Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

acetylcholine, 211-212 Activation-Input Source-Neuromodulation (AIM) model, 195-197 active sleep (AS), 46-47 adenosine, 29, 33-34, 103-104 adolescent sleep, 5, 54-55 adults dreams of, 146-149 sleep expression in, 55-57 advanced sleep phase wake disorder (ASPD), 36-38 affective network dysfunction (AND) model, 202 age. See lifespan dream content; lifespan sleep expression aggression in dreams, 157-161, 164-165 in REM sleep behavior disorder, 91-92 AIM model. See Activation-Input Source-Neuromodulation model alpha waves, 61, 174, 216 amnesia, of dreams, 127-128 amygdala, 210 in memory consolidation, 109-111 in REM sleep behavior disorder, 91–92 sleep deprivation effects on, 15-16 in social brain network, 12-14, 142-143 amyloid proteins, 102 ancestral humans, sleep in, 26 AND model. See affective network dysfunction model Angelman syndrome, 116 anorexia nervosa, 113-116 anti-depressants, 213-214 anti-histamines, 212 anti-psychotics, 213-214 anxiety, 80 apnea. See sleep apnea aquatic mammals, sleep in, 23-24 arousal, confusional, 53-54

arousal thresholds, 19 AS. See active sleep Asclepian rituals, 182-183 ASPD. See advanced sleep phase wake disorder atonia. See paralysis attachment dreams, 149-151 attachment theory childhood sleep expression and, 54 infant sleep expression and, 48-49 REM dreaming and, 143-144 of sleep state development, 44-46 attacks, sleep, 83-85 automaticity, of dreams, 128 autonomic nervous system, 67-68, 73 awakenings procedures, 223-224 bad dreams. See nightmares barbiturates, 212-214 behavioral traits, of sleep, 7-9 benzodiazepines, 212-214 big dreams, 186-187 bimodal sleep pattern, 26 binge eating, sleep-related, 87 biological rhythms, 28-29 circadian rhythm. See circadian rhythm disorders of, 36-38 methods of studying, 208-209 social modulation of, 35-36 in two process sleep regulation model, 33-35 ultradian cycle. See ultradian cycle bipolar disorder, 37-38, 80 birds, sleep in, 22, 42 body. See physiologic systems brain dream recall and, 174-176 energy restoration in, 102-104, 106 hybrid states of, 95-97

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

254

Index

brain (cont.) NREM connectivity and plasticity effects in. 105 NREM sleep mechanisms of, 64-65 REM sleep mechanisms of, 70-71 sleep regulation by, 11-14 social. See social brain network systems important for sleep, 209-210 brain development N3 slow wave sleep role in, 67 REM promotion of, 41-43, 111-112 sleep pattern response to, 41 brain stem, 210 Bulkeley, Kelly, sleep and dreams database of 227 caffeine, 33 CAP. See cyclic alternating pattern cardiac arrest, 73 Cartwright, Rosalind, 88-95 cataplexy, 83-85 catch-up sleep. See rebound sleep central sleep apnea, 81 cerebral cortex, 109-111, 209-210. See also prefrontal cortex CH. See continuity hypothesis characters, dream, 163-164 children dreams and nightmares in, 144-146 sleep deprivation among, 5 sleep expression in, 53-54 slow wave sleep role in, 67 chronotherapy, 38 cingulate cortex, 12-14 circadian rhythm adenosine role in, 29, 33-34 master clock regulating, 29-30, 32 melatonin release in, 29-30 sleep organization by, 14-16, 28-30 social modulation of, 35-36 in two process sleep regulation model, 33-35 ultradian cycle in, 30-32 clitoral engorgement, in REM sleep, 74-75 clonidine, 212 cognitions, dreams as, 123-127

cognitive functions, NREM restoration of, 104-105 cognitive processing, in dreams, 133, 146-149 cognitive-restructuring techniques, 90-91 compensatory rebound. See rebound sleep confabulation, 168-169 confusional arousals, 53-54 continuity hypothesis (CH), 149, 202-204 co-sleeping, 15, 40 creativity, in dreams, 130 criminal acts, during sleep, 88-95 cyclic alternating pattern (CAP), 61-62 cytokines, 100-101 daydreams, 123, 136 death. See also mortality dream content and, 152 debt, sleep, 10 default mode network (DMN), 70-71, 142-143 delayed sleep phase wake disorder (DSPD), 36-38 delta power, 10-11, 60-61 delta waves, 60-61, 63-65 depression, 80-82 deprivation. See sleep deprivation development. See brain development diary, sleep, 209, 223, 226 diencephalon, 210 diurnal lifestyle, 28-29 DMN. See default mode network dopamine, 211-215 doppelganger dreams, 187-188 dorsomedial prefrontal cortex, 12-14, 143 dream lag effect, 108-109 Dreambank, 227 DreamON, 176-177 dreams amnesia for, 127-128 attachment, 149-151 automaticity of, 128 bad. See nightmares big, 186-187 as brain state-regulated, 11-12 in children, 144-146

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

cognitive processing in, 133, 146-149 data resources on, 217, 226-227 in dying people, 152 in elderly, 151-152 emotions in, 127 enactment of. See enacted dreams false awakenings, 188–189 fear extinction by, 89-90, 202 hyper creativity in, 130 hypermnesia within, 127-128 incubated, 182-183 lifespan content of. See lifespan dream content loss of, 155-156 lucid, 176-177, 183-185 meeting one's double in, 187-188 in memory consolidation, 108-109 methods for studying, 221-223 awakenings procedures, 223-224 scoring of characters, social interactions, and emotions, 224-225 sleep logs/diaries, 209, 223, 226 transcription of mentation reports, 224 mind-reading in, 130-131 in multiple personality disorder/ dissociative identity disorder, 181 musical, 190 narrative structure of, 133-135 NREM. See NREM dreams ontology, 131-133 perceptual disengagement during, 129 physical symptom, 180-181 recall of. See recall recurrent, 191 REM. See REM dreams self in, 125-127 self-reflectiveness in, 130, 163 of sensorially limited patients, 191 sexual, 74-75, 181-182 sleep paralysis, 188-190 as sleep-dependent cognitions, 123-127 theories of, 194-195, 206-207 AIM theory, 195-197 continuity hypothesis, 149, 202-204 dreams as virtual simulation and predictions of reality, 197-200

AND model, 202 social simulation theory, 205-206 Solm's model, 200-202 threat simulation theory, 204-205 in traditional societies, 177-180 twin, 185-186 variation in, 171-172, 192 visitation, 188 visual sense in, 128 drowsiness, 17, 61 DSPD. See delayed sleep phase wake disorder dyssomnias, 78-79 hypersomnolence, 82 Kleine-Levin Syndrome, 82-83, 113-116 narcolepsy, 83-85 insomnia. See insomnia eating, during sleep, 87 EEG. See electroencephalography elderly dreams in, 151-152 sleep expression in, 57 electroencephalography (EEG) of dream recall neural correlates, 174-176 as method for sleep study, 215-217 of NREM stages, 61-64, 216 quantitative, 219 of rebound sleep, 10 of REM-NREM cycle, 31-32 sleep measurement using, 7, 9 electrophysiological traits, of sleep, 7-9 emotion in dreams, 127 processing of, 166-167, 202 REM regulation and balance of, 112-113 sleep deprivation effects on, 15-16 emotional memories, 108-109 enacted dreams, 195 dream recall and, 173-174 NREM-REM content differences in studies of, 160-161

emotional processing functions, 202

REM atonia and, 73–74, 91–92

255

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

256

Index

energy, sleep restoration of, 102-104, 106 erections, in REM sleep, 74-75 ERK. See extracellular signal-regulated kinase evolution, sleep attachment theory of, 44-46 functions, 99 heterochrony role in, 41 immune system evolution and, 101-102 life history theory of, 43-44 NREM, 18-23, 99, 113-118 parent-offspring conflict theory of, 43 REM, 18-23, 41-43, 99, 113-118 excessive daytime sleepiness. See dyssomnias exploding head syndrome, 88 extracellular signal-regulated kinase (ERK), 41-42 Falater, Scott, 88-95 false awakenings, 188-189 fatal familial insomnia (FFI), 68-69, 79-80 fear extinction, 89-90, 202 fetal sleep, 46 FFI. See fatal familial insomnia fitness signals, 75 flip-flop switch, 34-35 fMRI. See functional magnetic resonance imaging forced desynchrony protocol, 208-209 Freud, Sigmund, 134, 194 friendliness, in dreams, 157-161, 164-165 Friston, Karl, 197-200 frontal lobes, 210 delta power link to, 60-61 NREM restoration of, 104-105 slow wave activity and, 66-67 frontopolar region, 12-14, 143 full polygraphic sleep, 7 functional magnetic resonance imaging (fMRI), 217-218, 220 functional traits, of sleep, 7-9 fusiform gyrus, 12-16, 143 gamma aminobutyric acid (GABA), 212

gamma aminobutyric acid (GABA), 212 genetic conflict human lifespan and, 50–53

infant sleep expression and, 49-50 NREM-REM interactions and, 113-118 sleep state development and, 43 genomic imprinting, 113-118 GH. See growth hormone glial cells, 102-104 glutamate, 211 glycogen, 102-104 glymphatic system, 102 Gnas gene, 117 Grb10 gene, 117 growth hormone (GH), 65-66 Hall, Calvin, 194-195, 203 Hall/Van de Castle system, 131-133, 222-225 development of, 194-195 norms on male and female dreams, 147-148 hallucinations dreams as, 125-126 isolated sleep paralysis with, 92-95 in narcolepsy, 83-85 heart rate, REM effects on, 73 heterochrony, in evolution of sleep development, 41 hibernation, 20, 104 hippocampus, 109-111, 143, 210 Hobson, Allan, 195-200 homeostatic regulation, 10-11, 33-35 homicide, during sleep, 88-95 hypermnesia, within dreams, 127-128 hypermorphosis, in evolution of sleep development, 41 hypersomnolence, 82 Kleine-Levin Syndrome, 82-83, 113-116 narcolepsy, 83-85 hypnogram, 216 of NREM-REM cycle, 31-32 hypocretin, 83 hypothalamus, 32

idiopathic hypersomnia, 82 IL1. See interleukin I illness dreams, 180–183 imagery rehearsal therapy (IRT), 90–91

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

immersive spatiotemporal hallucination (ISTH), 125-126 immune system, NREM maintenance of, 67-68, 100-102 imprinting. See genomic imprinting incubated dreams, 182-183 indeterminate sleep, 46 infant sleep, 15, 43, 48-50 inflammation, sleep loss causing, 100-101 insomnia, 79 primary, 79–80 fatal familial insomnia, 68-69, 79-80 secondary, 80 major depression, 80-81 sleep apnea, 81-82 two-process model of, 34 insula, 12-14, 143 interleukin I (IL1), 100-101 International Association for the Study of Dreams, 227 IRT. See imagery rehearsal therapy isolated sleep paralysis (ISP), 92-96, 189-190 ISTH. See immersive spatiotemporal hallucination jet lag, 37-38 Jung, Carl, 194 K-complexes, 60-63, 216 Kleine-Levin Syndrome (KLS), 82-83, 113-116 latency, sleep, 57-58 law, on criminal acts committed during sleep, 88-95 learning NREM role in, 105-108 REM role in, 106-109 sleep spindle activity and, 62-63 slow wave activity and, 66-67 levodopa, 212 life history theory, 43-44 lifespan dream content, 138-140, 153 in adult males compared with adult females, 146-149

age-related changes in, 151-152 attachment dreams, 149-151 childhood dreams and nightmares, 144-146 death and, 152 social interactions in, 138-144 lifespan sleep expression adult woman, 55-57 child, 53-54 elderly, 57 evolutionary background to attachment theory, 44-46 heterochrony, 41 life history theory, 43-44 parent-offspring conflict theory, 43 REM promotion of brain development, 41-43 fetal, 46 infant, 48-50 longevity and, 50-53 neonatal, 47-48 normal patterns of, 40-41, 57-58 teenage, 54-55 light-dark cycle, 28-30 limbic system, 210 log, sleep. See sleep diary longevity, sleep expression and, 50-53 lucid dreams, 176-177, 183-185 magnetic resonance imaging (MRI), 217-218, 220 major depression, 80-81 mammals, sleep in, 22-26 MASS. See Montreal Archive of Sleep Studies master clock, 29-30, 32 melatonin, 213-214 in circadian cycle, 29-30 for delayed sleep phase wake disorder, 36 - 38memory NREM consolidation of, 106-111 REM consolidation of, 106-111 sleep spindle activity and, 62-63, 109-111

sleep spindle activity and, 62–63, 109 slow wave activity and, 66–67

men, dreams of, 146-149

257

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

258

Index

mentation reports, 224 metabolic rate, 102, 106 microsleeps, 17 migration, sleep during, 22 mind-reading, in dreams, 130-131 monotremes, sleep in, 22-23 Montreal Archive of Sleep Studies (MASS), 226-227 mortality lifespan sleep expression and, 50-53 sleep architecture as predictor of, 76 mothers infant co-sleeping with, 15 in infant sleep state development, 43 motivational reward, 72 motor paralysis. See paralysis MPD/DID. See multiple personality disorder/dissociative identity disorder MRI. See magnetic resonance imaging multi-oscillator sleep regulation models, 34-35 multiple personality disorder/dissociative identity disorder (MPD/DID), 181 musical dreams, 190 mutual dreams, 185-186 N1 sleep, 60-61, 216 N2 sleep, 60-63, 216 N3 sleep, 60-61, 63-64, 216. See also slow wave sleep narcolepsy, 83-85 narcotics, 213-214 narrative structure, dream, 133-135 National Sleep Research Resource (NSRR), 226 Native American Plains Indians, 178 neonatal sleep, 47-48 neurodevelopment. See brain development neuroimaging, 217-220 neuromodulators, 210-215 neuronal connectivity, NREM optimization of, 105 neurons, 211 sleep-on, 32 S-R , W-A, and W-R, 34-35

neurotransmitters. See neuromodulators nicotine, 212 night terrors, 53-54, 64, 87 nightmares, 88-91, 187, 202 in children, 144-146 night-wakings, 43, 48-50 non-rapid eye movement (NREM) sleep, 7 - 8bodily changes during, 67-68 brain mechanisms in, 64-65 in children, 53-54, 67 disorders of fatal familial insomnia, 68-69, 79-80 parasomnias, 64, 85-88, 95-97 dreams during. See NREM dreams EEG characteristics of, 61-64, 216 in elderly, 57 electrophysiologic measures of, 9 evolution of, 18-23, 99, 113-118 functions of, 99-100, 114-115, 118-119 antagonistic REM interactions and, 113-118 cognitive performance restoration, 104-105 energy restoration, 102-104 immune system maintenance, 67-68, 100 - 102memory consolidation, 106-108 neuronal connectivity optimization, 105growth hormone release during, 65-66 lifespan trends in, 57-58 memory and, 66-67 multi-oscillator sleep regulation models of, 34-35 in neonates, 47-48 pathway to deep sleep in, 61-64 in pregnancy, 55-57 rebound, 10-11, 34 REM compared with, 76-77, 114-115 REM cycle with. See ultradian cycle social brain network deactivation during, 13-14 stages of, 60-64, 216 norepinephrine, 211-215

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

NREM dreams, 155-159 REM compared with, 72, 157-161, 169 REM dream interactions with, 161–162 NREM sleep. See non-rapid eye movement sleep NSRR. See National Sleep Research Resource obstructive sleep apnea (OSA), 81-82 occipital cortex, 175-176 Ojibwa Algonguin speaking Indians, 179-180 OSA. See obstructive sleep apnea oxytocin, 142-143 pacemaker, circadian, 29-30, 32 paradoxical sleep (PS), 42 paralysis. See also sleep paralysis during REM, 73-74, 91-92 parasomnias, 78, 85 criminal acts during, 88-95 hybrid brain states in, 95-97 NREM, 64, 85-88, 95-97 REM, 88-97 parasympathetic nervous system, 67-68 parent-offspring conflict theory, 43, 49-50 parents infant co-sleeping with, 15 reproductive age of, 50-53 Parkinson's disease, 173-174 Pawaganak, 179 perception during dreams, 129 during sleep, 17 PET. See positron emission tomography PGO waves. See pontine-geniculo-occipital waves physical activity, during sleep, 17 physical symptom dreams, 180-181 physiologic systems NREM effects on, 67-68 REM effects on, 72 autonomic nervous system storms, 73 dream content, 72 motor paralysis, 73-74, 91-92 sexual activation, 74-75 thermoregulation lapses, 73

social nature of sleep and, 14-16 physiologic traits, of sleep, 7-9 Physionet, 226 plasticity NREM promotion of, 105 REM promotion of, 41-43 sleep spindle activity and, 62-63 polysomnography, 215-217, 223 pontine-geniculo-occipital (PGO) waves, 9, 69 positron emission tomography (PET), 217-220 posterior cingulate, 175-176 posture, sleep, 17-19 Prader-Willi syndrome (PWS), 116 precognitive dreams, 185-186 precuneus, 12-14, 175-176 predictions, dreams as, 197-200 prefrontal cortex, 210 in dream recall, 174-176 in memory consolidation, 109-111 in REM sleep behavior disorder, 91-92 sleep deprivation effects on, 15-16 in social brain network, 12-14, 143 pregnancy, 55-57 primates diurnal lifestyle of, 28-29 sleep in, 25-26 prion disease, 68-69, 79-80 PRL. See prolactin Process C, 33-34 Process S, 33-34 prolactin (PRL), 75 PS. See paradoxical sleep psychophysics, 219-221 puberty, 54-55 PWS. See Prader-Willi syndrome

QS. *See* quiet sleep quantitative EEG, 219 Quiche Maya, dreams of, 178 quiescent state, sleep as, 17 quiet sleep (QS), 46–47

RAM. *See* Reward Activation Model rapid eye movement (REM) sleep, 7–8 bihemispheric nature of, 24

259

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

260

Index

rapid eye movement (REM) sleep (cont.) biobehavioral characteristics of, 69 brain mechanisms in, 70-71 in children, 53-54 deprivation of, 11, 34, 75, 105-106 dreams during. See REM dreams in elderly, 57 electrophysiologic measures of, 9 evolution of, 18-23, 41-43, 99, 113-118 fetal development of, 46 functions of, 76, 99, 105-106, 114-115, 118-119 antagonistic NREM interactions and, 113-118 brain development, 41-43, 111-112 emotion regulation and emotional balance, 112-113 memory consolidation, 106-111 lifespan trends in, 57-58 in major depression, 81 motivational reward and, 72 multi-oscillator sleep regulation models of, 34-35 in neonates, 47-48 NREM compared with, 76-77, 114-115 NREM cycle with. See ultradian cycle parasomnias of, 88-97 physiologic phenomena related to, 72 autonomic nervous system storms, 73 dream content, 72 motor paralysis, 73-74, 91-92 sexual activation, 74-75 thermoregulation lapses, 73 in pregnancy, 55-56 rebound, 11, 34, 105-106 REM on and REM off cellular networks controlling, 69-70 sexual signaling and, 75 social brain network reactivation during, 13 in teens. 55 RBD. See REM behavior disorder reality prediction, dreams as, 197-200 rebound dreams, 125 rebound sleep, 10-11 for energy restoration, 104

REM, 11, 34, 105-106 two process sleep regulation model explaining, 33-35 recall, dream, 172-174 boosting of, 176-177 by lucid dreamers, 176-177 neural correlates of, 174-176 recurrent dreams, 191 religious dreams. See spiritual dreams REM behavior disorder (RBD), 73, 91-92, 96, 173-174 REM dreams, 155-159, 162-163 characters in, 163-164 emotional processing in, 166-167 NREM dream interactions with, 161-162 NREM dreams compared with, 72, 157-161, 169 self-reflectiveness in, 163 social brain network and, 142-144 social interactions and aggression in, 164-165 story-like complexity of, 167-169 REM sleep. See rapid eye movement sleep REM-NREM cycle. See ultradian cycle reptiles, sleep in, 21-22 respiratory functions, REM effects on, 73 restorative process, sleep as, 9 restorative theory, 102-104, 106 reversible state, sleep as, 9-10 Reward Activation Model (RAM), 72 rhythm disorders, 36-38 Roenneberg, Til, Chronotype Questionnaire of, 227 SAD. See seasonal affective disorder schizophrenia, 80 SCN. See suprachiasmatic nucleus

SCN. *See* suprachiasmatic nucleus scoring, of dreams, 224–225 script, in recurrent nightmares, 90–91 seasonal affective disorder (SAD), 37–38 sedatives, 212–214 selective serotonin reuptake inhibitors, 212 self, in dreams, 125–127 self-reflectiveness, in dreams, 130, 163 semantic priming, 219–221

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

261

senses during dreams, 128-129 dreams of patients with impaired, 191 serotonin, 211-215 sex, sleep, 64, 86 sexual activation, 15, 74-75 sexual dreams, 74-75, 181-182 sexual dysfunction, REM deprivation and, 42 sexual signaling, REM and, 75 shamans, 178-179 sharp-wave ripple events, 109-111 shell cells, 30 shift work, 37 Sigmund, 177 simulations, dreams as, 197-200, 204-206 single photon emission computed tomography (SPECT), 217, 219-220 sleep arousal thresholds during, 19 behavioral habits restoring, 5-6 biological need for, 3-4 biological rhythms of. See biological rhythms as brain state-regulated, 11-14 brain systems important for, 209-210 criminal acts committed during, 88-95 data resources on, 217, 226-227 definition of, 5-9 evolution of. See evolution full polygraphic, 7 functions of, 99 hibernation and torpor, 20, 104 homeostatic regulation of, 10-11, 33-35 lifespan expression of. See lifespan sleep expression methods for studying, 209-210 EEG, 215-217 neuroimaging, 217-220 neuromodulators, 210-215 polysomnography, 215-217, 223 psychophysics, 219-221 mortality and lifespan sleep expression effects on, 50-53 sleep architecture as predictor of, 76

multi-oscillator models of, 34-35 NREM. See non-rapid eye movement sleep perceptual disengagement during, 17 posture during, 17-19 as quiescent state, 17 rebound. See rebound sleep REM. See rapid eye movement sleep as restorative process, 9 as reversible state, 9-10 as social behavior, 14-16, 18-19 species comparisons in, 20-21 ancestral humans, 26 aquatic mammals, 23-24 birds, 22 monotremes, 22-23 primates, 25-26 reptiles, 21-22 terrestrial mammals, 24-25 triggering of, 32 two process regulation of, 33-35 yawning and, 19-20 sleep apnea, 81-82 sleep architecture, 216 sleep attacks, 83-85 sleep debt, 10 sleep deprivation in animals with unihemispheric sleep, 23-24 causes of, 4-5 consequences of, 3-5 dream rebound after, 125 emotional effects of, 15-16 global epidemic of, 4-5 inflammation associated with, 100-101 neuronal plasticity and, 41-43 rat studies of, 100 sexual impairment and, 75 sleep rebound after. See rebound sleep sleep diary, 209, 223, 226 sleep disorders dyssomnias. See dyssomnias hybrid brain states in, 95-97 parasomnias. See parasomnias rhythm, 36-38 two-process model of, 34

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

262

Index

sleep hygiene, 5-6 sleep latency, 57-58 sleep paralysis dreams of, 188-190 isolated, 92-96, 189-190 in narcolepsy, 83-85 sleep sex, 64, 86 sleep spindles, 60-63, 109-111, 216 sleep state misperception, 80 sleep talking, 64, 87-88, 96 sleep traits, 7-9 sleep walking, 64, 85-86, 88-96 sleep-dependent cognitions, dreams as, 123 - 127sleepiness, excessive. See dyssomnia sleep-on neurons, 32 sleep-onset REM (SOREM), 83 sleep-related binge eating, 87 slow wave activity (SWA), 64-65, 215-216 as indicator of Process S, 34 memory and, 66-67 types of, 62 slow wave sleep (SWS), 31, 60-61, 63-65, 216 in children, 67 in elderly, 57 functions of, 100 cognitive performance restoration, 104-105 energy restoration, 102-104 immune system maintenance, 100-102 memory consolidation, 106-111 neuronal connectivity optimization, 105 growth hormone release during, 65-66 lifespan trends in, 57-58 memory and, 66-67 in pregnancy, 55-57 Snord116 gene, 117 social behavior, sleep as, 14-16, 18-19 social brain hypothesis, dream content and, 138 - 142social brain network, 11-14 dream recall and, 174-176 in NREM sleep, 64-65 NREM-REM interactions and, 117–118

in REM dreaming, 142-144 in REM sleep, 70-71 social cues, biological rhythm response to, 35-36 social interactions in REM compared with NREM dreams, 157-161 REM dream levels of, 164-165 social simulation theory (SST), 205-206 Solms, Mark, 200-202 somatostatin (SS), 65-66 somnambulism, 64, 85-86, 88-96 somniloquy, 64, 87-88, 96 SOREM. See sleep-onset REM SPECT. See single photon emission computed tomography sperm, telomeres in, 51-53 spindles, sleep, 60-63, 109-111, 216 spiritual dreams big dreams, 186-187 doppelganger dreams, 187-188 in traditional societies, 177-180 visitation dreams, 188 S-R neurons, 34-35 SS. See somatostatin SST. See social simulation theory stimulants, 213-214 for narcolepsy, 85 story structure, dream, 133-135, 167-169 strangers, dream, 163-164 superior temporal sulcus, 12-14, 143 suprachiasmatic nucleus (SCN), 29-30, 32 SWA. See slow wave activity SWS. See slow wave sleep sympathetic nervous system, 67-68, 73 synapses, 105, 211 talking, sleep, 64, 87-88, 96 targeted memory reactivation (TMR), 111 teenagers. See adolescent sleep telomeres, 50-53 temporal-parietal junction, 12-14, 143, 174-176 terrestrial mammals, sleep in, 24-25

thalamic alerting neurons, 79–80 thalamus, 209–210

Cambridge University Press 978-1-107-17110-7 — The Neuroscience of Sleep and Dreams Patrick McNamara Index <u>More Information</u>

Index

263

theory of mind (ToM) capacity, 141–142 thermoregulation, 73 theta waves, 61, 110, 174, 216 threat simulation theory, 161, 204–205 TMR. *See* targeted memory reactivation ToM capacity. *See* theory of mind capacity torpor, 20, 104 traditional societies, dreams in, 177–180 traits, sleep, 7–9 twin dreams, 185–186 two process sleep regulation model, 33–35 ultradian cycle, 30–32

social modulation of, 35–36 triggering of, 32 unihemispheric sleep, 22–24

Van de Castle, Robert, 194–195. See also Hall/Van de Castle system vasopressin, 142–143 ventrolateral preoptic nucleus (VLPO), 34–35, 212 ventromedial prefrontal cortex, 12-14, 143, 174-176 virtual simulation, dreams as, 197-200 visitation dreams, 188 visual sense, in dreams, 128 VLPO. See ventrolateral preoptic nucleus W-A neurons, 34-35 wake after sleep onset (WASO), 57-58 waking, NREM and REM hybrid brain states with, 95-97 walking, sleep, 64, 85-86, 88-96 WASO. See wake after sleep onset white blood cells, 101-102 wish fulfillment, 194-195 women. See also mothers dreams in, 146-149 sleep expression in, 55-57 W-R neurons, 34-35

yawning, 19-20