Index

Note: page numbers in *italics* refer to figures and tables, those in **bold** refer to boxes.

abducens nerve (CN VI) 17, 322–3
abstraction, executive function 379, 380
abulia 67
academic performance 312
accessory nerve (CN XI) 17
acetylcholine (ACh) 65, 238, 285, 520
acetylcholinesterase inhibitors (AChE) 504
attention impairment 520
declarative memory impairment 524
executive dysfunction 531
language impairment 527
visuospatial memory impairment 529
working memory impairment 522
acromatopsia 149
acoustic nerve see vestibulocochlear nerve (CN VIII)
acquired immune deficiency syndrome dementia complex 51
action tendencies 269, 269–70
Activation Likelihood Estimation (ALE) activation maps 35
activities of daily living (ADL) 616
adaptive behaviors, basic emotion 268
addictive disorders, neurosurgical treatment 75
adenosine, sleep-promoting neuronal systems 99
adolescence, sleep 103
advanced sleep phase syndrome (ASPS) 104–5
age 270–1, 275
assessment 354, 355, 356
emotion 271, 270–1, 274
emotional feelings relationship 271
mental status examination 354–6, 355
mood relationship 274
neurological basis 290–1
neurological distinction from mood 290
affect disorders 271, 273, 273, 546–7
classification 271
co-occurrence with mood disorders 273
medication-induced 548, 548
mood disorder distinction 273–4
see also prosody, affective
affective placidity 273
affective processing, prefrontal cortex 138
ageusia 155
aggression 7, 41–2, 572–5, 579
acute 573–4
chronic 574–5
neurobiology 572
neurochemistry 573
physical 615
treatment 572–3, 574–5
aging 50
affective prosody 190
attitudinal prosody 190
sleep changes 103
deprivation recovery 103
neuronal systems 99
Process C 103
agitation 572–5, 613–14
acute 573–4
chronic 574–5
treatment 573, 574–5
agnosias 146, 368–9
aperceptual 146, 149
associative 146
auditory 151
cognitive impairment 521
finger 369
gustatory 155
integrative 146
interventions 521
olfactory 369
visual 369
agraphesthesia 153, 369
agraphia 177
akinesia 199
akinetic mutism 67, 73–4
akinetopsia 149, 218
alcohol abuse 477
alexias 177, 369
allostasis 290–1
allostatic overload 290
Alzheimer's disease 50, 54, 438, 456
conceptual apraxia 201
genetic testing 7
implicit memory 167–8
insomnia 104
pharmacotherapy 104
posterior cortical atrophy 150, 219
sundowning syndrome 104
supportive psychotherapy 597
treatment 7
visuospatial dysfunction 219
amantadine, arousal disorders 94
American Board of Psychiatry and Neurology (ABPN) 3, 396
American Medical Association (AMA) 3
American Neurological Association (ANA) 3
American Neuropsychiatric Association 5
American Psychiatric Association (APA) 3
amnesia
anterograde 164
electroconvulsive therapy 637
global 164–5, 168
implicit memory 167
perceptual skills learning 169
post-traumatic 315
retrograde 164–5
amnestic syndromes 69, 162
amputees, phantom limb sensations 153
amygdala 21–2, 138, 218
comportment dysfunction 256
extended 280–1
goal-directed behavior 138
motivation 138
anamnesis 349
ankle jerk reflex 329
anomia 357, 370
anopsias 149
anosmia 155
anosognosia 385
anterior brainstem injury 456
anterior capsulotomy 75, 631–2
anterior cerebral arteries (ACAs) 26
anterolateral cortex (AC) circuit 60, 62–3
motivation 137–8

649
Index

anterior cingulate (AC) cortex divisions 233
dorsal cognitive division 233
lesions causing akinesia mutism 67
reward circuit 282
rostral-ventral affective division 233
anterior cingulate (AC) syndrome 67, 73–4
anterior cingulate–subcortical circuit 235, 579
antero-communicating artery (ACoA) 26
anterior inferior cerebellar arteries (AICAs) 34
anterior temporal cortex 167
anticonvulsants 551
antidepressants 548–51
antero-temporal cortex 167
anterior inferior cerebellar arteries 328
asterognosia 369
axonotmesis 426
attention 115–31, 365–7
atrophy 134, 139, 578–9
depression differential diagnosis 579
diagnosis 140, 140
behavioral treatment 74
pharmacologic treatment 74
scales 579
treatment 579
aphasia 174–7, 369, 369–70, 526
Broca’s 174, 176, 177, 180
classic 371, 371
conduction 175–6, 181, 208–9
disorders of pantomime 186
progressive 180–1, 527
semantic 181, 181
subcortical 176–7
syndromes 176
transcortical motor/sensory 176
treatment 526–7
Wernicke’s 176, 177, 180
applied behavioral analysis 605, 618
apraxia 199–201, 373–4, 527–9
clinical relevance 199–200
conceptual 200–202
dementia 201
pathophysiology 201–2
testing 201
dissociation 200, 208–9, 210
gesture imitation problems 209
visual perceptual system failure 209
evaluation 528
ideational 200, 202, 374
ideomotor 200, 202–4, 208, 210
allocentric orientation errors 203
callosoal disconnection 204–5
cortical lesions 208
corticobasal degeneration 207–8
corticospinal neurons 206–7
eegocentric movement errors 203
inferior parietal lobe 206
intra-hemispheric disconnection 205–6
mental state examination 374
motor cortex 207
pathophysiology 204–8
postural 203
premotor cortex 206–8
subcortical lesions 208
superior longitudinal fasciculus 208
treatment 210
white matter pathways 208
limb 199–200
limb-kinetic 200, 210, 209–10, 211, 373–4
definition/description 209–10
testing 209
treatment 210–11
melokinetic 373–4
treatment 528–9
verbal dissociation 208, 209, 210
aprasodias 185–6, 187, 188, 191, 371
comorbid with primary mood disorders 545
crossed 188
global/motor 191
treatment 527
arcuate fasciculus 206, 236
arm
abductor muscles strength testing 326
see also upper extremities
arousal 88–95, 350–2, 363–5
ascending systems 89, 89–90
balance mechanisms 90
cholinergic projections 89–90
cognitive impairment 517–19
distributed neural circuits 88
dopaminergic projections 89–90
emotion 270
feedback mechanisms 90
glutamatergic projections 89–90
neuroanatomy 88
neurophysiology 88–90
nuclei 89, 89–90
olfactory input 88–9
pathological processes 90
reticular formation role 16
serotonergic projections 89–90
thalamic nuclei 90
visual system inputs 89
arousal circuit 281
arousal disorders 88, 90–4
brain death 90–1
pharmacologic treatment 94
severe impairment 91–4
treatment 94–5
arterial spin labeling (ASL) 436–7
ascending reticular activating system (ARAS) 16, 99, 443
ascending reticular inhibiting system (ARIS) 16
association tracts 26
asterognosia 153
astereognosis 369
astrocystoma, MRI 425
ataxia 328
ataxic disorders 40–1
athymormia 139
attachment, disorganized 313
attachment theory in psychotherapy 588
attention 115–31, 365–7
control 115–19, 129, 128–9, 131, 226
functional models 117–19
guided search model 118–19, 130
visual search model 117–18
cueing tasks 116–17
executive 128
impairment 519–21
orientation to locations 120
selective attention model 128–30
spatial 119–24
spatial cueing 116–17
speed of processing 365, 519–21
pharmacotherapy 519–21
sustaining 365

© in this web service Cambridge University Press
www.cambridge.org
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>targets 365</td>
</tr>
<tr>
<td>tests 365–7</td>
</tr>
<tr>
<td>types 119–28</td>
</tr>
<tr>
<td>visual 116–17</td>
</tr>
<tr>
<td>visual search task 117, 118</td>
</tr>
<tr>
<td>visual working memory 126–8</td>
</tr>
<tr>
<td>visually guided search model 118</td>
</tr>
<tr>
<td>see also object-based attention</td>
</tr>
<tr>
<td>attention-deficit hyperactivity disorder (ADHD) 70</td>
</tr>
<tr>
<td>pharmacologic treatment 73</td>
</tr>
<tr>
<td>attention deficit/disorders 121–2, 456</td>
</tr>
<tr>
<td>auditoryagnosia 151</td>
</tr>
<tr>
<td>auditorycortex 150–1</td>
</tr>
<tr>
<td>auditoryhallucinations 152, 347, 641</td>
</tr>
<tr>
<td>auditoryperception/recognition 150–2</td>
</tr>
<tr>
<td>auditorysystem, what/where 150–1</td>
</tr>
<tr>
<td>behavior(s) causes of target 619</td>
</tr>
<tr>
<td>behavioralanalysis, applied 605</td>
</tr>
<tr>
<td>behavioralmetaphors 570–1, 571</td>
</tr>
<tr>
<td>behavioralmetaphors 570–1, 571</td>
</tr>
<tr>
<td>Behavioral Neurology &amp; Neuropsychiatry 978-0-521-87501-1 - Cambridge University Press</td>
</tr>
<tr>
<td>© in this web service Cambridge University Press</td>
</tr>
<tr>
<td><a href="http://www.cambridge.org">www.cambridge.org</a></td>
</tr>
</tbody>
</table>
Index

brain tissue volume, morphometric analysis 424–6
brain tumors
clinical presentation 485–6
EEG findings 456
gliomatosis cerebri 486
hematopoietic 486–96
brain–behavior relationships 6, 23
brainstem 16, 12–16, 19
arousal disorders 88
cerebellum connections 14
injury 456
metencephalon 13–14
motivation 134–5
myelencephalon 12–13
REM sleep 100
reticular formation 15–16, 135–6
breach of duty, tort law 412
Broca, Paul 174
Broca’s aphasia 174, 177, 180
Broca’s area 174
Breach of Duty, tort law 412
Brodmann’s areas 23, 27–9
Broca’s area 174
Broca, Paul 174
Breast Cancer.Wiki 52
breast cancer 52
brainstem cognitive affective syndrome (CCAS) 37, 36–7, 37, 38, 41
behavioral aberrations 38–9
children 38–9
emotional deficits 38–9
oposculon–myoclonus–ataxia 39
posterior fossa syndrome 38
cerebellar lesions
clinical manifestations 35–8
development effects 40
disconnection syndromes 32
neuropsychiatric impairments 39, 40
cerebellar motor syndrome 35–6
cerebellar stroke 37–8
cerebellum 14, 32–42
activation maps 35
activation patterns 36
anatomy 32–3, 33, 34
behavioral neuroanatomy 14
blood vessels 34
brainstem connections 14
cerebral cortex connections 236–7
cognition 32–5, 41
cortex 14, 32
distributed neural circuits 32
dyslexia 41
electrical stimulation for behavioral disorders 41–2
emotion mechanisms 41
fissures 14, 32, 33
folia 14
functional topography 34–5
limbic 35
lobes 32, 34–5
nuclei 34
peduncles 34
primary psychiatric disease 40–1
Purkinje cell layer 14
sensorimotor control 35
sensorimotor projections 34
subdivisions 14
vermis damage 40
cerebral akinetopsia 218
cerebral arteries 27, 28
cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) 52
cerebral cortex 22–3
agranular areas 231
association areas 23–5
Brodmann areas 23
cerebellum connections 236–7
connections between modules 145–6
divisions 145
frontal lobes 24–5
granular areas 231
information flow 25
lamination 22
limbic areas 21
lobes 22–3, 23
paralimbic areas 21
primary motor cortex 23
Rolandi fissure 23
secondary motor cortex 23
subcortical structures 20, 25
Sylvian fissure 23
ventricular system 27–9, 29
cerebral hemispheres
affective–prosodic deficits 189
arousal disorders 88
cerebellum connection 34
interhemispheric interactions 188–9
intrahemispheric disconnection in ideomotor apraxia 205–6
language specializations 179
lateralization in affective prosody 188–9
left dominance for language 175, 178, 184, 188–9
left lesions causing limb–kinetic apraxia 209–10
right involvement
communication 186–9, 191–2
language 186–9, 191–2
visuospatial function 214–15
cerebrocerebellar connections 34
cerebrospinal fluid, ventricular system 27–9
cerebrovascular events, risk with antipsychotics 557
cerebrum, midbrain connections 14
challenging behavior 566–7
applied behavioral analysis 618
behavioral metaphors 570–1
causes 568
co-occurring cognitive impairment 567–8
definition 617–18
diagnosis 567–70
DSM classification 569
evaluation 606, 607, 617–20
hypothesis-driven intervention 619–20
labeling 569
management 617–20
medication side-effects vulnerability 570
neuropsychiatric disorders 607
neurotransmitter disease-specific alteration 569–70
psychiatric disorder comorbidity 568–9
psychopharmacology 570–1
quantification 618
recurrent evaluation of plan 620
self-awareness deficit 579–80
target behavior etiology 618
treatment effect evaluation 570
see also behavioral disturbance
change model 595, 597
character 301–2
brain region activation/deactivation patterns 305
cooperativeness 302
descriptors of high and low scorers 302

652
Index

comportment (cont.)
medial frontal circuit 255–6
mental status examination 353
orbitofrontal circuit dysfunction
254–5
prefrontal circuit 256
schizophrenia 260–1
self-awareness 251
social adaptation 251–2
temporal circuit 256
traumatic brain injury 258–60
comprehension 370–1
computed tomography (CT) 415, 417–19
acute subdural hygroma 423
contrast agents 418–19
cyanoide poisoning 426
factors in selection 421
frontal lobotomy 426
helical (spiral) 417–18
MRI comparison 421
normal brain 418
parasagittal meningioma 424
subarachnoid hemorrhage 424
tissue appearance 418
xenon-enhanced 418
conduction aphasia 175–6, 181
confusional arousals 108–9
consciousness 365
see also arousal; awareness; coma;
minimally conscious state
consent
electroconvulsive therapy 636–8
medical decision-making 408
contingency management 590
continuous arterial spin labeling
(CASL) 437
contrast agents, neuroimaging 417, 420
CT 418–19
MRI 420
conversion disorder 312–13, 315
Coome, Andrew 2
cooperativeness 302
coordination
lower extremities 329–30
upper extremities 328
corneal reflex, examination 323
corpus callosum
disconnection 204–5, 209
interhemispheric communication 204
limb–kinetic apraxia 210
cortical auditory disorder 151
cortical deafness 151
cortical sensory deficit 153
cortical–limbic pathways 71
corticobasal degeneration 207–8
corticospinal neurons 206–7
counter-conditioning 590
cranial nerves 16–17, 322–4, 357
myelencephalon 12–13
nuclei 16
cranium, venous drainage 27
criminal behavior 7
criminal responsibility, forensic
practice 410–12
crying, paroxysmal 277
complex partial seizures 273
cueing tasks 116–17
Cullen, William 1–2
cyanide poisoning, CT 426
cyclic alternating pattern (CAP), sleep
102
D1 and D2 receptors, frontal-subcortical circuits
64
dangerousness assessment 360–2
default hearing 151
declarative memory 164–7, 371–3, 373
delayed recall 372
impairment 523–5
cognitive rehabilitation 523–4
pharmacotherapy 524–5
deep brain stimulation (DBS) 632–4
applications 634
arousal disorders 94–5
complications 633–4
depression 75
fMRI 430–1
obsessive-compulsive disorder
treatment 75
Tourette syndrome 75
defendants
competency to stand trial 409–10
not guilty by reason of insanity 411
Dejerine–Roussy syndrome 153
delayed sleep phase syndrome (DSPS)
104–5
delirium, EEG findings 456
delusions 575–8
of control 156
mental state examination 361
dementia
alcoholic 477
apathy diagnosis 140
carbon monoxide-induced
encephalopathy 481
competency 409
conceptual apraxia 201
EEG findings 456
neurodegenerative 567–8
neurotic 481
semantic 167, 181
see also Alzheimer’s disease;
frontotemporal dementia; white
matter dementia
dementia with Lewy bodies (DLB)
insomnia 104
visoruospatial dysfunction 219–20
denial, psychological 385
dependency, excess 616
depression
apathy differential diagnosis 579
attention–cognition–motion
model 71
behavioral interventions 611
behaviors 545–60
cognitive behavioral therapy 592, 611
cortical–limbic pathways distributed
network failure 71
diagnosis with focal brain lesions 191
dopamine fronto-limbic deficiency
70–1
electroconvulsive therapy 639
environmental interventions 611
frontal–subcortical dysfunction 70–1
interpersonal therapy 593
neurological disorders 545, 545–6
neurosurgical treatment 75
pharmacotherapy 549–50
subgenual cingulate role 71
transcranial magnetic stimulation 641
vegetative–circadian compartment
model 71
see also bipolar disorder; major
depressive disorder
depth perception 218
Descartes, René 4
development
sleep across lifespan 102–3
white matter role 50
developmental coordination disorder
312
developmental history 312–13
diacylglycerol (DAG) gene, bipolar
disorder 72
Diagnostic and Statistical Manual of
Mental Disorders 4–5
behavioral disturbance 569
symptom terminology 346
diencephalon 17–19, 456
differential reinforcement of other
behavior (DRO) 614
agression 615
multiple behaviors 615
diffuse axonal injury (DAI) 52
diffusion tensor imaging (DTI) 422,
422, 435–6
apparent diffusion 435–6
dorsolateral prefrontal-subcortical circuit 282
driving, executive control 128
drowsiness, medication impact on theta/delta activity 455–7
drug reward circuit 72
drugs of abuse neurotoxins 476, 476, 477
see also substance abuse disorders
see also substance abuse disorders dual agency, forensic practice 408
dualism 4–5
Dynamic Causal Modeling (DCM) 472
dyscalculia 376
dysexecutive syndromes 164, 240
see also executive dysfunction
dyslexia 181
cerebellar–vestibular interactions 41
dysnomia 370
dyspraxia 527–9
dysprosody 185
dystonia 154
Economo, Constantin von 98–9
electroconvulsive therapy (ECT) 636–9
epilepsy 456
epileptiform discharges 451–2, 451–2
fast Fourier transform 461, 461, 466
filters 445
frequencies 443, 443
frequency domain averaging 465
hyperventilation stimulation 452–4
independent components analysis 469–70, 470
induced responses 463, 465, 468
interrupted rhythmic delta activity 450–1, 453
International System of Electrode Placement 444
interpretation 447–54
lambda waves 449, 452
measures 462
medication impact 455–7
motor evoked field 464, 468
mu rhythms 449, 451
phase 463–5
phase-locking 464, 466–7, 468
phase-resetting 467
photic stimulation 454
photoparoxysmal response 455
physiologic basis 442–3
polyphasic slowing 449–50, 452, 453
posterior dominant rhythm 447–8, 450, 455, 463
quantitative 447, 462
reactivity to stimulation/provocative maneuvers 452–4
recording types 446–7
referential montage 445, 446
rhythmic activity 443
rhythmic slowing 450–1
signals 442–3
amplification 443–5
displays 445–6
processing 443–5
recording 443
sleep architecture assessment 454
sleep patterns 101–2
slowing waveforms 449–51
source analysis 467–9
spectral analysis 461–3
theta activity 455–7
time versus frequency domain 461, 466
time–frequency transformation 465–6, 466, 467, 467
tracings 460
triphasic waves 457
electrophysiology
advanced 459–72
domains 460–1
spectral techniques 461–3

© in this web service Cambridge University Press
emotion 266–9
action tendencies 269–70
advances in understanding
affect 270–1, 271, 274
affect disorders 273
allostasis 290–1
arousal 270
assessment 354–6
basic 267–8, 268, 268, 268
brain activation 289
categories 267–70
action tendencies 269, 269–70
cerebellum, mechanisms 41
classes 267
coregulation 289
control 286, 285–9
definitions 267, 354
dimensions 270
expression mechanisms 277
expression pathways 277–8
expression/experience in greater
limbic system 285–6, 286, 287
facial expressions 268
frequency 270
functional neuroimaging
emotion relationships 288–9
function 288
generation in greater
limbic system 285–6, 286, 287
intensity 270
lateralization 287–90
limbic system 275–82
mental status examination 354–6
modal 268–9
mood 270–1, 271, 274
mood disorders 271–2
neurobiology 275–91
neuropsychological assessment
effects 403
potency 270
relative frequency 269
right-hemisphere hypothesis
sagacity 270
stress response 302
unpredictability 270
valence 270
valence-specific hypothesis 287–8
without emotional feeling 354
see also limbic system, greater
emotional disturbance 534–60
anxiety disorders 547–8
lateralized neurological processes
289–90
medication-induced 548
sustained/transition 290–1
see also affect disorders; mood
disorders; pathological
laughing and crying (PLC)
emotional feelings 267, 354, 356
action tendencies 269–70
affect relationship 271
allostasis 290–1
assessment 354–6
associations 354
basic 268
basic set 268
categories 267–70
dimensions 270
lateralization 287–90
limbic system 275–82
modal 268–9
mood relationship 271
neurobiology 275–91
relative frequency 269
emotional incontinence see
pathological laughing and
crying (PLC)
emotional outbursts, treatment 558–9
emotional states 270
limbic system 21–2
orbitofrontal syndrome 67–8
reinforcement effects on
temperature/character
dimensions 303
emotional traits 270
empathy 232, 255–7
encephalitis lethargica epidemic
(1917–1918) 98–9
encephalopathy
acute 481
carbon monoxide poisoning 481
metabolic 457
toxic 412
environmental autonomy, executive
function 379
environmental interventions 604–20
anxiety disorders 612
behavioral deficits 616
behavioral excesses 613–16
cognitive impairment 514
consistency 609
depression 611
executive dysfunction 617
integrated treatment plan 607
neuropsychiatric disorders
behavioral sequelae 611–16
cognitive sequelae 616–17
emotional sequelae 611–16
physical sequelae 609–11
nomenclature 604–5
paradigms 619
positive reinforcement 608
principles 605–9
reward 608
substance abuse disorders 612–13
environmental toxins 476, 477, 477–8
epilepsy 456
photostimulation in EEG 454
vagal nerve stimulation 634
epilepsy monitoring unit for EEG 447
epileptiform discharges, EEG 451–2
episodic memory 164–6
deficits 164–5
frontal lobe 165
hippocampus 165
imagining the future 163–6
medial temporal lobes 165
remembering the past 163–6
remember/know paradigm 164
epithalamus 19
ethics, forensic practice 407–8
event-related desynchronization
(ERD)/synchronization (ERS) 466, 468
phase-locking 466–7
evidence
neuropsychiatric 406–7
rules in forensic practice 412–13
excessive daytime sleepiness (EDS) 106
excitatory post-synaptic potentials
(EPSP) 442–3
executive attention 128
Executive Clock Drawing Test (CLOX) 377
executive control 128, 226
executive dysfunction 225, 511
assessment 530
behavioral interventions 617
cognitive impairment 530–2
environmental interventions 617
frontal networks 239–40
treatment 530–2
effective function 225–43
abilities 227
abstraction 379, 380
acetylcholine role 238
assessment
bedside 241–2, 242
instruments 240–1, 241
neuropsychological 240–1
association pathways 235–6
central executive 226
cholinergic system 238
clusters 227
cognitive models 226
complex motor sequencing 378–9
deficit in dorsolateral prefrontal
syndrome 68, 73
definitions 225–8
dopamine 237–8
environmental autonomy 379
frontal lobe 228–35
frontal networks 239–40
frontal-subcortical circuits 234–5
frontocerebellar interactions 237–9
GABA role 237
glutamate 237
historical studies 228–9
impaired 511, 530–2
judgment 385
language 377
mental status examination 376–9
neurochemical modulation 237–9
norepinephrine 237–8
Parkinson’s disease 73
pattern recognition 377–8
prefrontal cortex 225, 229–34
processes 227
serotonin role 238–9
set shifting 376–7
visuospatial function control 377
volition 227
experimental control 605
expert opinion, forensic practice 408, 412–13
extinction, cognitive therapies 591–2
extrapyramidal syndrome, antipsychotic motor side effect 336
eye contact, mental status examination 353
facial expressions of emotion 268
facial nerve (CN VII) 17, 323
familiarity 164
family history 311–12
family therapy 593–4, 595
fast Fourier transform 461, 461, 466
fatigue 610
feature integration theory 117–18
feelings see emotional feelings
fibromyalgia, insomnia 104
finger abductor muscles, strength testing 328
finger agnosia 369
finger extensor muscles, strength testing 327
finger jerk reflex 325–6
finger tapping sequence learning (FTSL) 169
Fisher test for ataxia 328
fist-edge-palm series 378
Florida Apraxia Battery–Extended and Revised Sydney (FABERS) 374
19-fluorine magnetic resonance spectroscopy (MRS) 423
focal neurobehavioral syndromes 53
foot see lower extremities
foot dorsiflexor muscles, strength testing 329
foramen of Magendie 27
foramen of Monro 27
foramina of Luschka 27
forearm flexor muscles, strength testing 326
forebrain 134–5, 278–9
forensic assessment 406–13
forensic practice 407–8
areas of importance 408–13
capacity diminished 411
medical decision-making 408
testamentary 410
competency 408–10
to stand trial 409–10
conceptual framework 407
criminal responsibility 410–12
diminished capacity 411
dual agency 408
evidence rules 412–13
expert opinion 408, 412–13
free will 411–12
medical decision-making 408
mitigating circumstances 411
not guilty by reason of insanity 411
testamentary capacity 410
tort law 412–13
traumatic brain injury 412
formications 153
fornix 26
free will 411–12
Freeman, Walter 628–9
Freud, Sigmund 2–3, 4, 6
frontal eye field (FEF) damage 122–3
frontal lobe autism spectrum disorders 261–2
episodic memory 165
executive function 228–35
historical studies 228–9
language impairment 177
language mapping 178–9
spatial attention 122–3
stereotactic targeting of white matter 632
frontal lobotomy, CT 426
frontal network syndrome 239
frontal release signs 326
frontal-subcortical circuits 20, 59–76, 234, 234–5
amnestic syndromes 69
anatomy 61, 59–61
anterior cingulate cortex 62–3
behavioral circuit interactions with motor circuits 66
bipolar disorder 72
cholinergic system 65
circuit-discrete neurochemical organization 65
D1 and D2 receptors 64
direct pathway 60, 64
dopamine system 64, 65
dorsolateral prefrontal cortex 61
GABA fibers 64
Huntington’s disease 68
impulse control disorders 72–3
indirect pathway 60, 64
lateral orbitofrontal circuit 61–2
medial orbitofrontal cortex 63–4
motivation 137, 139
motor circuit 61, 66
movement disorders 68
neuropsychiatric syndromes 69–73
neurotransmitter systems 65–6
norepinephrine system 65–6
oculomotor circuit 61
open-loop elements 60–1
organization 61–4
prototypical syndromes 66–8
rostromedial limbic circuit 62
schizophrenia 72
serotonergic system 66
structure 59–60, 60
subcortical dementia 69
subgenual cingulate circuit 63
substance abuse disorders 72
frontal-subcortical dysfunction attention-deficit hyperactivity disorder 70
depression 70–1
mania 71
neurosurgical treatment 75
obsessive-compulsive disorder 69
pharmacological interventions 73–5
Tourette syndrome 69–70
treatment 73–5
frontocerebellar interactions 236–7
frontoparietal operculum lesion 186–7
frontoparietal system, saliency detection 118, 130
frontostriatal systems 59
frontotemporal dementia 104
comportment dysfunction 257–8
EEG findings 456
neuroimaging 258
presenting symptoms 258
toxic 481
functional behavioral assessment 605
functional magnetic resonance imaging (fMRI) 6, 423–4, 433–4
advantages 433–4
deep brain stimulation 430–1
light pain stimulation paradigm 431
limitations 434
signal fluctuation 433
spatial attention 123
spatial resolution 434
visual task 433
funduscopic examination 322
GABA (gamma-aminobutyric acid) 99, 237
GABA fibers, frontal-subcortical circuits 64
Gage, Phineas 250–1, 253
gait testing 330
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>galanin, sleep-promoting neuronal systems 99</td>
</tr>
<tr>
<td>Gall, Franz Joseph 47</td>
</tr>
<tr>
<td>genetics 7</td>
</tr>
<tr>
<td>geniculostriate pathway 147–8</td>
</tr>
<tr>
<td>Gerstmann’s syndrome 150, 369, 376</td>
</tr>
<tr>
<td>Geschwind, Norman 6, 47, 175, 344</td>
</tr>
<tr>
<td>gestural kinesics 186</td>
</tr>
<tr>
<td>gestures 190</td>
</tr>
<tr>
<td>imitation problems 208, 209</td>
</tr>
<tr>
<td>Gilles de la Tourette syndrome see Tourette syndrome</td>
</tr>
<tr>
<td>glial cells 12</td>
</tr>
<tr>
<td>gliomas 52</td>
</tr>
<tr>
<td>gliomatosis cerebri 48</td>
</tr>
<tr>
<td>Global Assessment of Relational Functioning (GARF) Scale 594, 595</td>
</tr>
<tr>
<td>globus pallidus 19, 20, 60</td>
</tr>
<tr>
<td>glossopharyngeal nerve (CN IX) 17, 324</td>
</tr>
<tr>
<td>glutamate, executive function 237</td>
</tr>
<tr>
<td>gnosis</td>
</tr>
<tr>
<td>impairment 521</td>
</tr>
<tr>
<td>see also recognition</td>
</tr>
<tr>
<td>goal-directed behavior 138</td>
</tr>
<tr>
<td>diminished 140</td>
</tr>
<tr>
<td>goal-oriented behavior 134</td>
</tr>
<tr>
<td>Granger causality 472</td>
</tr>
<tr>
<td>gray matter 15</td>
</tr>
<tr>
<td>development 50</td>
</tr>
<tr>
<td>volume reduction 260–2</td>
</tr>
<tr>
<td>Griesinger, Wilhelm 2</td>
</tr>
<tr>
<td>group therapy 598–9, 599</td>
</tr>
<tr>
<td>guided search model 118–19</td>
</tr>
<tr>
<td>gustation, perception/recognition 154–5</td>
</tr>
<tr>
<td>gustatory agnosia 155</td>
</tr>
<tr>
<td>habenula 19, 66</td>
</tr>
<tr>
<td>hallucinations 146–7, 575–8</td>
</tr>
<tr>
<td>complex 150</td>
</tr>
<tr>
<td>gustatory 155</td>
</tr>
<tr>
<td>haptic 153</td>
</tr>
<tr>
<td>self-perception/-recognition 156</td>
</tr>
<tr>
<td>sleep alterations 147</td>
</tr>
<tr>
<td>tactile 153</td>
</tr>
<tr>
<td>visual 149–51</td>
</tr>
<tr>
<td>see also auditory hallucinations</td>
</tr>
<tr>
<td>hallucinosis, peduncul 48</td>
</tr>
<tr>
<td>handedness 312</td>
</tr>
<tr>
<td>harm</td>
</tr>
<tr>
<td>avoidance 300, 303, 304, 306</td>
</tr>
<tr>
<td>tort law 412</td>
</tr>
<tr>
<td>hazardous ambulation 614</td>
</tr>
<tr>
<td>headache 609–10</td>
</tr>
<tr>
<td>hearing, examination 323–4</td>
</tr>
<tr>
<td>heavy metal poisoning 478</td>
</tr>
<tr>
<td>heel-to-shin test 329–30</td>
</tr>
<tr>
<td>Heidelberg Scale for subtle neurological signs 334–5</td>
</tr>
<tr>
<td>hematopoietic tumors 486–96</td>
</tr>
<tr>
<td>hemianopia 149</td>
</tr>
<tr>
<td>hemispatial inattention 367, 375, 375</td>
</tr>
<tr>
<td>hemispatial neglect 530</td>
</tr>
<tr>
<td>hepatic impairment, neurotoxin activity 479</td>
</tr>
<tr>
<td>hereditary spino cerebellar ataxias (SCAs) 40–1</td>
</tr>
<tr>
<td>herpes simplex encephalitis, EEG findings 456</td>
</tr>
<tr>
<td>hip flexor muscles, strength testing 329</td>
</tr>
<tr>
<td>hippocampus 22</td>
</tr>
<tr>
<td>episodic memory 165</td>
</tr>
<tr>
<td>greater limbic system 282</td>
</tr>
<tr>
<td>memory function 22</td>
</tr>
<tr>
<td>semantic memory 166</td>
</tr>
<tr>
<td>visuospatial information 217–18</td>
</tr>
<tr>
<td>visuospatial memory 218</td>
</tr>
<tr>
<td>histamine deficiency in narcolepsy 107</td>
</tr>
<tr>
<td>greater limbic system modulation 285</td>
</tr>
<tr>
<td>history-taking 310–11, 314</td>
</tr>
<tr>
<td>collateral information 311</td>
</tr>
<tr>
<td>communication 310–11</td>
</tr>
<tr>
<td>contradictory account 311</td>
</tr>
<tr>
<td>developmental history 312–13</td>
</tr>
<tr>
<td>family history 311–12</td>
</tr>
<tr>
<td>general medical history 314</td>
</tr>
<tr>
<td>medical records 311</td>
</tr>
<tr>
<td>non-informative account 311</td>
</tr>
<tr>
<td>social history 313–14</td>
</tr>
<tr>
<td>Hughlings Jackson, John 186, 188</td>
</tr>
<tr>
<td>Huntington’s disease</td>
</tr>
<tr>
<td>autosomal dominant transmission 7</td>
</tr>
<tr>
<td>EEG findings 456</td>
</tr>
<tr>
<td>frontal-subcortical circuits 68</td>
</tr>
<tr>
<td>personality alterations 68</td>
</tr>
<tr>
<td>somatosensory symptoms 154</td>
</tr>
<tr>
<td>visuospatial dysfunction 219</td>
</tr>
<tr>
<td>hydrocephalus 29, 52</td>
</tr>
<tr>
<td>5-hydroxytryptamine 1A (5-HT1A) agonists 74</td>
</tr>
<tr>
<td>5-hydroxytryptamine receptors (5-HT-R) 66</td>
</tr>
<tr>
<td>hyperprosody 185</td>
</tr>
<tr>
<td>hypersomnia 106–10</td>
</tr>
<tr>
<td>menopause-associated 108</td>
</tr>
<tr>
<td>periodic 107–8</td>
</tr>
<tr>
<td>primary 107</td>
</tr>
<tr>
<td>psychiatric disorders 104</td>
</tr>
<tr>
<td>hyperventilation stimulation, EEG 452–4</td>
</tr>
<tr>
<td>hypopausal nerve (CN XII) 17, 324</td>
</tr>
<tr>
<td>hypokinesia 199, 215</td>
</tr>
<tr>
<td>hypomandria 544–6</td>
</tr>
<tr>
<td>hypomnia 155</td>
</tr>
<tr>
<td>hypothalamus 18–19, 19, 99, 100–1</td>
</tr>
<tr>
<td>hypoxic–ischemic injury 26, 90, 93</td>
</tr>
<tr>
<td>idiopathic hypersomnia (IH) 107</td>
</tr>
<tr>
<td>implicit memory 167–8</td>
</tr>
<tr>
<td>impulse control disorders 72–3</td>
</tr>
<tr>
<td>impulsive behavior 571–2, 579, 615–16</td>
</tr>
<tr>
<td>inattention, hemispatial 367, 375, 375</td>
</tr>
<tr>
<td>independent components analysis (ICA) 469–70, 470, 471</td>
</tr>
<tr>
<td>infants, sleep 102</td>
</tr>
<tr>
<td>inferior parietal lobe 206</td>
</tr>
<tr>
<td>information processing 365–7</td>
</tr>
<tr>
<td>dopamine/norepinephrine 237–8</td>
</tr>
<tr>
<td>serotonin 239</td>
</tr>
<tr>
<td>inhibitory post-synaptic potentials (IPSPs) 442–3</td>
</tr>
<tr>
<td>insanity, not guilty by reason of 411</td>
</tr>
<tr>
<td>insight</td>
</tr>
<tr>
<td>comportment 251</td>
</tr>
<tr>
<td>deficit in schizophrenia 260–1</td>
</tr>
<tr>
<td>measurement scales 257</td>
</tr>
<tr>
<td>mental status examination 384–5</td>
</tr>
<tr>
<td>insomnia 103–6</td>
</tr>
<tr>
<td>Alzheimer’s disease 104</td>
</tr>
<tr>
<td>antipsychotic drugs 554</td>
</tr>
<tr>
<td>cholinesterase inhibitors 104</td>
</tr>
<tr>
<td>chronic fatigue syndrome 104</td>
</tr>
<tr>
<td>chronic pain 104</td>
</tr>
<tr>
<td>circadian rhythm disorders 101, 104–5</td>
</tr>
<tr>
<td>cognitive behavioral therapy 105</td>
</tr>
<tr>
<td>conditioned 105</td>
</tr>
<tr>
<td>fibromyalgia 104</td>
</tr>
<tr>
<td>GABAergic agents 105–10</td>
</tr>
<tr>
<td>medical disorders 104</td>
</tr>
<tr>
<td>movement disorders 105</td>
</tr>
<tr>
<td>paradoxical 105</td>
</tr>
<tr>
<td>pharmacological treatment 105–6</td>
</tr>
<tr>
<td>primary 105</td>
</tr>
<tr>
<td>psychiatric disorders 104</td>
</tr>
<tr>
<td>treatment 104, 105–6</td>
</tr>
<tr>
<td>ventrolateral pre-ocpic region lesions 98</td>
</tr>
<tr>
<td>instrumental activities of daily living (IADLS) 616</td>
</tr>
<tr>
<td>integrated treatment plan 607</td>
</tr>
<tr>
<td>intellectual performance 312</td>
</tr>
<tr>
<td>intermittent rhythmic delta activity (IRDA) 450–1</td>
</tr>
<tr>
<td>internal carotid artery (ICA) 26, 426</td>
</tr>
<tr>
<td>International Classification of Impairments, Disabilities and Handicaps (WHO) 409</td>
</tr>
</tbody>
</table>
Index

International System of Electrode Placement 444
interneurons 12
interpersonal and social rhythm therapy (IPSRT) 593
intravascular lymphoma 493, 492–3, 494, 494–6
involuntary emotional expression disorder (IEED) see pathological laughing and crying (PLC)
IQ, heritability 306
ischemic injury 26
judgment 385
comportment 251
mental status examination 385
K-complexes, sleep 101
Kernan–Sayre syndrome 221
kinetics 186, 357–8, 371
Kleine–Levin syndrome 107–8
Klüver–Bucy syndrome 138, 273
knee jerk reflex 329
knowledge
mechanical 201–2
semantic 166
Korsakoff’s syndrome 73, 162
language 174–82
classic lesion model 174–7
problems with 177
communication 357
components 184–6
comprehension 370–1
disturbances 369
evaluation 526
executive control 377
fluency 357, 370, 377
functional imaging 184
hemispheric specialization 179
impairment 526–7
left cerebral hemisphere 175, 175, 184, 188–9
linguistic elements 184
mapping in frontal lobe 178–9
mental status examination 357, 369, 369–71
neurocomputational model 181–2
neuroimaging studies 177
paralinguistic elements 184–6
perisylvian area 175, 179, 181
processing 181
rehabilitation 526
repetition 370
right hemisphere role 186–9, 191–2
semantics 526
syntax 526
time intervals 181–2
lateral geniculate nucleus (LGN) 17, 147–8
lateral orbitofrontal circuit 61–2, 235
lateral ventricles 27
laughing
paroxysmal 273, 277
see also pathological laughing and crying (PLC)
The Law and Neuroscience Project 406
lead poisoning 478
learning disorders, EEG findings 456
leg
extension muscle strength testing 329
see also lower extremities
legal defense, neuropsychiatric 406
limbic leucotomy 628–9
limbic pathways 236
limbic system 276
amygdaloid sphere of influence 279
behavioral neuroanatomy 20–2
caudal components 280
emotional states 21–2
emotion/emotional feelings 275–82
forebrain evolution 279–82
function 21–2
greater 279–82
arousal circuit 281
dorsal region 282, 287
emotion generation/expression/experience/control 285–7
extended amygdala 280–1
humoral inputs 283
interoceptive inputs 283
motivational working memory circuit 281
neurotransmitter modulation 283–5
reward circuit 282
sensory inputs 283
ventral compartment 286–7
ventral striatopallidum 281
hippocampal sphere of influence 279
historical perspective 276–9
neurobiology 278
reciprocal cerebellohenpothalamic projections 280
rostral components 280
shared behavioral specializations 279
limbic system–midbrain circuit 279
line bisection task 367, 367
lithium 551, 553
lobotomy 628–9
locked-in syndrome 92
locus coeruleus 13
long-term memory 162, 164
lower extremities
balance testing 330
coordination testing 329–30
gait testing 330
neurological examination 328–31
postural reflexes 330
reflexes 329, 330
sensation testing 329
stance testing 330
strength testing 329
tone 328–9
walking assessment 330–1
Luria, Alexander R. 4
lymphoma, CNS 425
lymphomatosis cerebri 487–90
brain autopsy 488
CSF cytology 489–90
neuroimaging 489, 490
neuropathological assessment 490
pathological findings 487–8, 489
white matter hypermetabolism 490
M ganglion cells 148
magnetic resonance angiography (MRA) 432–3, 467
magnetic resonance imaging (MRI) 415, 419–21, 421
advanced imaging techniques 421–6, 432–7
arterial spin labeling 436–7
astrocytoma 425
CNS lymphoma 425
contraindications 421
contrast agents 420
CT comparison 421
diffusion-weighted imaging 419–20
gradient echo imaging 419
great vessels of the neck 433
hardware 416
metastatic melanoma 425
parasagittal meningioma 424
perfusion studies 422–3
radiofrequency pulses 419
safety 420–1
T1 and T2 432
tissue appearance 418
tissue sensitivity 419
toluene abuse 425
traumatic brain injury 424, 431
very ill hospitalized patients 421
voxel-based morphometry 424–6
white matter 50, 51
see also diffusion tensor imaging (DTI); functional magnetic resonance imaging (fMRI)
Index

magnetic resonance spectroscopy (MRS) 423, 434–5
chemical spectrum 435
types 434–5
uses 435
white matter 50
magnetization transfer (MT) imaging 421–2
magnetoencephalography (MEG) 459–72
advantages 460
cohere measurement 471–2
concept 459–60
connectivity 470–2
cost 460
distributed source analysis 469
evoked responses 463, 468
independent components analysis 470, 469–70, 471
induced responses 463, 465, 468
measures 462
motor evoked field 464, 468
phase 463–5
phase-locking 466–7, 468
quantitative 462
source analysis 467–9
spectral analysis 461–3
system 459
time and frequency representation 466
time–frequency transformations 465–6, 466, 467
tracings 460
major depressive disorder 543–4
neurosurgical interventions 632
malingering 482
mania
antipsychotic drugs 551
behaviors 545–60
bipolar disorder 544–5
electroconvulsive therapy 639
emotional behavior lateralization 71
frontal-subcortical dysfunction 71
mood stabilizers 552–3
neurological disorders 545
right-sided temporal
hypometabolism 71
secondary 546, 553
stroke association 546
symptoms 544
medial cingulate cortex 255–6
medial frontal circuit 255, 255–6
medial frontal cortex 233
connections 252
functions 255
lesions 255
neuroimaging 255–6
theory of mind 255
medial orbitofrontal cortex 63–4, 137–8
medial temporal lobes 165–6
median forebrain bundle 26
medical decision-making, forensic
practice 408
medical history, general 314
medical malpractice, tort law 412
medical records, history-taking 311
medications
acute encephalopathy 481
affect disturbance induction 548
affective symptoms 548
alternatives 504, 505–6
behavioral disturbance vulnerability
to side effects 570
changes 502
cognitive impairment 515–17
consilations 507
continuous reassessment of
treatment need 502–3
dose adjustments 502
dose escalation 501–2
drug–drug interaction vigilance 503
ease of use 500–1
EEG impact 455–7
evidence-based selection 500
expert opinion 501
genetic 503–4
hypnosis-driven selection 500
improving life without disease 507
media reports 506–7
mood disturbance induction 548
neurotoxins 476, 476–7
newly approved 504–5
non-approved indications 504
off-label use 505
partial response augmentation 503
pharmaceutical company samples 505
prior clinical experience 501
psychiatric symptoms 499
recovery concerns 506
reluctance to take 506–7
second opinions 507
selection 500–1
side effect profiles 500
therapeutic alliance 498–9
therapeutic trials 502
unexpected benefits 506
use 501–3
medulla oblongata 12–13
melanoma, metastatic 425
melatonin 101, 105
memory 161–70
anatomical substrates 162
central executive system 163–4
clinical overview 162
dysexecutive syndromes 164
episodic buffer 163
familiarity 164
hippocampus function 22
episodic memory 165
impairment 162, 522–6
implicit 167–8
long-term 162, 164
multiple systems 162–70
non-declarative 167–70
orientation to place/time/situation 372–3
phonological loop 163
phonological storage/rehearsal 163
recollection 164
remote 373
short-term 162
slave systems 163–4
spatial 372
subtypes 161
system classification 161
verbal 372
visual 372
visuospatial sketch pad 163
see also declarative memory;
episodic memory; procedural memory;
semantic memory; visuospatial memory;
working memory
Mendez’ Clock Drawing Interpretation Scale 377
mental status examination 375
 affect assessment 354, 355, 355–6
anamnesis 349
appearance 350–2
apraxia 373–4
arousal 350–2
attention 365–7
atypical clinical presentation 348
behavior 352–4
calculation 373–6
critical interview 348–50
 cognition 363–4, 364, 380–4
cognitive processes 349–50
communication 356–8
comportment 353
dangerousness assessment 360–2
declarative memory 371–3, 373
delusions 361
elements 345
emotional background 355–6
emotion/emotional feeling 354–6
engagement with examiner 354
examination-induced
emotional/behavioral
disturbances 349
executive function 376–9
eye contact 353
informant interviewing 349
information processing speed 365–7
Mindfulness-based stress reduction 610
minimally conscious state 91, 93–4
diagnosis 93
prognosis 93
vegetative state differential diagnosis 93
Mini-Mental State Examination (MMSE) 364, 365–6, 371, 382
mitigating circumstances, criminal responsibility 411
mitochondrial myopathies 221
Modified Quantified Neurological Scale 335
modulatory neurotransmitter nuclei 15
Moniz, Egas 628
monoamine oxidase inhibitors (MAOIs) 549, 551
monoaminergic systems, motivation 135–6
Montreal Cognitive Assessment (MoCA) 364, 383
mood
affect relationship 274
assessment 354–6
definition 270–1
emotion 270–1, 271, 274
emotional feelings 271
mental status examination 355, 354–6
neurological basis 290–1
neurological distinction from affect 290
types 275
mood disorders 271
affect disorder distinction 273–4
clinical implications 271–2
co-occurrence with affect disorders 273
EEG findings 456
electroconvulsive therapy 639
emotion 271–2
features 272
medication-induced 548
neurological disorders 545–6
primary 543–5
sleep 104
mood stabilizers 551–4
bipolar disorder 551–3
drug–drug interactions 554–6
mania treatment 552, 553
side effects 554, 555
morphometric analysis of brain tissue volume 424–6
motion perception 148
motivation 134–40
amygdala 138
anterior cingulate circuit 137–8
auto-activation deficit 139
basal ganglia 139
brain structures 134
brainstem 134–5
brainstem reticular formation 135–6
definition 134
dopaminergic system 135–6
forebrain 134–5
frontal-subcortical circuits 137, 139
loss 139–40
medial orbitofrontal cortex 137–8
mental status examination 354
monoaminergic systems 135–6
neurobiological basis 134–8, 139
nucleus accumbens 136–7
physiology 138–9
prefrontal cortex 137–8
striato-pallidal circuit 139
triggers 139
ventral tegmental area 135–6
motivation disorders 134, 273, 578–9
motivation enhancement therapy (MET) 612–13
motivational interviewing 595–6, 596, 612–13
motivational working memory circuit 281
motor acts, complex, voluntary/involuntary 353
motor circuit 61
motor cortex, ideomotor apraxia 207
motor disturbance, involuntary/voluntary 353
motor evoked field (MEF) 464, 468
motor sequencing, complex 378–9
motor skills 169–70
global amnesia 168
movement disorders, frontal-subcortical circuits 68
multiple behaviors 615
multiple sclerosis 51, 53, 592
multiple system atrophy (MSA) 39
muscle strength grading 327
see also lower extremities, strength testing; upper extremities, strength testing
musical hallucinations 152
myasthenia gravis, depression 545–6
mycosis fungoides
brain involvement 492
neuropathological assessment 490–2
pathological findings 491, 491–2
myelencephalon 12–13
myelin, white matter 48–9
myelinated fibers 48
myelinization, white matter 49
activity-dependent 55
### Index

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>narcolepsy</td>
<td>106–7</td>
</tr>
<tr>
<td>hallucinations</td>
<td>147</td>
</tr>
<tr>
<td>histamine deficiency</td>
<td>107</td>
</tr>
<tr>
<td>idiopathic hypersomnia</td>
<td>differential diagnosis</td>
</tr>
<tr>
<td>National Hospital for the Relief of Paralysis, Epilepsy and Allied Diseases</td>
<td>2</td>
</tr>
<tr>
<td>neglect</td>
<td>120–1, 215–16</td>
</tr>
<tr>
<td>attentional blink</td>
<td>127</td>
</tr>
<tr>
<td>disengage deficit</td>
<td>121, 130–1</td>
</tr>
<tr>
<td>dorsal attention system</td>
<td>130–1</td>
</tr>
<tr>
<td>dorsolateral prefrontal lobe</td>
<td>122–3</td>
</tr>
<tr>
<td>extrapersonal</td>
<td>216</td>
</tr>
<tr>
<td>hemispatial</td>
<td>530</td>
</tr>
<tr>
<td>motor</td>
<td>215</td>
</tr>
<tr>
<td>motor-intentional</td>
<td>215</td>
</tr>
<tr>
<td>neural network model</td>
<td>121</td>
</tr>
<tr>
<td>object-based attention</td>
<td>125</td>
</tr>
<tr>
<td>parietal lobe</td>
<td>120–1</td>
</tr>
<tr>
<td>personal</td>
<td>216</td>
</tr>
<tr>
<td>sensory</td>
<td>215</td>
</tr>
<tr>
<td>sensory-intentional</td>
<td>215</td>
</tr>
<tr>
<td>temporoparietal junction</td>
<td>120, 130–1</td>
</tr>
<tr>
<td>temporoparietal junction damage</td>
<td>120</td>
</tr>
<tr>
<td>ventral attention system</td>
<td>130–1</td>
</tr>
<tr>
<td>ventral frontal cortex</td>
<td>130–1</td>
</tr>
<tr>
<td>visual</td>
<td>215–6</td>
</tr>
<tr>
<td>neocortex</td>
<td>22–3</td>
</tr>
<tr>
<td>nephrogenic systemic fibrosis</td>
<td>420</td>
</tr>
<tr>
<td>neural networks</td>
<td>damage in behavioral disturbance</td>
</tr>
<tr>
<td>distributed</td>
<td>7</td>
</tr>
<tr>
<td>neuroanatomy</td>
<td>6, 228–40</td>
</tr>
<tr>
<td>Neurobehavioral Status Examination</td>
<td>384</td>
</tr>
<tr>
<td>neurobehavioral toxicology</td>
<td>480–2</td>
</tr>
<tr>
<td>acute encephalopathy</td>
<td>481</td>
</tr>
<tr>
<td>dementia</td>
<td>481</td>
</tr>
<tr>
<td>malingering</td>
<td>482</td>
</tr>
<tr>
<td>pseudoneurotoxicity</td>
<td>482</td>
</tr>
<tr>
<td>neurochemistry</td>
<td>6</td>
</tr>
<tr>
<td>neurocognitive tests</td>
<td>394</td>
</tr>
<tr>
<td>impairment detection</td>
<td>397</td>
</tr>
<tr>
<td>selection</td>
<td>397</td>
</tr>
<tr>
<td>neuroimaging</td>
<td>advanced</td>
</tr>
<tr>
<td>case studies</td>
<td>430–1</td>
</tr>
<tr>
<td>clinical indications</td>
<td>415–16, 416</td>
</tr>
<tr>
<td>contrast agents</td>
<td>417</td>
</tr>
<tr>
<td>functional</td>
<td>6</td>
</tr>
<tr>
<td>historical background</td>
<td>4</td>
</tr>
<tr>
<td>patient preparation</td>
<td>416–17</td>
</tr>
<tr>
<td>post-imaging considerations</td>
<td>417</td>
</tr>
<tr>
<td>pre-imaging considerations</td>
<td>416–17</td>
</tr>
<tr>
<td>selection of technique</td>
<td>421</td>
</tr>
<tr>
<td>structural</td>
<td>6–7, 415–27</td>
</tr>
<tr>
<td>see also</td>
<td>referred modalities</td>
</tr>
<tr>
<td>neurologic malignant syndrome</td>
<td>480, 554–6</td>
</tr>
<tr>
<td>Neurological Evaluation Scale (NES)</td>
<td>335–6</td>
</tr>
<tr>
<td>neurological examination</td>
<td>319–31</td>
</tr>
<tr>
<td>bruits</td>
<td>321</td>
</tr>
<tr>
<td>communication</td>
<td>321</td>
</tr>
<tr>
<td>cranial nerves</td>
<td>322–4</td>
</tr>
<tr>
<td>elements</td>
<td>320</td>
</tr>
<tr>
<td>lower extremities</td>
<td>328–31</td>
</tr>
<tr>
<td>paratonia</td>
<td>325</td>
</tr>
<tr>
<td>speaking to the patient</td>
<td>321</td>
</tr>
<tr>
<td>standardized</td>
<td>319–20, 321</td>
</tr>
<tr>
<td>subtle neurological signs</td>
<td>321, 333–9</td>
</tr>
<tr>
<td>upper extremities</td>
<td>324–8</td>
</tr>
<tr>
<td>neurology</td>
<td>historical background</td>
</tr>
<tr>
<td>organic problems</td>
<td>2</td>
</tr>
<tr>
<td>post-graduate training</td>
<td>5–6</td>
</tr>
<tr>
<td>neurons</td>
<td>12</td>
</tr>
<tr>
<td>neuropathological assessment</td>
<td>485–96</td>
</tr>
<tr>
<td>brain tumor clinical presentation</td>
<td>485–6</td>
</tr>
<tr>
<td>gliomatosis cerebri</td>
<td>486</td>
</tr>
<tr>
<td>hematopoietic tumors</td>
<td>486–96</td>
</tr>
<tr>
<td>intravascular lymphoma</td>
<td>492–6</td>
</tr>
<tr>
<td>lymphomatosis cerebri</td>
<td>490</td>
</tr>
<tr>
<td>mycosis fungoides</td>
<td>490–2</td>
</tr>
<tr>
<td>neuropsychiatric disorders</td>
<td>behavioral sequelae 611–16</td>
</tr>
<tr>
<td>cerebellar lesions</td>
<td>39, 40</td>
</tr>
<tr>
<td>challenging behavior</td>
<td>607</td>
</tr>
<tr>
<td>cognitive sequelae</td>
<td>616–17</td>
</tr>
<tr>
<td>emotional sequelae</td>
<td>611–16</td>
</tr>
<tr>
<td>frontal-subcortical circuits</td>
<td>69–73</td>
</tr>
<tr>
<td>legal defense</td>
<td>406</td>
</tr>
<tr>
<td>neurosurgical interventions for refractory conditions</td>
<td>632–3</td>
</tr>
<tr>
<td>pain</td>
<td>609</td>
</tr>
<tr>
<td>physical sequelae</td>
<td>609–11</td>
</tr>
<tr>
<td>psychotherapy</td>
<td>600</td>
</tr>
<tr>
<td>social skills training</td>
<td>613</td>
</tr>
<tr>
<td>white matter disorders</td>
<td>54, 54–5</td>
</tr>
<tr>
<td>neuropsychiatric evaluation</td>
<td>310–15</td>
</tr>
<tr>
<td>developmental history</td>
<td>312–13</td>
</tr>
<tr>
<td>family history</td>
<td>311–12</td>
</tr>
<tr>
<td>general medical history</td>
<td>314</td>
</tr>
<tr>
<td>history-taking</td>
<td>310–14</td>
</tr>
<tr>
<td>personal experience</td>
<td>in exploration</td>
</tr>
<tr>
<td>social history</td>
<td>313–14</td>
</tr>
<tr>
<td>symptoms/signs</td>
<td>347</td>
</tr>
<tr>
<td>neuropsychiatric function</td>
<td>511, 511</td>
</tr>
<tr>
<td>Neuropsychiatric Inventory (NPI)</td>
<td>349, 352</td>
</tr>
<tr>
<td>neuropsychiatric phenomenology</td>
<td>314–16</td>
</tr>
<tr>
<td>dissociative symptoms</td>
<td>315</td>
</tr>
<tr>
<td>marital status examination</td>
<td>345–50</td>
</tr>
<tr>
<td>mild cognitive impairment</td>
<td>315–16</td>
</tr>
<tr>
<td>personality change</td>
<td>316</td>
</tr>
<tr>
<td>sleep-related</td>
<td>315</td>
</tr>
<tr>
<td>traumatic brain injury</td>
<td>315</td>
</tr>
<tr>
<td>neuropsychological assessment</td>
<td>394–404</td>
</tr>
<tr>
<td>applications</td>
<td>395</td>
</tr>
<tr>
<td>clinical interview</td>
<td>396</td>
</tr>
<tr>
<td>cognitive impairment testing</td>
<td>399, 512</td>
</tr>
<tr>
<td>collateral information</td>
<td>396</td>
</tr>
<tr>
<td>emotion effects</td>
<td>403</td>
</tr>
<tr>
<td>functioning levels</td>
<td>402</td>
</tr>
<tr>
<td>historical background</td>
<td>394–5</td>
</tr>
<tr>
<td>impairment detection</td>
<td>397</td>
</tr>
<tr>
<td>levels</td>
<td>401–2</td>
</tr>
<tr>
<td>measures</td>
<td>398</td>
</tr>
<tr>
<td>mental status examination</td>
<td>396–7</td>
</tr>
<tr>
<td>neurocognitive domains</td>
<td>398</td>
</tr>
<tr>
<td>neurocognitive tests</td>
<td>394, 397</td>
</tr>
<tr>
<td>norm-referenced data</td>
<td>394, 397, 400–1</td>
</tr>
<tr>
<td>patient cooperation</td>
<td>400</td>
</tr>
<tr>
<td>patients' individual situations</td>
<td>401</td>
</tr>
<tr>
<td>patterns of scores</td>
<td>402</td>
</tr>
<tr>
<td>percentiles conversion table</td>
<td>401</td>
</tr>
<tr>
<td>personality effects</td>
<td>403</td>
</tr>
<tr>
<td>practice effects</td>
<td>402</td>
</tr>
<tr>
<td>premorbid cognitive functioning</td>
<td>401</td>
</tr>
<tr>
<td>procedures</td>
<td>396–403</td>
</tr>
<tr>
<td>psychometrists</td>
<td>400</td>
</tr>
<tr>
<td>record review</td>
<td>396</td>
</tr>
<tr>
<td>referrals</td>
<td>395</td>
</tr>
<tr>
<td>reliable change index</td>
<td>402</td>
</tr>
<tr>
<td>reports</td>
<td>403</td>
</tr>
<tr>
<td>test administration</td>
<td>400, 402</td>
</tr>
<tr>
<td>test batteries</td>
<td>399</td>
</tr>
<tr>
<td>brief</td>
<td>399</td>
</tr>
<tr>
<td>computerized</td>
<td>400</td>
</tr>
<tr>
<td>fixed/flexible</td>
<td>397–9</td>
</tr>
<tr>
<td>intermediate</td>
<td>399</td>
</tr>
<tr>
<td>specialty</td>
<td>399, 399</td>
</tr>
<tr>
<td>test interpretation</td>
<td>400–2</td>
</tr>
<tr>
<td>test scoring</td>
<td>400–3</td>
</tr>
<tr>
<td>neuropsychology, qualifications to practice</td>
<td>395–6</td>
</tr>
<tr>
<td>neuropsychological rehabilitation, traumatic brain injury</td>
<td>7</td>
</tr>
<tr>
<td>neurosis, origin of term</td>
<td>1–2</td>
</tr>
<tr>
<td>neurotoxicity</td>
<td>alcohol abuse</td>
</tr>
<tr>
<td>antidote use</td>
<td>480</td>
</tr>
<tr>
<td>clinical history</td>
<td>478–9</td>
</tr>
<tr>
<td>diagnosis</td>
<td>478–80</td>
</tr>
<tr>
<td>laboratory testing</td>
<td>479</td>
</tr>
</tbody>
</table>
neurobehavioral toxicology 480–2  
nuroimaging 479–80  
nurologic examination 479  
nagnosis 480  
pseudoneurotoxicity 482  
treatment 480  
nurotoxicology 474–6  
nurotoxins 476–8  
categories 476  
dose–response relationship 475–6  
rods of abuse 476, 476–7  
environmental toxins 476, 477, 477–8  
haptic impairment impact 475  
imedications 476, 476–7  
nervous system region 475  
nervous system vulnerability 474–5  
rganic solvents 477–8  
pesticides 478  
nenal impairment impact 475  
solvents 477–8  
white matter 481  
urotransmission 6  
nurotransmitters 519, 569–70  
nicotinic α4β2/α7 receptor antagonists 522, 524  
night eating syndrome 109  
night terrors 108–9  
nights tares 108–9  
NMAs 549  
nMDA receptor antagonists 549  
nention impairment 520–1  
declarative memory impairment 524  
executive dysfunction 531  
visuospatial memory impairment 529  
nociception 152  
non-rapid eye movement (non-REM) 89  
sleep 100, 101  
nalpha-2 noradrenergic agonists, orbitofrontal syndrome 74  
norepinephrine  
executive function 237–8  
greater limbic system modulation 284–5  
formation processing 237–8  
norepinephrine system, frontal-subcortical circuits 65–6  
not guilty by reason of insanity 411  
novelty seeking 300–1, 303, 304–6  
nistratum involvement 304  
nuclear magnetic resonance (NMR) see magnetic resonance spectroscopy (MRS)  
nucleus accumbens 60, 136–7  
motivation 136–7  
number cancellation task 366  
oject attribute task 124  
oject cueing paradigm 125  
oject-based attention 124, 124, 126  
ctional imaging 125–6  
neglect 125  
nial lobe damage 125  
superior parietal lobe 126  
obessions, mental status examination 362  
oressive-compulsive disorder 69  
nurosurgical treatment 75, 630–1  
armacologic treatment 74–5  
obstinate sleep apnea 106, 315  
oculomotor circuit 61  
oculomotor nerve (CN III) 17, 322–3  
oflaction 154–5  
ofactory agnosia 369  
ofactory nerve (CN I) 16, 322  
ofactory system 154  
osopoclonus–myoclonus–ataxia 39  
ptic chiasm 214  
ptic nerve (CN II) 17, 214, 322  
lesions 149  
ptic radiations 147–8  
ofic tract 147–8, 214  
oforbral (OF) circuit 253–4, 254, 255  
components 253  
ruption 254–5  
fuctions 254  
oforbral (OF) cortex 59–60, 233–4  
activation 233–4  
ctions 252  
direct pathway anatomy 62  
lesions 67–8, 254–5  
ofactory system 154  
reward circuit 282  
numatic brain injury 259  
oforbral (OF) syndrome 67–8, 74  
organic solvents, neurotoxins 477–8  
optic–functional dichotomy 4–5  
organophosphate pesticide  
nueotoxicity 478, 480  
zeretskii test 378  
P cells 148  
pain  
chronic 104  
nepropsychiatric disorders 609  
palacinus 151–2  
pallidus see globus pallidus  
pnic attacks 547  
pnic disorder 612  
panmome, disorders of 186  
pomimic of transitive acts  
sociation apraxia 208  
ideomotor apraxia 203, 206  
Papez circuit 20, 26, 278, 287  
paralimbic system 276  
paralinguistic cues 356  
paralinguistics 357–8, 371  
parasagittal meningioma 424  
parasomnias 108–10, 315  
central pattern generators 109  
disorders of arousal 108–9  
non-REM sleep 108–9  
REM sleep 109  
secondary 109–10  
treatment 109  
paratonia, neurological examination 325  
paresthesias 153  
parietal lobe  
tention deficit 121–2  
disengage deficit 121  
inferior 206  
neglect 120–1  
object-based attention 125  
posterior 120, 215  
sequencing disorder 202  
simultanagnosia 217  
spatial attention 120  
visual search task 121  
Parkinson’s disease  
cognitive behavioral therapy 592  
with dementia, visuospatial  
sysfunction 219–20  
depression 545  
executive function 73  
limb–kinetic apraxia 210–11  
medial substantia nigra involvement 68  
armacological intervention 73  
putamen involvement 68  
somatosensory symptoms 154  
visuabnormalities 150  
pathological laughing and crying (PLC) 39, 547, 546–7, 560  
frequency 546–7  
nuroanatomy/neurochemistry 546  
treatment 557–9  
patient, role in medical decision-making 408  
pattern recognition, executive function 377–8  
pedunculopontine tegmental  
cholinergic nuclei 15  
perception 144–56  
uditory 150–2  
crossmodal integration 155–6  
definition 144  
disorders 146–7  
agnosias 146  
somatosensory 153–4  
visual 149–50  
turbances 360  
gustation 154–5  
motion 148  
oflaction 154–5  
self-perception 156
Index

perception (cont.)
- sensory input 145
- somatosensory 152–4
- visual 147–50
- disorders 149–50
- visual system functional
  - specialization 148
perceptual priming 145
perceptual skills learning 169
perceptual system, organization 145–6
periaqueductal gray (PAG) 15
periodic limb movements of sleep
  - PLMS 105
peripheral nervous system (PNS) 12, 474–5
perisylvian area
- language 175, 179, 181
- persistence 303, 304–5
- persistent vegetative state (PVS) 92–3
personality
- change 316
- 299–307
- complexity 305–6
- definition 299
- gene–environment interactions 305–7
- heritability 300, 306–7
- humoral theory 299
- inheritance 300, 306–7
- neuropsychological assessment effects 403
- temperament and character
  - comprehensive model 299
  - see also character; temperament
- personality change 316
- orbitofrontal syndrome 67–8, 74
- pesticides, neurotoxins 478
phantom limb sensations 153
pharmacotherapy 498–508
attention impairment 519–21
behavioral disturbance 566–81
- cognitive impairment 515–17
- coma 518–19
- consultations 507
- continuous reassessment of treatment need 502–3
- drug–drug interaction vigilance 503
- evaluation 499–500
- expert opinion 501
- generic medications 503–4
- initiation 498
- insurance issues 504
- pharmaceutical industry
  - interactions 505
- rating scale use 499
- second opinions 507
- therapeutic alliance 498–9
- therapeutic trials 502
- treatment priority 499–500
- see also medications

phase-contrast angiography (PCA) 433
phobias, types 362
phonagnosia 151, 186
phonemes, articulation impairment
- 357
photic stimulation, EEG 454
Pick, Arnold 257–8
Pick's disease
- see frontotemporal dementia
- pin prick perception 328
pineal body 19
planum temporale 179
pons 13
- positive behavioral supports 605, 615
- positive reinforcement 608
- positron emission tomography (PET)
  - 6, 437–8, 438, 439
- posterior cerebral arteries (PCA) 26
- stroke 216
posterior cingulate 282
posterior cortical atrophy (PCA)
- Alzheimer's disease 219
- Balint's syndrome 219
- visual deficits 150
- visuospatial dysfunction 219
- posterior dominant rhythm (PDR),
  - EEG 447–8, 450, 455
- posterior fossa syndrome 38
- posterior inferior cerebellar arteries
  - (PICAs) 34
- posterior parietal lobe 120, 215
- post-traumatic amnesia (PTA) 315
- post-traumatic stress disorder (PTSD)
  - 109, 190–1, 612
- postural reflexes 330
- praxis 199–211, 373–4, 527–9
- neuroanatomy 528
- see also apraxia
- prefrontal circuit 253, 256
- prefrontal cortex
  - affective processing 138
  - association pathways 233–6
  - childhood lesions 259–60
  - executive function 225, 229–34
  - functions 229
  - goal-directed behavior 138
  - heteromodal sector 231–2
  - medial 233
  - motivation 137–8
  - motor association areas 229–30
  - motor–premotor sector 229–31
  - paralimbic sector 232–4
  - subdivisions 229–32, 232, 234, 252–6
  - premotor cortex 206–9
  - supplementary motor area 207
- primary central nervous system
  - lymphoma (PCNSL) 486–7
- primary sensory cortex 145
- primary visual area 214
- procedural interventions 627–42
- complications 632
- historical aspects 627–9
- invasive 627–31
- lesional interventions 631–2
- vagal nerve stimulation 634
- methodological variability 630
- non-invasive 634–6
- rationale 629–31
- see also deep brain stimulation
  - (DBS); electroconvulsive therapy (ECT); transcranial magnetic stimulation (TMS)
- procedural memory 168–70
- assessment 525
- impairment 525–6
- treatment 525–6
- Process C, sleep 102–4
- Process S, sleep 101–2, 104
- processing speed 365, 519–21
- cognitive impairment 519–21
- proprioception 152
- prosody 186–5, 527
- affective 186–8
- aging 190
- alcohol abuse 190
- clinical settings 190–1
- comprehension 190
- disruption with left hemisphere damage 188–9
- hemispheric lateralization 188–9
- post-traumatic stress disorder 190–1
- repetition 189
- schizophrenia 190
- spontaneous 189
- attitudinal 190
- brain damage 185–9
- clinical disorders 185–6
- elements 185
- emotional 185
- functional imaging 188
- inarticulate 185
- intellectual (attitudinal) 185
- interhemispheric integration loss 189
- intrinsic (linguistic) 185
- mental status examination 357–8, 371
- paralinguistic cue 356
- prosopagnosia 149
- pseudobulbar affect see pathological laughing and crying (PLC)
- pseudohallucinations 146–7
- pseudoneurotoxicity 482
- pseudoseizures, case studies 313
- psychiatric disorders, challenging
  - behavior comorbidity 568–9
Index

| sleep 98–110 |
| across lifespan 102–3 |
| adolescence 103 |
| aging 99, 103 |
| architecture 101–2, 449, 454 |
| ascending reticular activating system 16, 443 |
| cyclic alternating pattern 102 |
| deprivation 103, 147 |
| disturbance 98 |
| EEG patterns 101–2 |
| hallucinations 147 |
| homeostatic systems 98 |
| infants 102 |
| K-complexes 101 |
| local 102 |
| mood disorders 104 |
| morphology 101–2 |
| motor skills acquisition 169 |
| neuropsychiatric phenomenology 315 |
| physiology 102 |
| Process C 102–4 |
| Process S 101–2, 104 |
| spindles 101, 443 |
| stages 101 |
| timing regulation 100–1 |
| see also wake–sleep organization |
| sleep disorders 103–10 |
| behavioral interventions 610–11 |
| circadian system 101 |
| excessive daytime sleepiness 106–7 |
| hypersomnias 106–10 |
| narcolepsy 106–7, 147 |
| obstructive sleep apnea 106 |
| parasomnias 108–10 |
| schizophrenia 104 |
| see also insomnia |
| sleep state misperception syndrome (SSMS) 105 |
| sleep-promoting systems 99 |
| sleep-related eating disorder 109 |
| sleep–wake organization 98–100, 102 |
| slow-wave sleep (SWS) system 98, 101, 102 |
| social adaptation, comportment 251–2 |
| social cognition, judgment 385 |
| social communication 617 |
| social-skills training (SST) 613 |
| social-interactive competence 617 |
| Society for Behavioral and Cognitive Neurology 5 |
| solvents, neurotoxins 477–8 |
| somatosensory cortex pathways 152–3 |
| somatosensory pathways, central 152 |
| somatosensory perception 152–4 |
| somatosensory processing streams 152–3 |
| somatosensory recognition disorders 153–4 |
| somatostatin/neuropeptide Y-containing interneurons 66 |
| somesthesia 152 |
| somnambulism 108–9 |
| source analysis 467–9 |
| spatial attention 119–24 |
| frontal eye field damage 122–3 |
| frontal lobe 122–3 |
| functional imaging 123–4 |
| neglect 120–1 |
| parietal lobe 120 |
| posterior parietal lobe 120 |
| temporoparietal junction 120 |
| spatial cueing 116–17 |
| disengage deficit 121, 122 |
| object-based 124 |
| order of events 116 |
| peripheral/central cue comparisons 123–4 |
| spatial memory 372 |
| speech |
| communication 357 |
| disturbance 357 |
| examination 324 |
| production 181–2 |
| spinal accessory nerve (CN XI) 324 |
| Stages of Change model 595, 597 |
| stance testing 330 |
| stem cell replacement 55 |
| stereopsis 218 |
| stimulus control 605 |
| wandering 614 |
| strength testing, upper extremities 326–8 |
| stress, emotional response 302 |
| striate cortex 214 |
| striatopallidal circuit 139 |
| striatopallidum, ventral 281 |
| striatum 19–20, 304 |
| cholinergic/dopaminergic system interactions 65 |
| limbic/motor system interactions 66 |
| sensorimotor systems 66 |
| stereotypies 66 |
| stroke |
| auditory hallucinations 152 |
| basilar artery 216 |
| cerebellar 37–8 |
| depression 345 |
| EEG findings 456 |
| ischemic 26 |
| mania association 546 |
| middle cerebral artery 216 |
| posterior cerebral arteries 216 |
| simultanagnosia 216 |
| subarachnoid hemorrhage 424 |
| subcortical dementia 69 |
| ischemic vascular 50 |
| subdural hygroma, acute 423 |
| subgenual cingulate 71 |
| circuit 63 |
| substance abuse disorders |
| behavioral interventions 612–13 |
| behavioral therapy 590–1 |
| dopaminergic system 72 |
| environmental interventions 612–13 |
| frontal–subcortical circuits 72 |
| substantia nigra 14, 60 |
| subtle neurological signs (SNS) 321, 333–9 |
| antipsychotic motor side effects 336 |
| assessment 333–6 |
| behavioral problems 336 |
| biological marker function 338 |
| brain structure abnormality associations 336–7 |
| Cambridge Neurological Inventory 335 |
| clinical significance 336–8 |
| cognitive impairment domains 336 |
| disease associations 336 |
| endophenotype function 338–9 |
| functional outcome 337–8 |
| genetic relationship with conditions 338–9 |
| Heidelberger Scale 334–5 |
| localization in brain 334, 337 |
| Modified Quantified Neurological Scale 335 |
| Neurological Examination Scale 335–6 |
| research 338–9 |
| Rossi Scale 334 |
| schizophrenia 337–9 |
| social function 337–8 |
| sociodemographic variables 336 |
| Woods Scale 334 |
| sudden cardiac death 556–7 |
| sundowning syndrome, Alzheimer’s disease 104 |
| superior cerebellar arteries 34 |
| superior colliculus ablation 214 |
| superior longitudinal fasciculus 208, 214, 235 |
| superior parietal lobe (SPL) 126 |
| supplementary motor area (SMA) 207 |
| support groups 594 |
| supportive psychotherapy 596–7, 597 |
| suprachiasmatic nucleus (SCN) 100–1 |
| Sylvian fissure 23 |
| symbol cancellation task 366–7, 367 |
| synesthesia 155–6 |
| syntax 526 |
| systemic lupus erythematosus (SLE) 51, 545 |
systemic motivational counseling (SMC) 595
systems therapy 593–4, 594, 595
tactile sensation 152
tardive akathisia 556
tardive dyskinesia 336, 556
tardive dystonia 556
task selection, executive attention 128
taste cells 154
taste sensation 154–5
tastes, primary 154
thoughtcontent 358–62
thoughtprocess 358–62
thoughtprocess, disorder 358–62
thoughtprocess, regulation 359–61
thoughtprocess, modification 359–61
thoughtprocess, control 359–61
thoughtprocess, restructuring 359–61
thinking, disruption 358–62
thoughtprocess, modification 358–62
therapeuticalliance 498–9, 587
theory of mind 255, 261
thalamus 18, 88
thalamic nuclei 18
therapeutic alliance 498–9, 587
thermoreception 152
thought content 358–62
inferences from non-engagement 362
lethal 360–2
thought process 358, 359, 359
time–frequency transformations 358
covering tasks 366
toluene abuse 425
tone testing
lower extremities 328–9
upper extremities 324
tongue examination 324
tool use, conceptual apraxia 200–1
topectomy 628
tort law 412–13
touch testing 328
Tourette syndrome
cortical–subcortical interaction 69–70
frontal–subcortical dysfunction 69–70
neurosurgical treatment 75, 631
pharmacologic treatment 73
striatal neuron overactivity 69–70
tic pathophysiology 69
tic severity 69
toxic encephalopathy 412
toxic leukoencephalopathy (TL) 51–2, 53, 481
tractography, diffusion tensor imaging 48
transcranial Doppler ultrasound 426
transcranial magnetic stimulation (TMS) 41–2, 527, 640–1
clinical applications 641
frequency 640
historical aspects 635–6
stimulus intensity 640
transmodal cortex 145
traumatic brain injury (TBI) 8
aural pathology 90
behavioral change 258–9
narcotic behavioral therapy 592
comportment dysfunction 258–60
MRI 424, 431
neuropsychiatric phenomenology 315
neurorehabilitation 7
orbitofrontal cortex 259
psychiatric comorbidity 568–9
tort law 412
vegetative state 93
white matter lesions 52
prehension 627–8
triceps muscle, strength testing 326
tricesis reflex 325–6
tricyclic antidepressants 549–51, 557–8
trigeminal nerve (CN V) 17, 323
trochlear nerve (CN IV) 17, 322–3
T-scores 382
unawareness of deficit 385
Universal Cerebellar Impairment 41
Universal Cerebellar Transform (UCT) 41
upper extremities
coordination testing 328
neurological examination 324–8
reflexes 325–6
sensation testing 328
strength testing 326–8
tone 324
vagal nerve stimulation 634
vagus nerve (CN X) 17, 324
valence 134, 270
valence–specific hypothesis 287–8
vascular dementia 456
vascular system 26–7, 27, 28
arrests 26
veins 27
vegetative state 91–4
diagnosis 92
diagnostic criteria 92
locked-in syndrome 92
minimally conscious state
differential diagnosis 93
pathology 92
prognosis 92–3
progression from coma 92
ventral frontal cortex (VFC) 129, 130–1
ventral limbic pathway 236
ventral striatopallidum 281
ventral tegmental area (VTA) 14, 135–6
ventral visual stream lesions 149
ventral visual system 148
ventricular system 29, 27–9
ventrolateral pre-optic (VLPO) region
ascending reticular activating system
inhibition 100
insomnia 98
sleep-promoting neuronal systems 99
verapamil 552–4
verbal fluency tasks 377
verbal letter test 366
verbal trail making test (vTMT) 366
vertebral arteries 26
Vesalius, Andreas 47
vestibulocochlear nerve (CN VIII) 17, 323–4
violence/violent behavior 7, 256
see also aggression
vision 147–50
visual acuity testing 322
visual agnosia 369
visual association areas 147
visual cortex 147, 214
visual field cuts 149
visual field testing 322
visual loss, cortically mediated 149
visual memory 372
visual neglect 215–16
visual objectagnosia 369
visual perception/recognition disorders 149–50
visuomotor adaptation 169
visuospatial clinical syndromes 215–18
visuospatial clinical syndromes
visuospatial function 214–21, 529–30
distributed neural circuits 529
dysfunction with neurological conditions 218–21
evaluation 529
executive control 377
mental status examination 374–5
visuospatial processing 214–15
visuospatial memory 217–18, 529–30
allocentric/egocentric 218
visuospatial information 217–18
working memory 217
vitamin B12 deficiency 52
vocalization, disruptive 614–15
voice 356–7
voxel-based morphometry (VBM) 424–6

wakefulness 16, 443, 455–7
wake-promoting systems 98–9
wake–sleep organization 98–100, 102
sleep-promoting systems 99
wake-promoting systems 98–9
walking 330–1
wandering 614
war 7
Watts, James 628–9
Wechsler Adult Intelligence Scale 401
Wernicke, Karl 174–5
Wernicke–Geschwind model of language 175, 176, 176
Wernicke–Korsakoff syndrome 477
Wernicke’s aphasia 176, 177, 180
Wernicke’s area 175, 175–6, 177, 181
function 180
planum temporale 179
white matter 47–56
aging role 50
Alzheimer’s disease 50, 54
anatomy 47–8
behavioral neuroanatomy 25–6
development role 50
distributed neural circuits 50
focal syndromes 52–3
historical background 47
myelin 48
myelination 49, 55
neuroimaging studies 7, 50–1, 51
pathways 49
physiology 48–50
plasticity 55
toxins 481
tractography 236
tracts 48
white matter dementia 53, 53–4, 486
neurobehavioral features 53–4
neuropsychological profile 54
white matter disorders 51–2, 52
axon regrowth 55
gray matter pathology 54
hematopoietic tumors 486–96
neurobehavioral syndromes 52–3, 53, 54
neuropsychiatric syndromes 54, 54–5
prognosis 55
stem-cell replacement 55
treatment 55
Williams syndrome 220–1
Willis, Thomas 47
Woods Scale for subtle neurological signs 334
word-finding difficulty 357
word-selection anoma 180
working memory 162–4, 367–8
impairment 368, 522–3
World Health Organization (WHO), International Classification of Impairments, Disabilities and Handicaps 409
wrist extensor muscles, strength testing 327
written alternating sequence tasks 376
xenon enhanced computed tomography (Xe-CT) 431–2
Z-scores, mental status examination 381–2, 382, 383