CAMBRIDGE

Cambridge University Press & Assessment 978-1-108-44439-2 — The Cambridge Handbook of Infant Development Jeffrey J. Lockman, Catherine S. Tamis-LeMonda Index

More Information

Index

A not B search error navigation system studies, 416-417 action understanding role of the mirror neuron system, 495 theories of, 496-499 adipose tissue development critical period, 45 air displacement plethysmography (ADP), 45 Alberta Infant Motor Scale (AIMS), 472f17.1. American Academy of Pediatrics (AAP) guidance on screen time for young children, 435 reading aloud to infants, 228 Recommendations for Preventive Pediatric Health Care, 43 recommendations on media exposure for young children, 455 amygdala development effects of early stress on volume and function, 693 influence of infant-caregiver relationship, 693 anxiety impact of parental anxiety on children, 729-731 approximate magnitude system (AMS), 422 approximate number system (ANS), 363, 422 arachidonic acid (ARA) role in visual development, 161-162 Asperger, Hans, 128 assisted reproductive treatment (ART), 40 asthma, 75, 83 Attachment and Biobehavioral Catch-up (ABC) intervention, 702 attachment assessment Attachment Q-Set (AQS), 691 infant attachment evaluation methods, 689-691 Strange Situation Procedure (SSP), 689-690 attachment network configurations models, 699 attachment patterns disorganized attachment, 690 insecure-ambivalent attachment (type C), 690 insecure-avoidant attachment (type A), 690

insecure-resistant attachment (type C), 690 organized attachment, 690 secure attachment (type B), 690 universality and specificity of, 694-696 Attachment Q-Set (AQS), 691 attachment relationships comparison of maternal and paternal contributions to development, 699 developmental outcomes of early experiences, 691 effects of divorce, 702 in foster care, 700 in institutionalized care settings, 700 infant attachment to mother and father, 696-699 influence of socioeconomic conditions, 695 influence of the number of secure attachments, 697-698 influence on amygdala volume and function, 693 influence on cortisol secretion patterns and reactivity, 692 influence on the HPA axis, 692 interventions, 702-703 neurodevelopmental outcomes, 693 one infant with multiple caregivers, 696-699 parental education about, 700 psychophysiological outcomes, 692 quality of group care, 700 sociocultural contexts, 694-696 socioemotional outcomes, 691-692 stress physiology of attachment, 692 attachment theory, 687 additive hypothesis, 697 attachment network configurations models, 699 buffering hypothesis, 698 caregiver influence on attachment quality, 688 centrality of the infant-caregiver emotional tie, 688 competence hypothesis, 696 cross-cultural validity of, 694-696

environmental influences on attachment quality, 688

More Information

834 INDEX attachment theory (cont.) comparison between infants and adults, 214 future relationships influenced by infant cross-cultural perspective on pitch attachment, 688 processing, 225 hierarchical hypothesis, 699 cross-cultural perspectives on temporal horizontal hypothesis, 699 processing, 223 implications for practice, 700-703 music processing, 221-227 integrative hypothesis, 697 pitch processing, 224-225 internal working models, 688 policy implications, 227-228 main tenets, 688 role in social and emotional development, normativity hypothesis, 695 228-229 public policy implications, 700-703 song and coordinated movement as sensitivity hypothesis, 694 sociocultural signals, 226-227 universality hypothesis, 695 temporal processing, 222-223 attention auditory perception auditory object perception, 218-219 biased competition concept, 186 common tasks used in research, 192-194 auditory scene analysis, 217-220 electroencephalography (EEG) assessment auditory stream segregation, 220 methods, 191 auditory system development, 215 executive attention, 186 basic auditory abilities, 214-221 eye-tracking tools, 189-190 congenital deafness, 215 consonant and dissonant tone heart rate as a measure of sustained attention, 190 combinations, 219 looking time measures, 187-189 harmonicity, 219 measurement, 187-194 minimum audible angle, 220 near infrared spectroscopy (NIRS), 191-192 prenatal period, 216 visual attention constructs, 186 singing, 219 See also multisensory attention, 206 sound-meaning associations, 221 attention-deficit hyperactivity disorder (ADHD), speech perception, 220 72, 75, 76, 78, 128, 143, 304, 454 auditory scene analysis, 217-220 infant attention and, 205 auditory system risk factors for, 4-5 fetal development, 9 attention development Autism Diagnostic Interview - Revised, 129 attention to eye gaze, 201-202 Autism Diagnostic Observation Schedule cultural bias, 203-204 (ADOS), 129, 322 Autism Observational Schedule for Infants, 137 effects of preterm birth, 205 feedforward and feedback cortical autism spectrum disorder (ASD), 49, 76, 78, connections, 197-198 83, 201, 304 first postnatal year, 194-197 attention, 134 clinical features, 128 individual differences, 202-205 infants of depressed mothers or fathers, co-occurring conditions, 128 202 - 203definition, 128 influence of social, cultural and biological diagnostic instruments, 129 factors, 202-205 early development, 131-133 influence of socioeconomic status (SES), effects of dual language exposure, 671 204-205 emerging executive function, 135 interaction with body kinematics and ethical issues for research, 145-147 posture, 199-200 general cognitive development, 135 interaction with learning and memory, 200 genetic syndromes and, 142 implications of intersensory processing interaction with vision development and eye movement control, 198-199 deficits, 323-324 infant attention and, 205 joint attention, 201-202 other-race effect (ORE), 203-204 infant sibling research design, 129-131 policy implications, 205-206 justification for infant sibling studies, 147 predictive value of infant visual mirror neuron system (MNS) studies, 508-509 motor development, 132-134 attention, 202 auditory pattern perception multisensory attention skills assessment, 322 analysis of musical scenes, 222 new directions for research, 141-144

More Information

Index	835

non-verbal communication, 137 policy issues, 145-147 response to biological motion, 136 risk factors for, 4-5 robustness and replicability of study findings, 140 - 133sensory processing and responses to basic sensory stimulation, 131-132 social attention, 136-137 social information processing, 136-137 social interaction, 137, 671 sociocultural perspective, 145-147 structural brain development, 139-140 verbal communication, 138-139 vocal learning and speech production, 620 Avon Longitudinal Study of Parents and Children (ALSPAC), 75 BDNF gene effects of DNA methylation, 77 methylation associated with bisphenol A (BPA), 75 Big Five personality inventory, 817 bilingualism, 639 effects on language development, 648 influence on memory development, 352 language perception in bilingual-learning infants, 588 See also dual language exposure, 676 bioelectrical impedance analysis (BIA), 45 biological motion response to, 136 birth weight, 41 body composition and, 46 bisphenol A (BPA) association with BDNF gene methylation, 75 body composition assessment, 44-46 air displacement plethysmography (ADP), 45 anthropometric assessment, 44, 45 bioelectrical impedance analysis (BIA), 45 deuterium dilution method, 45 magnetic resonance imaging (MRI), 45 PEAPOD TM, 45 ultrasound measurement, 45 body length measurement methods, 46-47 body movements development in the fetus and infant, 9-10 body representation developing role of touch, 246-252 early development of proprioception and the postural schema, 248-249 embodied brain model, 14-29 learning in the primary somatosensory cortex, 21-23 multisensory development, 250-252

somatotopic organization, 246-247 bone production of osteocalcin, 59 bone density measurement, 45 bone growth influence of the brain, 59 Bowlby, John, 687, 688 brain development, 94 adulthood and later life, 95 age 2 through adolescence, 95 changes in head size and brain volume, 95-96 critical period for brain growth, 48 effects of early institutional care, 114-117 effects of environmental deprivation, 113-118 effects of poverty, 117 epigenetic impacts of fetal environments, 74-77 experience-expectant and experiencedependent processes, 108-113 face processing, 108-113 gray matter development, 96-101 influence of infant-caregiver attachment, 693 influence of osteocalcin, 59 influence on bone growth, 59 interfaces with physical growth, 59-60 myelination, 102-107 neuroimaging techniques, 99-101, 105-107 plasticity of language development, 645 prenatal period, 95 preparedness for language development, 645-646 processing of digital media in early childhood, 451-454 role in memory development, 348-350 social policy for optimal development, 119 synaptic pruning, 94, 97 synaptogenesis, 94, 96-101 volume expansion, 48 white matter development, 102-107 **BRAIN** Initiative, 6 caregivers. See infant-caregiver relationship; parent categorization average prototype formation, 393 biopsychosocial view, 400 conditioning studies, 385 cultural influences, 397-398 definition of, 215 definition of categories, 381 definition of concepts, 381 distinction from conceptualization, 384 EEG ERP studies, 389 evidence of infant categorization, 384-388, 389 experience and categorization, 397-398 familiarization-test procedures, 386-387 flexibility of categories, 382f14.1. future research directions, 400-401

More Information

836

INDEX

categorization (cont.) cortisol influences on secretion patterns and imitation procedures, 388 reactivity, 692 language and categorization, 395-396 neural underpinnings of, 399 craniosynostosis, 51 neuroscientific evidence of, 389 critical periods, 41 newborns' abilities and limitations, 390-392 brain growth, 48 object manipulation by infants, 388 developmental origins of health, 46 origins of, 390-392 infant fat pattern development, 45 perceptual versus conceptual language perception development, categorization, 392-395 591-592, 593 policy implications, 401-402 muscle growth in infancy, 46 prelinguistic categories, 382 crossed-extension reflex in newborns, 246 role in cognition, 381 culture role in information organization, 383 beliefs about infant size, 53 sequential touching task, 388 context of child emotional development. social influences, 397-398 731-732 head circumference assessment, 50 use of category labels, 395-396 cell phone use, 442-443 emotional displays and parental responses, central pattern generators (CPGs), 11 763-764 parental emotional expectations of chemesthesis, 265 chest circumference, 52 children, 763 CHILDES (CHIld Language Data Exchange influences on memory development, 352 views on how big infants should be, 56 System), 623 childhood adversity See also parent-infant interactions across epigenetic effects, 78-79 cultures, 808 cognitive differentiation cytokines, 59 perspective on emotional development, 743 cvtosines Comprehensive Assessment of Family Media methylation within DNA, 73 Exposure (CAFE) tool, 444 computational and neural model of Davis, Clara, 271 navigation, 412-414 default mode network (DMN), 454 concepts deferred imitation paradigm, 343, 668 definition, 381 depression effects of maternal depression on the fetus, 77 conceptualization distinction from categorization, 384 impact of parental depression on children, conditioning studies 729-731 categorization in infants, 385 impact on infant attention development, 202 - 203conduct disorder, 75 Descartes, René, 563 congenital blindness, 215 congenital deafness, 215 deuterium dilution method, 45 Developing Human Connectome Project, 6 congenital hearing loss effects on vocal learning and speech developmental biology application of epigenetics, 70 prodution, 619 CONLERN model, 109 developmental coordination disorder, 509 core knowledge, 363 developmental disorders early knowledge of space and quantity, head circumference and, 49-50 410-411 perspectives on, 4-5 magnitude and number system, 422 developmental robotics, 6 object manipulation system, 418 diathesis-stress/dual risk models, 727 differential emotions theory, 718 cortex developmental role of the subplate differential susceptibility models, 727, 729 diffusion tensor imaging (DTI), 106 layer, 13, 14 excitation/inhibition (E/I) neuron balance, digital landscape in infancy 14, 26-27 background cell phone use technoference, fetal development, 12-14 442-443 background TV technoference, 441-442 corticospinal tract fetal development, 11 effects of parental still-face, 442

More Information

837

Index

future research directions, 443-444 impact on infant learning, 442-443 joint media engagement, 438-440 media environment, 435-436 screen time for young children, 435-436 sociocultural context of media use, 437-438 technoference, 440-443 TV and joint media engagement, 438-439 videochat, 436, 440 digital media AAP recommendations, 455 assessing infant exposure to, 435 Fred Rogers Center position statement, 456 National Association for the Education of Young Children (NAEYC) position statement, 456 policy implications, 455-456 recommendations and guidelines, 455-456 transfer learning deficit, 445-449 Zero to Three (ZTT) Screen Sense guidelines, 455 digital media learning default mode network (DMN), 454 dorsal attention network (DAN), 454 effects of lack of social contingency, 454 media processing in the brain in early childhood, 451-454 neuroimaging studies, 451-453 policy implications, 449-450 potential cognitive developmental neuroscience mechanisms, 453-454 transfer learning, 444-450 direct matching theory of social cognition, 496, 498 discrete emotion theory, 743 divorce effects on attachment relationships, 702 DNA methylation, 73 docosahexaenoic acid (DHA) role in visual development, 161-162 Donné, Alfred, 44 dorsal attention network (DAN), 454 dorsal pathway, 525 Down syndrome, 509 drug exposure epigenetic effects on the fetus, 75 dual energy X-ray absorptiometry (DEXA), 45 dual language exposure attentional effects, 662-663 children with ASD, 671 code-switching in bilingual children, 671 cognitive advantages, 662-663 cognitive flexibility and, 667-670 comparison with monolingual early learning, 661 cultural background and, 672 definition of dual language learners, 661

future studies, 675-676 language development and, 663-667 memory flexibility and, 667-670 multiple language acquisition by young children. 661 phonetic perception, 664 policy implications, 675-676 quality and quantity of language interactions, 674-675 social interactions, 671 sociocultural considerations, 672-673 socioeconomic background and, 673 speech pattern detection, 665 word learning, 665-667 See also bilingualism, 676 Duchenne intensification hypothesis, 756-758 dynamic systems approach emotional development, 744 dyslexia, 324 Early Head Start, 539 Early Social Communication Scales (ESCS), 322 electroencephalography (EEG) ERP studies of infant categorization, 389 imaging of digital media processing, 451-453 mu rhythm as measure of MNS, 499-502 electronic media impact on emotional development, 765 embodied brain model, 14-29 atypical learning conditions in preterm infants, 23-27 cortical excitation/inhibition (E/I) neuronal imbalance, 26-27 early exposure to extrauterine environments, 28-29 features of the model, 15-17 immature learning of cortical body representation and multisensory integration, 28-29 implications for developmental care, 26 learning body representation in the primary somatosensory cortex, 21-23 mechanisms of developmental cascades, 28-29 mechanisms of spontaneous bodily movements, 17-18 motor development, 19-21 origins of neurodevelopmental disorders, 26 policy implications, 26 simulating cortical learning of body representations, 27-28 spinal circuit learning, 19-21 embodied cognition theory, 497

More Information

838

INDEX

embodied interactions infant emotional lives, 742 definition, 6 negative emotions, 745-749 sensorimotor experience and, 6 adult perceptions of infants' discrete negative expressions, 746 embryonic development neural development related to sensorimotor body movement and negative emotion learning, 10-14 expressions, 748 sensory modalities, 6 development of discrete negative emotions, 746-748 spinal nervous system, 10-12 emotion and emotion regulation distress expressions in fetuses, 745 early cry-face expressions, 745 approaches to study in infancy, 716 basic constructs, 716-717 facial expressions, 745 behavioral markers, 719 functionalist ontogenetic perspective, 749 core features, 715 genetic variance, 759 cultural context of emotion development, indications of anger and sadness 731-732 expression, 747 differential emotions theory, 718 negative emotion expression in emotiondifferentiation-oriented perspectives, 718 eliciting situations, 747 discrete emotions models, 718 physiological specificity of negative dynamic systems approaches, 718 emotion expressions, 748 emotion regulation in infancy, 723-724 postnatal cry-faces, 745 features shared with temperament, 715 recognition of pain in young infants, 765 functionalist perspective, 718 neural bases and correlates of emotional neural and physiological underpinnings, expressivity, 761 720-721 perception of smiles, 760 policy implications, 764-765 normative development trends, 722-723 parental characteristics, 729-731 positive emotions, 749-756 parental depression and anxiety, 729-731 anticipatory smiling, 755 parental shaping towards cultural norms, contingent responsiveness, 754 development of happiness and joy, 751-752 731-732 parenting behaviors that impact on, Duchenne smiles, 750 728-729 happiness and pretense, 755 policy implications, 733-734 infant and mother responsivity to problem of distinct operational definitions, smiling, 753 717-718 interactive smiling (2-6 months), 753-754 role of infant caregivers, 715 laughter, 751 temperamental influence on neonatal smiling, 751-752 development, 727 open-mouth smiles, 750 temperamental variations, 724-727 positive affect multiplicity question, 756 prenatal smiling, 751-752 working definitions, 716-717 emotional development smiling (6-18 months), 755 affective prosody processing, 760 smiling intensity during interaction, 754 cognitive differentiation perspective, 743 social aspect of early positive affect cross-cultural comparison, 763-765 expression, 756 cultural differences in parental emotional social smiling (1-2 months), 752 expectations, 763 temporal patterning of smiles, 753 cultural diversity and public policy, 764 variety of positive emotion expression, 750-751 discrete emotion theory, 743 Duchenne intensification hypothesis, 756–758 why infants smile, 754 sociocultural theory, 744 dynamic systems approach, 744 emotional displays and parental responses, theoretical orientations, 742-744 763-764 empathy development, 761-762 empathy development, 761-762 contributions of early interactions, 762 functionalist theory, 744 future research directions, 762 future research directions, 765-766 genetic influences on, 762 heritability of positive and negative responses to other infants' cries, 761 expressivity, 759 responsiveness to adult distress, 762 impact of electronic media, 765 encoding specificity principle (Tulving), 344

More Information

839

Index

epigenetic effects fetal drug exposure, 75 fetal toxin exposure, 75 epigenetic inheritance intergenerational and transgenerational effects, 80-82 patrilineal epigenetic inheritance, 81-82 epigenetic mechanisms, 73-74 histone modifications, 74 non-coding RNAs, 74 epigenetic perspective, 71-74 epigenetics adversity and resilience in social environments, 78-79 application within developmental biology, 70 definition, 72 effects of maternal obesity on the fetus, 76 effects of maternal stress on the fetus, 76-77 effects of prenatal nutrition on the fetus, 76 effects of prenatal stress on the fetus, 76-77 effects of preterm birth, 76-77 effects related to socioeconomic status, 82-83 future directions, 84 gene-environment interactions, 70, 71-74 heritability of the epigenetic state, 72 impacts of fetal environments on the developing brain, 74-77 influence of sociocultural context, 82-83 public policy implications, 83 sex differences in epigenetic effects, 75 epigenome, 82-83 equilibrium fetal development, 9 executive attention, 186 extrapyramidal tract, 524 face inversion effect, 110-112 face processing, 108-113 familiarization-test procedures categorization in infants, 386-387 Family Stress Model, 695 fat pattern development, 45 Fauconnier's brick, 635 feeding amniotic fluid, 273-281 breast milk, 273-281 chemesthesis, 265 communication skills and, 270-271 complementary feeding, 281-289 culture of feeding, 263-264 development of feeding skills and patterns, 269-270 development of taste preferences, 267-268 early feeding patterns and practices, 264-265 early influence of what the mother consumes, 273-281

effects of prenatal flavor exposure, 273-281 effects of repeated exposure to food, 281-289 food habits and beliefs, 263-264 influence of childhood experiences, 268 influence of the mother's choices, 264 learning about foods, 273-289 neurobiology of flavor senses, 265-268 olfactory association with the mother, 268 ontogeny of feeding behaviors and skills (birth to 24 months), 265-272 policy implications, 290-291 role of olfaction, 265-266, 268 self-regulation of intake, 271-272 sense of taste, 265-266 signaling hunger and satiation, 270-271 snacking in children, 264-265 social modeling of, 289 sweets and sugar-sweetened beverages, 264 fetal brain development neuroscience perspectives, 5 use of large-scale datasets to elucidate, 5 fetal development auditory system, 9 body movements, 9-10 cortex, 12-14 corticospinal tract, 11 gustatory organs, 9 learning from sensorimotor experience, 4 neural development related to sensorimotor learning, 10-14 olfactory organs, 9 proprioception, 8 sense of equilibrium, 9 sensory capabilities, 4 sensory modalities, 7-9 spinal nervous system, 10-12 stretch reflex, 8, 10-11 tactile perception, 8 visual system, 8 fetal environments epigenetic impacts on the developing brain, 74-77 Field, Tiffany, 254 First 5 California initiative, 563 FKBP5 gene, 79, 83 folate supplementation in the maternal diet, 76 foster care infant attachment and, 700 fractional anisotropy (FA), 106 fragile X syndrome, 142, 205 Fred Rogers Center, 456 Freud, Sigmund, 341-342 functional near infrared spectroscopy (fNIRS), 376 imaging of digital media processing, 451-453 mirror neuron system (MNS) studies, 503

More Information

840 INDEX functional neural development histone modifications embodied brain model, 14-29 effects on gene expression, 74 functionalist perspective on emotional Holmes, Oliver Wendell, 632 development, 744 Home View project, 563 HomeBank, 623 gene-environment interactions, 70, 71-74 hormones gene expression influence on physical growth, 59 effects of DNA methylation, 73 HSD11B2 gene, 80 effects of histone modifications, 74 effects of DNA methylation, 77 effects of non-coding RNAs, 74 hypothalamic-pituitary-adrenal (HPA) axis gene silencing, 73 marker for stress physiology, 692 hypothalamus, 59 geometric module role in navigation, 415-416 role in physical growth, 59 Gesell, Arnold, 523, 819 Gibson, Eleanor, 305-306, 522-523 in vitro fertilization (IVF), 40 Gibson, James J., 305-306 infant-caregiver relationship growth. See physical growth attachment assessment methods, 689-691 growth references, 54-56 attachment network configurations model, 699 cultural views on how big infants centrality of, 688 should be 56 comparison of maternal and paternal data analysis, 55 contributions to development, 699 data presentation, 55 effects of divorce, 702 definition, 53 foster care, 700 growth charts, 55-56 infant attachment to mother and father, limitations of growth charts, 57 696-699 policy on how big infants should be, 56 influence of socioeconomic conditions, 695 sampling for references, 54-55 influence of the number of secure growth spurts, 57-58 attachments, 697-698 Gusii people, 694, 696, 764 influence on amygdala volume and gustatory organs function, 693 fetal development, 9 influence on cortisol secretion patterns and reactivity, 692 habituation, 365, 376 influence on developmental outcomes, Hausa people, 695 691 head circumference, 47-52 influence on the HPA axis, 692 developmental disorders and, 49-50 institutionalized care settings, 700 early assessment, 50 interventions, 702-703 effects of prenatal toxin exposure, 49 neurodevelopmental outcomes, 693 effects of synostoses, 50 one infant with two caregivers, 696-699 parental education about, 700 genetic influences, 48 patterns of attachment, 690 maximal occipital frontal circumference (OFC), 47 psychophysiological outcomes, 692 microcephaly related to Zika virus exposure, 49 quality of group care, 700 head shape sociocultural contexts, 694-696 causes of head deformity, 50-52 socioemotional outcomes, 691-692 culture-related views on, 50-52 stress physiology of attachment, 692 effect of cradle boards, 51 Infant-Toddler Social Emotional normal variability among human Assessment 322 infants, 50-52 inheritance positioning plagiocephaly, 50-52 epigenetic inheritance, 80-82 use of cranial orthotics, 50-52insecure-ambivalent attachment (type C), 690 Head Start, 764 insecure-avoidant attachment (type A), 690 Head, Toes, Knees, and Shoulders Task insecure-resistant attachment (type C), 690 institutional care (HTKS), 323 hearing loss effects of, 78 effects on vocal learning and speech effects on brain development, 114-117 prodution, 619 effects on infant attachment, 700

More Information

841

Index

intention understanding theory of social cognition, 497 internal working models, 688 interoception, 240 intersensory processing. See multisensory attention Intersensory Processing Efficiency Protocol (IPEP), 316, 319, 323 Intersensory Redundancy Hypothesis (IRH), 309-311 intraparietal sulcus (IPS) possible role in spatial and numerical processing, 424-425 Inventory of Callous-Unemotional Traits (ICU), 794 iPad, 435 iPhone, 435 Kanner, Leo, 128, 131 !Kung San people, 764 laboratory temperament assessment battery (LAB Tab), 725 language interaction with categorization, 395-396 role in memory retrieval, 347-348 language development, 632-633 learning grammar, 632 link with multisensory attention skills, 321-323 plasticity of the brain, 645 preparedness of the brain for, 645-646 See also syntax learning; vocal learning; word learning, 633 Language Environment Analysis (LENA), 441 language perception attunement to native language before birth, 580 audiovisual speech perception, 582-583 bilingual-learning infants, 588 critical periods for development, 591-592, 593 factors influencing critical periods, 593 forming phoneme categories, 581-582 influences on development, 579 lateralization of language processing, 589-591 levels of word understanding, 585-587 mapping meaning, 585-587 multimodal speech perception, 582-583 native language discrimination, 580-581 neural specialization for language, 589-591 policy perspectives, 593-594 rhythmicity of language, 580-581 word segmentation, 583-585 lean body mass patterns, 46

LENA, 327 'Like Me' theory of social cognition, 497 magnetic resonance imaging (MRI) body composition assessment, 45 diffusion tensor imaging (DTI), 106 functional and structural studies of the MNS, 504 MCDESPOT MCR technique, 107 multicomponent relaxometry (MCR), 107 voxel-based morphometry (VBM), 105-106 magnitude and number system, 422-425 approximate magnitude system (AMS), 422 approximate number system (ANS), 422 core knowledge, 422 cultural influences on development, 425 debate over infant sensitivity to number, 422-423 intraparietal sulcus (IPS), 424-425 methodological issues, 423 neoconstructivist view, 422 neural bases of magnitude and number, 424-425 policy implications, 425 Many Babies project, 563 maternal depression effects on the developing fetus, 77 impact on infant attention development, 202-203 maternal diet folate supplementation, 76 maternal obesity epigenetic effects on the fetus, 76 maternal stress epigenetic effects on the fetus, 76-77 maze tasks, 412-414 MCDESPOT MCR technique, 107 media. See digital media memory age-related changes in memory processing, 344-345 bilingualism and, 352 causes of individual differences in performance, 350-351 childhood amnesia, 341-342 cultural influences, 352 deferred imitation paradigm, 343, 668 dual-context statistical learning, 669 earliest autobiographical memory, 352 effects of dual language exposure, 667-670 encoding specificity hypothesis, 668 factors affecting encoding, 350 factors affecting information processing, 351 factors influencing memory retrieval, 346 future research directions, 354-355 influence of early childhood experiences,

More Information

842 INDEX memory (cont.) expectations for how individuals tend to treat each other, 782-783 methods to study infant memory, 342-343 Mobile Conjugate Reinforcement and expectations for how observers of fair and unfair distributions will behave, 785 Operant Train paradigms, 343 policy implications, 352-354 expectations for how observers of help and principles of infant memory development, harm will behave, 782 344-345 expections for how recipients of help and reactivation of memories, 346 harm will behave, 780-781 fairness and unfairness, 783-785 role of brain maturation, 348-350 role of language in memory retrieval, 347-348 implications, 793-794 Visual Recognition Memory (VRM) influence of social evaluations on social paradigm, 342 interactions, 792-793 making sense of infants' choices, 789-790 Mencius, 777-778 mental representations of objects, 420-421 methods for exploring, 779 mental rotation of objects, 420-421 morality of context-based evaluations. 791-792 microcephaly neural correlates of moral understanding related to Zika virus exposure, 49 microRNAs (miRNAs), 74 and evaluations, 795 mirror neuron system (MNS) policy implications, 797 preference/choice paradigms, 785-792 autism spectrum disorder (ASD) studies, preferences for fair versus unfair choices, 788 508-509 development theories, 496-499 relationship to development of cooperation, 792-793 direct matching theory of social cognition, 496, 498 responses to prosocial and antisocial EEG mu rhythm as measure of MNS, 499-502 individuals, 792-793 EEG mu rhythm studies in infants, 504-506 sociocultural context, 796 embodied cognition theory, 497 understanding helpful versus harmful acts, 779 fNIRS studies, 503 understanding of morally-relevant acts, functional and structural MRI studies, 504 779-785 functions, 495-496 what infants are evaluating, 791 intention understanding theory of social Morris water maze, 412, 413 cognition, 497 motor development 'Like Me' theory of social cognition, 497 Alberta Infant Motor Scale (AIMS). 472f17.1. measuring in infancy, 499-504 network perspective, 499 cultural-historical differences in neuro-atypical populations, 508-509 childrearing practices, 475-476 neuroimaging techniques, 499-504 experimental manipulations of timing and policy implications, 509 form, 476-477 role in action understanding, 495 facilitative effects of augmented experience, role of experiences, context and culture, 476-477 flexibility of motor behavior, 480-482 506-508 functional actions in a changing significance in social communication environment, 480-481 disorders, 509 structure, 495-496 implications for clinical intervention, 482-486 Mobile Conjugate Reinforcement implications for neuroscience, 482-486 individual differences and unique solutions, paradigm, 343 mobile devices 478-479 background cell phone use technoference, infant acquisition of motor skills, 469-471 442-443 intraindividual variability, 477-478 impact on infant learning, 442-443 limitations of milestone charts, 470-471 locomotor actions, 470 Moment app (Apple devices), 444 moral sense in humans manual actions, 470 origins of, 777-778 multiple developmental pathways, 478-479 physical growth 43-52 moral sense in infants actions in context, 791 plasticity of development, 474-477 evaluations of helpers versus harmers, postural transformation, 469 786-788 sticky mittens training, 477

More Information

Index

variability of development, 477-479 variety of means to achieve functional outcomes, 482 Mullen Scales of Early Learning (MSEL), 132.321 multicomponent relaxometry (MCR), 107 multilingualism, 661 multisensory attention conceptual issues, 305-306 detection of amodal information, 305-306 detection of modality-specific information, 309 differentiation view of intersensory development, 305-306 educating attention through intersensory redundancy, 311-312 effects of intersensory redundancy, 307 history of intersensory research, 305-306 integration view of intersensory development, 305 intersensory facilitation, 309, 310 Intersensory Redundancy Hypothesis (IRH), 309-311 neural evidence of intersensory processing, 306-307 physiological evidence of intersensory processing, 306-307 policy implications, 313-314 role of intersensory redundancy in perceptual development, 308-314 selective attention to amodal information, 308 unimodal facilitation, 309, 310 Multisensory Attention Assessment Protocol (MAAP), 316-318, 321-322 multisensory attention skills basic attention skills, 321-322 definition, 303 detecting early risk, 172-174 detection of amodal information, 303 developmental pathways, 328 establishing typical developmental trajectories, 328 foundational nature of intersensory processing, 314-319 future research directions, 328-329 importance of caregiver responsiveness and interactions, 326-327 learning in infants, 303-304 link with language outcomes, 321-323 link with social outcomes, 321-323 measurement of individual differences, 321-323 neurodevelopmental disorders and, 304 predictive value of individual differences, 321-323 promoting optimal development, 329

promotion through social interaction, 326-327 training interventions, 329 multisensory attention skills assessment findings in preterm infants. 325-326 importance of individual difference measures, 314-315 individual difference measures of intersensory processing, 315-319 Intersensory Processing Efficiency Protocol (IPEP), 316, 319 intersensory processing in ASD, 323-324 Mullen Scales of Early Learning (MSEL) assessment, 321 Multisensory Attention Assessment Protocol (MAAP), 316-318 policy implications of findings on ASD, 323-324 policy implications of preterm birth findings, 325-326 potential predictive value for ASD, 322 predictive value of MAAP testing, 321-322 muscle growth critical period, 46 music processing, 221-227 analysis of musical scenes, 222 cross-cultural perspective on pitch processing, 225 cross-cultural perspectives on temporal processing, 223 pitch processing, 224-225 policy implications, 227-228 role in social and emotional development, 228-229 song and coordinated movement as sociocultural signals, 226-227 temporal processing, 222-223 myelination of axons, 102-107 National Association for the Education of Young Children (NAEYC), 456 National Institute of Child Health and Human Development, Study of Early Childcare and Youth Development, 692 nativist-empiricist debate early knowledge of space and quantity, 410 - 411navigation system, 412-417 A not B search error, 416-417 allocentric information, 412 computational and neural model of navigation, 412-414 cultural influences on development, 417 geometric module debate, 415-416 inertial information, 412 maze tasks, 412-414

More Information

844

INDEX

navigation system (<i>cont.</i>) Morris water maze, 412, 413 Piaget's view, 416–417 policy implications, 417 reorientation paradigm, 415 rotation paradigms, 416–417
neoconstructivist view early knowledge of space and quantity, 410–411
magnitude system, 422 neocortex
developmental role of the subplate layer, 13, 14
fetal development, 12–14 neonates
early competences, 3 neural development
embodied brain model, 14–29 relation to sensorimotor learning, 10–14 neural oscillators in the spinal circuit, 11 neurodevelopmental disorders
influence of atypical learning conditions in preterm infants, 23–27 perspectives on, 4–5
risk in preterm birth, 13–14 neurodevelopmental outcomes of infant attachment, 693
neurofibromatosis type 1 (NF1), 142 Nicaraguan Sign Language, 641 non-coding RNAs
effects on gene expression, 74 NR3C1 gene, 79, 80
effects of increased DNA methylation, 77 Nso people, 763–764
number. See magnitude and number system; quantity
obesity epigenetic effects of maternal obesity, 76
object-based attention, 186 object manipulation and play
caregiver play participation, 537 cognitive-representational approach, 521–522
combining objects and surfaces, 527–528 contrasting research approaches, 520 cultural variation, 536–538
development of object manipulation, 525–528
development of object play, 528–531 distancing from the functions of objects, 532–533
distancing from the self, 531–532 distancing in time and space, 533–534 exploration through play, 529 gateway to tool use, 528
investigation of object affordances, 522–523

learning from object interactions, 4 materials for play, 537-538 neural underpinnings, 523-525 non-symbolic play, 529-530 object interactions, 537 perception-action theory, 522-523 Piaget's ideas, 521-522 policy implications, 538-540 practice directions, 538-540 prospective adjustments, 527 role of parents and caregivers, 534-536 role of the pyramidal and extrapyramidal tracts, 524 role of the ventral and dorsal streams, 525 scaffolding of infant play, 535-536 scaffolding of object manipulation, 535 social influences, 534-536 symbolic play, 530-531 theoretical foundations, 521-523 working with educators, 540 working with parents, 539 working with practitioners, 540 object manipulation system, 418-421 core knowledge, 418 cultural influences, 421 dorsal ("where-how") stream processing, 418-420 grasping and manipulating objects, 419-420 mental representations of objects, 420-421 mental rotation, 420-421 neural substrates, 418-419 policy implications, 421 "sticky mittens" studies, 419 ventral ("what") stream processing, 418-420 object play. See object manipulation and play olfaction emotional links, 268 memories evoked by odors, 268 role in feeding, 265-266, 268 olfactory organs fetal development, 9 Open Dynamics Engine, 15 Operant Train paradigm, 343 Oral Reading Fluency (ORF) tests, 323 osteocalcin, 59 other-race effect (ORE), 203-204 OXTR gene, 79 oxytocin, 816 pain

recognition in young infants, 765 pain perception, 244 palmar grasp reflex, 242 parent-infant interactions across cultures Africa, 819 Aka people, 818

CAMBRIDGE

Cambridge University Press & Assessment 978-1-108-44439-2 — The Cambridge Handbook of Infant Development Jeffrey J. Lockman, Catherine S. Tamis-LeMonda Index

More Information

Argentina, 809, 815, 817 Australia, 808 Bali, 819 Baoulé people, 819 Belgium, 809, 815, 817 challenges of the cross-cultural approach, 821-822 cross-cultural differences, 815 cross-cultural similarities, 814 cultural context of parenting, 805-806 cultural perspective on differences and similarities, 807-808 didactic parenting, 810 direct and indirect effects of parents on infants 811 European American, 810, 811, 815, 819 findings, 824-825 formative nature of experiences in infancy, 813 France, 819 Ganda people, 819 goals of cross-cultural research, 824-825 Hopi people, 819 importance of the cross-cultural approach, 825 Indian mothers in the UK, 809 Israel, 809, 817 Italy, 809, 816, 817 Jamaican mothers in the UK, 809 Japan, 809, 811, 816, 817 justification for the cross-cultural approach, 819-821 Kipsigis people, 812, 819 language used by parents, 810 Lebanon, 808 material parenting, 810 need for data on non-WEIRD nations, 806 Netherlands, 819 Ngandu people, 818 nurturant parenting, 810 parent education and support, 822-823 parenting perspective, 808-811 parenting responsibilities, 805 parents' cultural cognitions, 809-810 parents' cultural practices, 810-811 physical parenting, 810 policy implications, 822-823 Puerto Rico, 810 range of interactions, 813 research challenges, 806 role of the mother, 808 Samoa, 810 social parenting, 810 sources of similarities and differences, 815-818 South Korea, 817 specificity principle, 807 Taiwan, 815

United Kingdom, 809 United States, 809, 810, 811, 812, 815, 817, 819 United States immigrant cultures, 818 United States native peoples, 819 values of the cross-cultural approach, 819-821 Wolof people, 819 parents cultural differences in emotional expectations of children, 763 cultural differences in responses to children's emotional displays, 763-764 impact of parental depression and anxiety on children, 729-731 influence of parental characteristics on emotion and emotion regulation in children, 729-731 moderation of temperamental expression in children, 728 parenting behaviors that impact on child emotion and emotion regulation, 728-729 shaping children's emotions towards cultural norms, 731-732 See also infant-caregiver relationship, 734 PEAPOD TM, 45 perception-action theory, 522-523 phonetic perception effects of dual language exposure, 664 physical growth birth weight, 41 bone-brain collaboration, 59 controls, 41 critical periods, 41 cultural beliefs about infant size, 53 cultural views on how big infants should be, 56 definition of growth, 14-29 developmental timing, 42 dynamic context for developing motor skills, 60 embryonic phase, 40 growth references, 54-56 growth spurts, 57-58 hormonal influences on, 59 how babies grow, 57-58 impact of psychosocial stresses, 59 individual growth biology, 57-58 influence of maternal pre-conceptual environment, 40 organ formation, 40-41 physiological and neurological interfaces, 59-60 policy on how big infants should be, 56 policy to promote healthy infant growth, 60-61

Index

845

More Information

846

INDEX

physical growth (cont.) poverty effects on brain development, 117 role of the hypothalamus, 59 saltatory growth pattern, 57-58 prenatal nutrition size versus growth, 41-42 epigenetic effects on the fetus, 76 physical growth measurement, 43-52 prenatal stress AAP Recommendations for Preventive epigenetic effects on the fetus, 76-77 Pediatric Health Care, 43 prenatal toxin exposure birth weight, 46 developmental effects, 49 body composition, 44-46 preterm birth body length, 46-47 effects on attention development, 205 bone density measurement, 45 effects on multisensory attention skills, brain volume expansion, 48 325-326 chest circumference, 52 epigenetic effects on the infant, 76-77 developmental disorders and, 49-50 influence of atypical learning conditions effects of prenatal toxin exposure, 49 and context, 23-27 fat pattern development, 45 risk of neurodevelopmental disorders, 4-5, growth references, 53-57 13-14, 76-77 head circumference, 47-52 Preyer, Wilhelm, 9 head shape, 50-52 primary somatosensory cortex lean body mass patterns, 46 learning body representations, 21-23 limitations of growth charts, 57 proprioception, 240 early development of, 248-249 sampling frequency, 43 ultrasound measurement of body fetal development, 8 composition, 45 Providence Talks initiative, 563 weight, 43-44 psychophysiology physical reasoning contribution to physical reasoning approximate number system, 363 research. 376 contribution of neuroscience/ psychosocial stresses psychophysiology to research, 376 impact on physical growth, 59 core knowledge, 363 pyramidal tract, 524 definition, 363 development of expectations about object quantitative development behavior, 364-371 See also magnitude and number system, 425 development of expectations about quantity substances, 372-375 core knowledge view of early development, habituation, 365, 376 410-411 implications for learning systems, 377 neoconstructivist view of early influence of linguistic distinctions, 376 development, 410-411 looking and reaching study paradigms, Quick Interactive Language Screener 364-371 (QUILS), 634 policy implications, 377 Quinean conundrum, 632 quantity discrimination, 363 relation to achievement of postural reading delay, 324 milestones, 368 reading disorder, 304 sociocultural perspective, 376 reorientation paradigm, 415 Piaget, Jean, 497 robotics on object manipulation and symbolic play, developmental robotics, 6 521-522 use of sensorimotor interactions in view of the navigation system, 416-417 learning, 6 play. See object manipulation and play rotation paradigms Play & Learning Across a Year project, 563 navigation system studies, 416-417 positioning plagiocephaly, 50-52 postnatal rearing environment saltatory growth pattern, 57-58 epigenetic effects, 78-79 secure attachment (type B), 690 postural schema self-other schemas, 688 early development of, 248-249 sensitive periods early visual experience, 553 postural transformation, 469

More Information

Index

sensorimotor experience embodied interactions and, 6 influence on fetal learning, 4 sensorimotor learning neural development related to, 10-14 sensory modalities embryonic and fetal development, 7-9 sequential touching task categorization in infants, 388 sign language systems, 641 smartphones, 435 Social Communication Questionnaire, 322 social environments epigenetics of adversity and resilience, 78-79 social outcomes link with multisensory attention skills, 321-323 Social Responsiveness Scale, 322 sociocultural context influence on epigenetic effect, 82-83 sociocultural perspective on emotional development, 744 socioeconomic status (SES) effects on brain development, 117 epigenetic effects related to, 82-83 influence on attention development, 204-205 influence on vocal learning and speech production, 616 spatial attention, 186 spatial domain core knowledge view of early development, 410-411 neoconstructivist view of early development, 410-411 specificity principle, 807 speech pattern detection effects of dual language exposure, 665 speech perception, 220 attunement to native language before birth, 580 audiovisual speech perception, 582-583 bilingual-learning infants, 588 critical periods for development, 591-592, 593 factors influencing critical periods, 593 forming phoneme categories, 581–582 influences on development, 579 lateralization of language processing, 589-591 levels of word understanding, 585-587 mapping meaning, 585-587 multimodal speech perception, 582-583 native language discrimination, 580-581 neural specialization for language, 589-591 policy perspectives, 593-594

rhythmicity of language, 580-581 word segmentation, 583-585 speech production adult input as targets for imitation, 608 adult responses as positive reinforcers, 607-608 canonical syllables, 603-604 computational models, 612-615 conversational turn-taking, 605 cross-cultural perspectives, 618-619 culturally sensitive policies on assessment and intervention, 622-623 early meaningful speech, 605 effects of congenital hearing loss, 619 future research directions, 624 influence of socioeconomic status (SES), 616 interventions to promote, 621-622 linguistic differences, 617-618 mechanisms of, 606-612 neural underpinnings, 609-612 policy perspectives, 621-623 potential early indicators of ASD, 620 prelinguistic vocalization types, 602-604 protophones, 602-603 role of intrinsically-motivated play, 606 role of social input, 606-608 spike timing-dependent plasticity (STDP), 13 spinal circuit activity-dependent neural development and learning, 11-12 central pattern generators (CPGs), 11 spinal circuit learning embodied brain model, 19-21 spinal nervous system development in the embryo and fetus, 10-12 statistical learning, 423 dual-context, 669 syntax learning, 641-642 word learning, 634 word segmentation, 585 "sticky mittens" studies, 419 effects on motor development, 477 still-face during mobile phone use, 442 still-face paradigm, 728 Strange Situation Procedure (SSP), 689-690 stress physiology of attachment, 692 stretch reflex fetal development, 8, 10-11 subplate layer role in development of the cortex, 13, 14 sustained attention, 186 synaptic pruning during childhood and adolescence, 94, 97

synaptogenesis in the infant brain, 94, 96-101

More Information

848 INDEX synostoses plantar grasp reflex, 242 effects on head circumference, 50 policy implications, 253 syntax learning proprioception, 240 bilingualism, 648 receptor types and distributions, 240 development in infants, 641 role of sociocultural factors, 254-255 differences in communicative contexts, rooting response in newborns and infants, 646-647 248-249 effects of sociocultural differences, 646-647 social touch, 244-245 learning non-adjacent relations, 642-643 somatosensory homunculus, 246 leveraging domain-general processes, 641-643 taste policy implications, 647-649 chemesthesis, 265 problem of syntax, 632 culture of foods, 263-264 prosodic bootstrapping of syntactic units, 643 development of taste preferences, 267-268 sign language systems, 641 early feeding patterns and practices, socially communicative contexts, 643 264-265 socioeconomic status gap, 647-649 effects of mother's diet on breast milk, statistical learning, 641-642 273 - 281temporal attention, 642-643 effects of prenatal flavor exposure, 273-281 timing of interventions, 648 effects of repeated exposure to food, 281-289 influence of the mother's choices, 264 tracking input structure to uncover syntactic rules, 641-642 neurobiology of flavor senses, 265-268 underlying neural mechanisms, 645-646 preference for sweet tastes, 272 use in word learning, 640 role of olfaction, 268 using word knowledge to bootstrap, 644 sense of, 265-266 snacking in children, 264-265 tablets, 435 social modeling and food preferences, 289 tactile perception sweets and sugar-sweetened beverages, 264 benefits of massage, 253, 254 technoference, 440-443 benefits of skin-to-skin contact for temperament babies 253 core features, 715 crossed-extension reflex in newborns, 246 features shared with emotion and emotion C-Tactile (CT) afferent fibers, 244 regulation, 715 definition of touch, 240 parental moderation of expression, 728 developing role in the bodily self, 246-252 policy implications, 733-734 development of pain perception, 244 susceptibility to environmental influences early development of affective aspects, 244-245 and, 727 early development of haptic sensing, 241-243 variations in emotion and emotion early development of proprioception and regulation, 724-727 the postural schema, 248-249 working definition, 716-717 effects of early tactile experiences, 253 theory of mind, 495, 506 Too Small to Fail initiative, 563 exploratory procedures in the early postnatal period, 241-243 touch. See tactile perception fetal development, 8 toxin exposure future research on tactile development, 252 epigenetic effects on the fetus, 75 importance of, 238 tuberous sclerosis (TS), 142 influence of other sensory inputs, 240 Tulving's Encoding Specificity Principle, 344 interoception, 240 ΤV location of touch in external space, 249 background TV technoference, 441-442 multisensory development of body parent and child joint media engagement, representations, 250-252 438-439 multisensory interactions, 238, 240 neural substrates of touch, 239-241 ultrasound ontogeny of, 241 measurement of body composition, 45 origins of tactile body maps in brain and behavior, 246-247 ventral pathway, 525 palmar grasp reflex, 242 vista space, 415 passive tactile inputs, 246 visual attention. See attention

visual development

161 - 162

processing, 170-172

face processing, 172-174

of low-level vision, 160-161

race faces, 171

vision, 161-162

165-167, 172-173

face processing, 168-169

perceptual narrowing, 171-172

policy implications, 174-176

tuning to own species, 171

cultural context, 562-563

ego-centric vision, 549-550

policy implications, 563

sensitive period, 553

558-560

acuity, 157

social context, 562-563

congenital blindness, 215

detecting faces, 168-169

high-level vision, 163-165

low-level vision, 157-160

stereopsis, 160

motion processing, 163-165 peripheral vision, 160

contrast sensitivity, 158-159

effects of retinal immaturity, 158

visual perception of the newborn

everyday visual tasks, 558-560

role in visual development, 549

atypical development and, 561

biased early experiences, 552-553

visual experience

559

face input and, 170

Cambridge University Press & Assessment 978-1-108-44439-2 - The Cambridge Handbook of Infant Development Jeffrey J. Lockman, Catherine S. Tamis-LeMonda Index

More Information

visual recognition memory (VRM) cross-cultural differences related to diet, paradigm, 342 visual system cultural biases in the tuning of early face fetal development, 8 vocal learning discrimination between own-race and otheradult input as targets for imitation, 608 adult responses as positive reinforcers, early visual experience and development of 607-608 canonical syllables, 603-604 clinical perspectives, 619-620 early visual experience in the development computational models, 612-615 early visual experience in the development conversational turn-taking, 605 of motion processing, 165-167 cross-cultural perspectives, 618-619 effect of diet on development of low-level culturally sensitive policies on assessment and intervention, 622-623 effects of congenital cataracts, 160-161, early meaningful speech, 605 effects of congenital hearing loss, 619 effects of premature birth, 161, 167, 174 future research directions, 624 influence of socioeconomic status (SES), 616 interventions to promote, 621-622 linguistic differences, 617-618 mechanisms of, 606-612 role of arachidonic acid (ARA), 161-162 neural underpinnings, 609-612 role of docosahexaenoic acid (DHA), 161-162 policy perspectives, 621-623 potential early indicators of ASD, 620 prelinguistic vocalization types, 602-604 protophones, 602-603 role of intrinsically-motivated play, 606 role of social input, 606-608 development of face perception, 552-553, voxel-based morphometry (VBM), 8 Vygotsky, Lev, 411, 534 developmental neuroscience, 559-561 developmentally changing context, 555-557 Waddington, Conrad, 72, 74 weight infant weight measurement, 43-44 WEIRD (Western, educated, industrialized, rich and democratic) nations, 806 Williams syndrome, 422, 509 shift in attention to manual actions, 555-556 word learning skewed distribution of object categories, acquiring phonological and semantic biases, 639 sleeper effects of early deficits, 553 associative word learning theories, 634 attention-shifting ability, 636 Bayesian inference models, 635 bilingualism, 648 challenges for infants, 633 communicative context, 637-638 context of dvadic interaction. 636-638 cross-situational models, 634 differences in communicative contexts, immaturity of the pathway from the retina 646-647 to the primary visual cortex, 158-159 effects of dual language exposure, 665-667 learning about individual faces, 169 effects of sociocultural differences, 646-647 hypothesis testing models, 634 infant-directed speech, 636-637 influence of vowel hyperarticulation by adults, 637

Index

849

More Information

850 INDEX timing of interventions, 648 word learning (cont.) leveraging domain-general processes, 634-636 underlying neural mechanisms, 645-646 link with learning grammar, 632 verb learning, 640 mutual exclusivity bias, 639 word-to-world mappings, 634-635 policy implications, 647-649 writing skills development, 559 problem of reference, 632 Quinean conundrum, 632 zebrafish embryo studies social nature of, 636-638 spinal circuit learning, 20-21 socioeconomic status gap, 647-649 Zero to Three (ZTT) Screen Sense guidelines, 455 statistical learning, 634 sustained attention to word referents, 635 Zika virus exposure syntactic bootstrapping, 640 microcephaly related to, 49