - 114Catts, H. W., 133-134 causal explanations of dyslexia, 26-27, 172 - 173phonological deficit hypothesis and, 46 central executive, working memory and, 57-58, 60-62 cerebellar hypothesis brain function studies and, 97-104 perceptual-motor training and, 152-155 cerebellum magnetic resonance imaging of, 94-95 psycho-motor processing and, 81-83 reading-brain model research and, 91-93 cerebral asymmetry dyslexia research on, 93-97 magnetic resonance imaging of, 94 cerebrospinal fluid (CSF), voxel-based morphometry, 95-96 Chiappe, P., 54 Chinese readers

auditory processing in, 67–68 cross-linguistic braining imaging studies, 105–106

105 - 106

Index

gender discrepancies in dyslexia prevalence in, 33-34 Churchill, Winston, 23-24 classroom environment intervention and role of, 149 risk identification for reading disability and, 135 - 136classroom intervention, reading competency and. 18 clinical utility, genetics of dyslexia and, 119 - 121clinical validity, genetics of dyslexia and, 119 - 121cognitive process, dyslexia and, xiii-xiv, 36-38, 42-87 attentional factors, 74-81 current research in, 179-180 educational intervention and, 85-86 low-level sensory processing, 63-74 multifactorial factors in, 83-85 phonological deficit hypothesis, 42-49 psycho-motor processing, 81-83 rapid naming and double deficit research, 49–56 cognitive testing IQ discrepancy model, 17-24 response to intervention model and, 29-30 coherent motion perception, visual processing and, 70-71 colored lenses, visual stress management and, 155 - 156complementary interventions for dyslexia, 152-160 Comprehensive Test of Phonological Processing, 133-134 Compton, D. L., 30, 132-133, 135-136 computer technology auditory interventions using, 157-158 dyslexia intervention using, 151-152 Congenital Word-Blindness (Hinshelwood), 2 "Congenital Word Blindness" (Morgan), 2 Conlon, E. G., 72–73 Connor, C. M., 128–129 conserved non-coding elements (CNEs), molecular studies of reading disability and. 118 contextual cues, teaching of reading and, 125-126 Cooke, A., 9 corpus callosum diffusional tract imaging of, 96-97 magnetic resonance imaging of, 94 correlation studies, phonological deficit

hypothesis and, 46

261

cortical surface area and thickness, reading brain studies, 93-97 Covington, M. V., 23-24 Crain, S., 47 Crisfield, J., 32 Crombie, M., 134-135 cross-linguistic studies genetics of reading disability and, 111 reading-brain model and, 105-106 cross-sectional studies, phonological deficit hypothesis and, 46 cueing effect sluggish attention hypothesis, 76 teaching of reading and, 125-126 cultural factors in dyslexia, science and politics of, 175-177 Danish readers molecular studies of reading disability and, 112 - 114phonological awareness in, 52-53 data-driven hypothesis testing, intervention assessment, 148 DDAT (Dyslexia, Dyspraxia, Attention Treatment Program), 152-155 decoding ability dyslexia and, 6-7, 160-164 interventions for improvement of, 136-139 rapid naming and, 52 reading fluency and, 144-146 Denckla, M., 49 Denton, C. A., 140 developmental disabilities, genome structural variations and, 117 developmental dyslexia definitions of, ix genetics of reading disability and, 115-116 developmental dysphasia, dyslexia and, 25-26 Deweyian educational theory, 124-129 diagnosis of dyslexia. See also assessment of dyslexia academic skills and, 21 current debate concerning, 168-169, 180 - 181end of dyslexia and, 177-182 IQ discrepancy model, xiii-xvii, 10 pedagogic value of, 160-164 political motivations in, 39-40 psychometric assessment, 20-21 response to intervention model, 23, 27-31 specificity hypothesis, 35 Diagnostic and Statistical Manual (DSM-5), 168-169, 177-182 dyslexia classification and, 8

learning disability defined in, 34–35

262 Index

Diehl J J 48 dietary supplementation, dyslexia management and, 156-157 diffusion tensor imaging (DTI), brain anatomy, 96-97 DiGeorge syndrome, 117 Digit Span Coding, 20-21 working memory and, 57-58 discrepancy model, reading competency and IQ levels, 17-24 DNA markers genome structural variations and, 117 molecular studies of reading disability, 112-114 DORE programme. See DDAT (Dyslexia, Dyspraxia, Attention Treatment Program) double deficit hypothesis dyslexia and, 51-52 statistical analysis of, 54 visual attention span, 77-78 Duff, F. J., 43 Dyck, M., 72-73 dynamic assessment techniques, risk identification for reading disability and, 135 Dynamic Indicators of Basic Early Literacy Skills (DIBELS), risk identification for reading disability, 133-134 dvslexia assessment and intervention, xiv-xv case studies in. 2 causal definitions of, 26-27 cognitive process and, xiii-xiv, 36-38, 42 - 87complementary and alternative approaches to intervention in, 152-160 conceptual ambiguities concerning, 39-40 criticism of research on, ix-x, 1-4 current debate concerning, 166-175 definitions of, 4-17 diversity of theories concerning, 38-39 early research on, 2 exclusionary definitions of, 13 genetic bases for, 110-122 high intelligence levels linked to, 22-24, 169 inadequacy of terminology for, 177-182 interdisciplinary approach to, x language disorders and, 25-26 learning disabilities and, 16, 34-36 origins of terminology, 2 other reading disorders and, 7 prevalence of, 31-34

reading and IQ discrepancies and, 17-24

resistant dyslexia, interventions for, 139 - 149risk identification in children for, 129-139 science and politics surrounding, xv self-protective concealment of, 23-24 symptoms of, 13-14 terminology involving, 40-41, 168, 177-182 Dyslexia Early Screening Test (DEST), 134 Dyslexia Foundation of New Zealand, 32 "dyslexia-friendly" schools movement, 160-164 The Dyslexia Myth (television program), 166-167 dyslexia probands, genetics of reading disability and, 112 early intervention in reading disability assessment of, 138-139 importance of, 136-139 early learning skills, reading performance and, 44-45 Edison, Thomas, 23-24 educational services. See also special education services cognitive dysfunction in dyslexia and, 85-86 current assessment for dyslexics of, 171 working memory and, 62-63 Einstein, Albert, 23-24 Elbro, C., 52-53 electroencephalography (EEG) brain function studies, 102-103 training studies using, 104-105 electrophysiological studies, brain function, 102-103 Elliott, J., 1-4, 13-14, 62-63, 135, 160-164 endophenotypes, phonological deficit hypothesis and, 48-49 Enfield, M. L., 168 English readers auditory processing in, 67-68 combined PET/fMRI brain imaging studies of, 101–102 cross-linguistic braining imaging studies, 105-106 phonological awareness in, 83-85 rapid automatized naming correlation for, 50 reading fluency in, 144-146 environmental experiences dyslexia linked to, 26-27 genetics of reading disability and, 115-116 intervention and role of, 149 phonological deficit hypothesis and, 46

Index

risk identification for reading disability and, 135-136 epigenetic genome regulation, reading disability genetics and, 119 event-related potentials (ERPs), brain function studies, 102–103 explicit phonological processing, 43 Facoetti, A., 80 false negative results, in risk identification for reading disability, 130-131 false positive results genetics of reading disability and, 116-117 in risk identification for reading disability, 130-131 family sampling, genetics of reading disability and, 112 Fast ForWord program, xvi Fast ForWord system, 157-158 fatty acid interventions, dyslexia management and, 156-157 Fawcett, A. J., 81-83, 134 Fernald, Grace, 3-4 Finnish readers computer and assistive technologies for, 151-152 phonological awareness in, 52-53 Fletcher, J. M., 7, 29-30, 32, 52, 149-151 "flexible scaffold" theory, molecular studies of reading disability and, 118 floor effects, risk identification for reading disability, 133-134 Foorman, B. R., 26-27 fractional anisotropy analysis, brain anatomical studies using, 96-97 Franceschini, S., 76-77 French readers cross-linguistic braining imaging studies, 105 - 106dyslexia and memory deficit in, 61-62 Friedmann, N., 74-81 Frith, U., 36-38 Fuchs, D., 30, 148 Fuchs, L. S., 135 functional imaging (generally) brain function studies, 99-101 combined PET/MRI brain imaging, 101-102 current and future research issues using, 107 - 110functional magnetic resonance imaging (fMRI) brain function studies, 99-101 electrophysiologic studies combined with, 102 - 103short term and working memory studies, 56

263

training studies using, 104-105 Garside, S., 168 gender discrepancies in dyslexia prevalence, 33-34 reading-brain model research and, 91-93 generalist gene hypothesis, molecular studies of reading disability and, 114-115 genetics and dyslexia future research issues in, 115-116, 119-121, 170-171 molecular studies of reading disability and, 112-114 reading difficulty in high-IQ students and, 18 reading disability and, 110-122, 177-182 relative risk estimates, 112 geniculate nuclei, reading-brain model research and, 91-93 genome variability genetics of reading disability and, 111 reading disability and, 88 structural variations, 117 Germany, gender discrepancies in dyslexia prevalence in, 33-34 Gerretsen, P., 51-52 Geschwind, N., 91-93 gifted dyslexics, media perceptions of, 23-24 Gillingham, Anna, xvi, 149-151 global processing, rapid automatized naming and, 55 Goodman, K. S., 124 Goswami, U., 65 grapheme-phoneme mapping, visual deficits and, 68-74 gray matter (brain), voxel-based morphometry, 95-96 Greenspan, S., 159-160 Gresham, F. M., 29-30 Grigorenko, E. L., 160-164 Hale, J. B., 29-30 Hallahan, D. P., 3 Hambly, H., 152-155 Hari, R., 74-81 Haskins lab, auditory interventions development at, 157-158 Hayiou-Thomas, M., 43 Heaton, P., 10 heritability estimates dyslexia and, 172 genetics of reading disability and, 111, 116-117 Hinshelwood, James, 2, 31

Hitch, G., 57-58

264 Index

Hulme, C., 43 Human Genome Project, 121 Hyatt, K. J., 152-155 Hyde, C., 155-156 Hyperlexia, defined, 6-7 hypo-activation mechanisms combined PET/fMRI brain imaging studies of, 101-102 magnetoencephalography studies, 103 implicit phonological processing, 43 individualized interventions assessment of, 138-139, 146-147 resistant reading disability and, 140-141 Individuals with Disabilities Education Act (IDEA), 129-139 Individuals with Disabilities Education Improvement Act (IDEIA) (U.S.), learning disability defined in, 34-35 information and communications technology (ICT), dyslexia intervention using, 151 - 152Information subtest, dyslexia and, 16 intellectually disabled students, interventions for, 144 International Dyslexia Association, 168-169, 177-182 causal explanations of dyslexia, 26-27 prevalence statistics of, 32 interpretivist research, teaching of reading and, 126 - 127interventions in dyslexia and reading disability in auditory processing, 66-67, 157-158 biofeedback interventions and, 158-159 complementary and alternative approaches to, 152-160 computer and assistive technologies for, 151-152 evidence-based theories on, 174-175 fatty acid interventions, 156-157 individualized vs. standardized approaches, 138 - 139for older disabled readers, 142-144 overview, xiii-xvii, 123-165 pedagogic value of diagnosis, 160-164 perceptual-motor training system, 152-155 recommendations for, 166-175 resistance to, strategies for reducing, 139-149 risk identification for dyslexia and, 129-139 skills requirements for, 148-149 teaching methods for, 149-151 visual interventions, 155-156

intransigent reading disability, interventions for, 139-149

inventory-based screening, risk identification for reading disability, 133-134 IQ discrepancy model demise of, 167-168 dyslexia diagnosis and, xiii-xvii, 10 reading competency and, 17-24 IO scores cognitive assessment and, 179-180 learning disability linked to, 22 professional resistance to limitations of, 23 research selections based on, 22 Italian readers computer and assistive technologies for, 151-152 cross-linguistic braining imaging studies, 105-106 Jackson, G., 158-159 Jackson, S., 158-159 Joint Statement - Learning Disabilities, Dyslexia, and Vision, 73-74 Juel, C., 128-129 Juul, H., 52-53 Jyväskylä Longitudinal study, phonological deficit hypothesis and, 46-47 Kamhi, A., 181-182 Katch, E. L., 128-129 Kavale, K. A., 28–29, 152–155 Kendell, R. E., 31-32 Kerhel, N., 74-81 Kersting, K., 23 Khoury, M. J., 119-121 kinesthetic interventions, perceptual-motor training and, 152-155 Kirby, J, Georgiou et al., 51-53 Kirk, S. A., 34–35 Kovas, Y., 32 Kussmaul, L. A., 1-2 lack of asymmetry hypothesis, reading-brain model research, 91-93 Lallier, M., 80 Landerl, K., 17, 71-72, 78-79 language-based deficits dyslexia and, xiii-xvii, 4 multisensory interventions and, xvi language comprehension auditory processing and, 64-68 cross-linguistic brain imaging studies and, 105 - 106current and future research involving, 107-110 whole language approach to, 124-129 word recognition and, 25-26

Index

language disorders auditory interventions for, 157-158 auditory processing and, 64-68 dyslexia and, 25-26 phonological deficit hypothesis and, 47 reading-brain model research and, 91-93 Language in the National Curriculum, 126 learning disability ACID profile and, 20-21 definitions of, 34-35 diagnosis of, 27 dyslexia in relation to, 16, 34-36 IQ ranges linked to, 22 prevalence of, 35 response to intervention (RTI) model and, 27-31 risk identification for, 130-131 science and politics of, 175-177 learning disorder, dyslexia and, 8 Lee, R., 134 left posterior brain system, functional magnetic resonance imaging studies, 99-101 letter identification abnormal crowding hypothesis, 78 attentional factors, 74-81 multisensory teaching techniques for, 149-151 letter-sound integration, functional magnetic resonance imaging studies, 99-101 letter-to-sound decoding, phonological deficit hypothesis and, 44 Levitsky, W., 91–93 Liddle, E., 158–159 Linan-Thompson, S., 149-151 Lipka, O., 36 listening comprehension, reading and, xiii-xvii literacy dyslexia and problems in, 5, 160-164 risk identification for reading disability and levels of, 131-132 working memory and, 57 longitudinal studies auditory processing, 66-67 of interventions in reading disability, 137-138 phonological deficit hypothesis and, 46-47 reading-brain model, 107-110 sluggish attention hypothesis, 76 long-term memory (LTM), reading disability and, 56 low-level sensory processing attentional factors, 74-81 auditory processing, 64-68 current research issues in, 81

dyslexia and, 63-74 visual processing, 68-74 magnetic resonance imaging (MRI), brain anatomical structure, 94-95 magnetic resonance spectroscopy (MRS), brain function studies, 103-104 magnetoencephalography (MEG) studies brain function, 103 training studies using, 104-105 magnocellular dysfunction attentional factors, 74-81 brain function studies and, 97-104 critique of theories on, 72-73 functional magnetic resonance imaging studies, 99-101 visual processing and, 69-73 visual stress and, 73-74 maintenance of performance, interventions for resistant dyslexia and, 139-149 Manis, F. R., 65-66 Massaoud-Galusi, S., 67-68 mathematical difficulties, dyslexia and, 16-17 Mathes, P. G., 138-139 "Matthew effect" reading fluency and, 144-146 underestimation of cognitive potential and, 19 visual stress and, 73-74 Mattson, P. D., 152-155 McArthur, G. M., 64-65 McCardle, P., 121 McLean, G. M. T., 72-73 McPhillips, M., 152-155 Meares-Irlen syndrome, 73-74 visual intervention techniques, 155-156 Melby-Lervig, M., 45, 62 Mendelian laws, genetics of reading disability and, 116-117 Menghini, D., 83-85 Mercer, C., 3 meta-analytic analysis, of auditory interventions, 157-158 metacognitive strategies, reading fluency and, 145-146 Miller, B., 121 "miscue analysis," teaching of reading and, 125-126 missing heritability, genetics of reading disability and, 116-117 molecular studies

conserved non-coding elements (CNEs), 118

genetics of reading disability and, 112-114 Moll, K., 17

266 Index

Moores, E., 78 Morgan, P. L., 12 Morgan, W. Pringle, 2 Morris, R. D., 145-146 Morrison, F. J., 128-129 motivation, reading and, 5-6 motor deficits dyslexia and, 81-83 risk identification for reading disability and, 134-135 multifactorial factors in dyslexia, 83-85 current research on, 173-174 multisensory attentional deficits, reading disability and, 80 multisensory reading interventions, research on, xvi multisensory teaching methods, dyslexia assessment and intervention, 149-151 multistage assessment strategies, risk identification for reading disability and, 131 - 132mythology of dyslexia, 166-167 naming speed. See rapid automatized naming (RAN) National Early Literacy Panel, 62 National Reading Panel, 127 assessments of dyslexia teaching, 149-151 nature vs. nurture debate, dyslexia and, 5-6 Netherlands phonological deficit hypothesis and dyslexia studies in, 46-47 prevalence of dyslexia in, 32 neurobiology and dyslexia auditory processing and, 68 biofeedback interventions and, 158-159 brain anatomical structure studies, 93-97 current and future research involving, 107-110, 170-171 future promise of, 122 genetic bases of reading disability, 110-122 low-level sensory processing, 63-74 magnocellular system, visual processing and, 69-73 postmortem studies of, 91-93 reading brain model and, 88-110 reading disability and, xiv, 88-122, 177-182 scotopic sensitivity, visual stress and, 73-74 neuronal network reading-brain model and, 89-91 reading-brain model research and, 91-93 New Zealand gender discrepancies in dyslexia prevalence in, 33-34

prevalence of dyslexia in, 32

Nicolson, R. I., 81-83, 134, 152-155 No Child Left Behind Act (NCLB), 129-139 non-curriculum-based interventions for dyslexia, 152-160 nonword testing, working memory and, 57-58 Northern Ireland, dyslexic readers in, 152-155 objects, rapid automatized naming and, 50-51 occipital lobe structure, reading-brain model research and, 91-93 oculomotor problems, visual processing and, 69 Oganian, Y., 78-79 older students intervention strategies for, 142-144, 147-148 pedagogic value of dyslexia diagnosis in, 160 - 164reading fluency interventions in, 144-146 one-to-one tutoring programs, interventions based on. 136-139 opaque languages double deficit hypothesis and, 51-52 reading instruction in, 128-129 optical reversibility theory, challenges to, xvi oral language comprehension, reading disability and, 25-26 oral reading fluency, risk identification for reading disability, 133-134 orthography studies cross-linguistic brain imaging studies, 105 - 106gender discrepancies in dyslexia prevalence in. 33-34 phonological decoding, 43-44 rapid automatized naming and, 50-51, 53 Orton, Samuel, xvi, 3-4, 31, 91-93, 149-151 outcome assessment, genetics of dyslexia and, 119-121 output deficit, phonological awareness and, 47 overlearning technique, dyslexia assessment and intervention, 149-151 "Pamela Phelps (P.P.)" case, 123, 160-164 Pammer, K., 72-73 parental education, 177 genetics of reading disability and, 115-116 parietal lobe structure, reading-brain model research and, 91-93 parvocellular pathway, visual processing and, 69-73 Paulesu, E., 105-106 Pearson, P. D., 126-127

peer interactions, intervention strategies for older disabled readers and, 142–144

Index

Pennington, B. F., 83-85 perception, auditory processing and, 65 perceptual-motor training, dyslexia intervention with, 152-155 PHAB (Phonological Analysis and Blending) system, reading fluency and, 145-146 PHAST (phonological and strategy-based) system, reading fluency and, 145-146 phonemes, auditory processing and, 67-68 phonics interventions based on, 136-139 philosophical debate over, 124-129 phonological awareness auditory processing and, 64-68 brain function studies and, 97-104 corpus callosum anatomy and, 94 debate over teaching of reading and, 124-129 dyslexia predictability and, 62 gender discrepancies in dyslexia prevalence in. 33-34 interventions for development of, 136-139 longitudinal studies and, 46-47 multifactorial factors in dyslexia and, 83-85 rapid automatized naming and, 52-53 reading competency and, 42-49 risk identification for reading disability and, 133-134, 135 training studies in improvement of, 104-105 visual attention span hypothesis and, 77-78 working memory and, 59 Phonological Awareness Test, 133-134 phonological deficit hypothesis bidirectional consequences and relationship in, 46 cognitive process and dyslexia, 42-49 contradictory studies to, 47 dominance of, 86-87, 173 double deficit hypothesis and, 51-52 functional magnetic resonance imaging studies and, 99-101 non-dyslexia reading disabilities and, 48 short term and working memory and, 56-57 visual attention span, 77-78 phonological loop verbal short-term memory and, 58-59 working memory and, 57-58 Pinker, Steven, 125 planum temporal magnetic resonance imaging of, 94 reading-brain model research, 91-93

reading-brain model research, 91–93 politics of dyslexia inadequacy of terminology and, 177–182

learning disability diagnosis, 35 scientific debate and, 175-177 in special education policy, 27, 28-29 teaching of reading and role of, 126-127 poor cerebral dominance hypothesis, 91-93 positron emission tomography (PET) brain function studies, 99 combined PET/fMRI brain imaging, 101 - 102postmortem brain function studies, dyslexia research and, 91-93 Poulsen, M., 52-53 Powell, D., 54 pre-literacy studies, visual deficits, 76-77 Pre-School Screening Test (U.K.), 134 Pressley, M., 125-126 prevalence of dyslexia, 31-34, 169 resistant dyslexia, statistics on, 140 preventive intervention in dyslexia, risk identification in children and, 129-139 primary intervention strategies assessment of, 140 risk identification for reading disability and, 130 Primary Movement Programme, 152-155 primary visual cortex, reading-brain model research and, 91-93 processing limitation hypothesis, 47 processing speed rapid automatized naming and, 54 reading competency and, 42-43 proprioceptive signal perception, dyslexia and, 81-83 prosodic cues, auditory processing and, 65 pseudoword reading early intervention in reading disability and, 136 - 139rapid automatized naming and, 53 resistant reading disability and, 140-141 psycholinguistics, teaching of reading and, 124-129 psychometric assessment limitations, in dyslexia diagnosis, 20-21 response to intervention model vs., 27-31, 40 psycho-motor processing brain function studies and, 97-104 dyslexia and, 81-83 quantitative genetics, reading disability and, 116-117

quantitative intervention strategies, 148

Ramus, F., 47, 48, 83–85 hypothesis, phonological awareness and, 47

268 Index

rapid automatized naming (RAN) challenges to, 54 critical reception of, 86-87 double deficit hypothesis and, 51-52 dyslexia and, 49-56 predictability of dyslexia and, 62 risk identification for reading disability and, 135 rapid processing hypothesis, auditory processing, 64-68 RAVE-O (Retrieval, Automaticity, Vocabulary, Engagement with language, and Orthography) system, 145-146 reading aloud, dyslexia management using, 149-151 reading-brain model, 88 anatomical structure studies, 93-97 brain function studies and, 97-104 cross-linguistic imaging research, 105-106 current and future research issues, 107-110 genetic bases of reading disability and, 110 postmortem studies, 91-93 research overview, 88-110 training studies, 104-105 reading competency auditory processing skills and, 67 developmental context for, 118 dyslexia goals and, 6-7 IQ scores and, 17-23, 24 philosophical debate over teaching of, 124-129 phonological components of, 42-49 rapid automatized naming and, 49-56 reading-brain model and, 89-91 written expression vs., 8 reading comprehension gene isolation for deficits in, 117 terminology for, 177-182 working memory and, 57 reading difficulty magnocellular deficits and, 72-73 multisensory attentional deficits and, 80 rapid automatized naming correlation with, 50 terminology for, 40-41 reading disability anchoring deficit hypothesis, 78-79 auditory processing and, 65-66 brain anatomical studies and, 93-97 brain function studies and, 97-104 complementary and alternative approaches to intervention in, 152-160 cross-linguistic brain imaging studies and, 105-106 dyslexia vs., xvi-xvii, 5

functional magnetic resonance imaging studies, 99-101 genetic bases of, 110-122 international dimensions of, ix interventions for, 136-139 key factors in, 10 neurobiological basis for, xiv, 88-122 resistant disability, interventions for, 139 - 149risk identification in children for, 129-139 short-term and working memory and, 57-58 terminology for, 40-41, 177-182 training studies in remediation of, 104-105 visual processing deficits and, 68-74 reading disorders, dyslexia vs. other forms of, Reading First program (Florida), 133-134 reading fluency dyslexia and, 7, 15-16 interventions for developing, 144-146 terminology for, 177-182 Read Naturally program, 140-141 Ready to Learn screening system, 134 region-of-interest analyses, brain anatomical studies using, 96-97 Reid, G., 134-135 relative risk estimates, genetics of reading disability and, 112 Renvall, A., 74-81 repetition testing auditory processing, 64-68 dyslexia assessment and intervention and, 149-151 resistant reading disability interventions for, 139-141, 149, 169-170 prevalence of, 140 secondary intervention strategies, 140 response to intervention (RTI) model dyslexia diagnosis and, 23, 27-31 efficacy of, 40 limitations of, 28-29 resistant reading disability and, 140-141 risk identification for reading disability and, 129-139 third tier interventions and, 142 Responsive Reading Instruction, 140-141 Reynolds, C. R., 29-30, 152-155 Rice, M., 5-6, 36 rime awareness, phonological deficit hypothesis and, 45 rise time sensitivity auditory processing and, 65 reading disability and, 65-66 risk identification techniques, reading

Index

269

interventions based on, 136-139 overview of, 129-139 RNA, molecular studies of reading disability and, 118 Romani, C., 77-78 Rose Report (U.K.) on dyslexia, 8-9, 14-15, 160-164, 167 Saine, N. L., 151-152 sampling techniques auditory processing research and, 66-67 magnocellular system research, 72-73 Santi, K., 133-134 Savage, R. S., 59, 61, 81-83 Scammacca, N., 142-144, 145 Schmidt, John, 1-2 school attendance, dyslexia and, 11 Schulte-Körne, G., 71 science of dyslexia, political debate over, 175-177 scotopic sensitivity visual intervention techniques, 155-156 visual processing and, 73-74 screening techniques risk identification for reading disability, 133-134 risk identification for reading disability and, 131-132 secondary intervention strategies overview of, 136-139 for resistant disability, 140 risk identification for reading disability and, 130 second-language readers, interventions for, 144 self-protective behaviors intervention strategies for older disabled readers and, 142-144 in parents of dyslexic children, 160-164 science and politics of dyslexia and, 175-177 underachievement linked to, 160-164 self-protective behaviours, concealment of dyslexia and, 23-24 Semiclaes, W., 67-68 sex-linked prevalence of dyslexia, 33-34 Shankweiler, D., 47 Shaywitz, B. A., 2, 16, 31-32, 33-34, 146 Shaywitz, S., 29-30, 146 short-term memory (STM) dyslexia and, 56-63, 86-87 phonological deficit hypothesis and, 45 reading competency and, 42-43 Shvimer, L., 74-81 Siegel, L. S., 36, 53, 175-177

silent reading, dyslexia management using, 149-151 Singleton, C. H., 149-151, 155-156 Skottun, B. C., 69-73 Skoyles, J., 69-73 Slavin, R. E., 151-152 sluggish attentional shifting (SAS), dyslexia and, 74-81 Smith, S. D., 112-114 Snow, C. E., 128-129 Snowling, M. J., 32, 42, 48-49, 159-160 socio-economic disadvantage dyslexia and, 10-11, 172 science and politics of dyslexia and, 175-177 Soler, J., 175-177 Spain, gender discrepancies in dyslexia prevalence in, 33-34 special education services. See also educational services current assessment for dyslexics of, 171 dyslexia assessment and teaching, 27, 149-151 IQ scores and eligibility for, 23 labeling problems in, 180-181 risk identification and early intervention, 129 - 139science and politics of dyslexia and, 175 - 177specificity hypothesis, learning disability diagnosis and, 35 specific language impairments (SLI), dyslexia and, 25-26 specific learning disorder current terminology involving, 168-169 defined, 8 terminology for, 177-182 speech difficulties, phonological deficit hypothesis and, 47 speech sound disorder (SSD) auditory processing and, 67-68 dyslexia and, 25-26 speech sounds, phonological deficit hypothesis and, 44-45 spelling, terminology for, 177-182 Sprenger-Charolles, L., 67-68 Stainthorp, R., 55, 69 standardized interventions, assessment of, 138-139, 146-147 Stanovich, K. E., 6-7, 20-21, 23, 42-43, 182 statistical analysis multifactorial factors in dyslexia and, 83-85 prevalence of dyslexia and, 32-33 Stein, J., 69-73 Steinberg, E., 177

270 Index

Sternberg, R. J., 160-164 Steubing, K. K., 18 stimulus sequences, discrimination, visual processing and, 70-71 strephosymbolia, terminology of, 3-4 String, Graham, 1-4 Strong, G. K., 157-158 subtest profile analysis, dyslexia diagnosis and, 20 - 21superior longitudinal fasciculus (SLF), diffusional tract imaging of, 96-97 Swanson, H. L., 58-59, 60, 61 symbol matching tasks, visual attention span theory and, 77-78 Symbol Search subtest, 20-21 Szenkovits, G., 47 tactile difficulties, dyslexia and, 81-83 Tainturier, M., 80 Talcott, J. B., 71-72 Tallal, P., xvi, 64, 157-158 teacher identity, whole language approach to reading and, 126 teaching skills for dyslexia assessment and teaching, 149-151 intervention and importance of, 148-149 temporal acuity, visual processing and, 70-71 temporal contrast sensitivity, visual processing, 70-71 temporal cortex, functional magnetic resonance imaging studies, 99-101 Texas Primary Reading Inventory (TPRI), risk identification for reading disability and, 133-134 text presentation, attentional deficits and, 75–76 thalamic structure, reading-brain model research and, 91-93 Thomson, M., 20-21 Tønnessen, F. E., 27 top down processing attentional factors, 74-81 auditory processing and, 64-68 philosophical debate over, 124-129 Torgesen, J. K., 26–27, 160–164 Torppa, M., 52–53 Townend, J., 149-151 tractography, brain anatomical studies using, 96-97 training studies, reading disability, 104-105 transparent languages

double deficit hypothesis and, 51–52 phonological deficit hypothesis and, 45 rapid automatized naming and, 50–51

reading fluency in, 144-146 reading instruction in, 128-129 Tunmer, W., 43 "two-group" hypothesis, 17–24 two-step gated procedure, risk identification for reading disability and, 132-133 U.K. House of Commons Science and Technology Committee, 160-164 United Kingdom dyslexia terminology in, 181-182 gender discrepancies in dyslexia prevalence in, 33-34 pedagogic value of dyslexia diagnosis in, 160-164 prevalence of dyslexia in, 32 United States politics of reading teaching in, 127 risk identification for reading disability in, 129-139 U.S. National Institutes of Child Health and Human Development causal explanations of dyslexia, 26-27 prevalence of dyslexia, 32 U.S. National Institutes of Health, 32 U.S. National Research Council, reading disability definitions and, 5-6 Vaessen, A., 51-52 Van Bergen, E., 22-24, 32 Vaughan, A. E., 29–30 Vaughan, S., 149-151 Vellutino, Frank, xiii-xvii, 21, 23, 69, 136-139, 160-164 verbal short-term memory phonological deficit hypothesis and, 45 phonological loop and, 58-59 reading disability and, 59-60 Vidyasagar, T. R., 72-73 visual attention span hypothesis, 77-78 computer and assistive technologies and, 151 - 152Visual-Auditory-Kinesthetic-Tactile (VAKT) procedure, dyslexia assessment and intervention, 149-151 visual deficits dyslexia and, xiii-xvii multisensory interventions and, xvi pre-literacy studies, 76-77 rapid automatized naming and, 55 visual intervention techniques, dyslexia management and, 155-156 visual memory, dyslexia linked to, 2-3, 60-62 visual persistence, visual processing and,

70 - 71

Index

271

visual processing attentional factors, 74-81 auditory processing influence on, 71-72 brain function studies and, 97-104 current research issues in, 81 dyslexia and, 68-74, 172-173 functional magnetic resonance imaging studies, 99-101 magnocellular system role in, 69-73 visual attention span hypothesis and, 77-78 visual stress/scotopic sensitivity, 73-74 visual-spatial domain verbal short-term memory and, 60-62 working memory and, 56-58 visual stress visual intervention techniques, 155-156 visual processing and, 73-74 vocabulary skills, dyslexia and, 16 voxel-based morphometry (VBM), brain anatomical structure, 95-96 Vukovic, R. K., 53 Wagner, R. K., 15-16, 26-27, 59 "wait to fail" models, risk identification for reading disability and, 130 Wanzek, J., 142-144 Watkins, M. W., 20-21 Wechsler Intelligence Scales ACID profile and, 20-21 dyslexia and, 16 What Works Clearinghouse, 140 White, S., 10 whole-genome linkage scan, molecular studies of reading disability, 112-114

whole language teaching approach, debate concerning, 124-129 whole word sight reading, debate concerning, 125-126 Why Johnny Can't Read (Flesh), 125-126 Wilkins, A. J., 155-156, 168 Willburger, E., 71–72, 78–79 Willcutt, E. G., 83-85 Winterton, P., 10 WISC-IV subtest, dyslexia profiling and, 20-21 Wolf, M., 51-53, 145-146 Woodcock Reading Mastery Test (WRMT-R), 136-139 "word-blindness," early definition of dyslexia as. 1-2 word identification fluency (WIF), risk identification for reading disability and, 132 word reading accuracy, improvement techniques for, 144-146 word recognition intervention strategies based on, 142 language comprehension and, 25-26 reading instruction and, 128-129 working memory dyslexia and, 56-63, 86-87 educational intervention and, 62-63 Wright, C. M., 72-73 written expression, reading competency vs., 8 Yule, W., 181-182 Ziegler, J. C., 50-51, 54, 77-78

Zorzi, M., 78 Zumeta, R. O., 133–134