Index

ability 91–92

dysfunctional beliefs affecting 91–92

motivation and negative symptoms 90–91

acetylcholine 269–270

acetylcholinesterase inhibitors 272

adolescents, relevance of performance-based measures 262

affect recognition, studies of 131–132

affect recognition training 300

neural mechanisms of 307–308

affective saliency of stimuli, assessment issue 61

aging 110–111

cognitive processing, changes in 112–113

and dementia 113–114

sensory functioning, changes in 112

see also older patients

alertness-promoting agent, modafinil 275

Alzheimer’s disease (AD) 117

amphetamine treatment 275

anhedonia 100

anteri or cingulate cortex (ACC), error/conflict detection 211–212

anticholinergic medication, negative effects on cognition 10, 309

antipsychotic medications dopamine D2 receptor blockade 267
dosing effects of add-on compounds 278–279

effect on cognition 9–10

and emotion recognition 133–134

interference with effects of cognitive enhancers 278

apathy 100

assessment affective saliency of tasks 61

of cognitive and functional skills 118–119


cognitive neuroscience approach 25–26

consensus batteries 61–62

experiential negative symptoms 93

informant-based reports of functional performance 119

issues requiring further study 121

repeated testing, bipolar disorders 62

standard cognitive measures, criticism of 11–12

see also performance-based measures of functioning

assessment of cognition in schizophrenia treatment studies 231

cognitive outcome measures 240

computerized tests 241–243

paper pencil batteries 240–241

current status of clinical trials 231–234

outcome measures and study designs 239

associative memory 208

attention 163–164

attitudes, dysfunctional 91–92

attributional style 86, 129–130

bipolar disorder 56

training programs targeting 300

auditory (dys)function 180

behavioral studies 180–181

neuropsychological approaches 181–182

normative age-related changes 111–112

predicting social cognition and outcome 88

auditory emotion recognition 181

auditory steady-state response (ASSR) 182

auditory training, Brain Fitness Program 296–297

awareness of illness 142–144

measurement of insight 150

measurement of neurocognition 150–152

meta-analysis
data analysis 145
discussion 149–150

limitations of studies included in 150

methods used 144–145

results 146–149

studies included in 152–156

AX-CPT task, executive processing/working memory 185

B-CATS (Brief Cognitive Assessment Tool for Schizophrenia) 241

BACS (Brief Assessment of Cognition in Schizophrenia) 240–241

BCA (Brief Cognitive Assessment) 241

beliefs, dysfunctional 91–92

BFP see Brain Fitness Program bipolar disorder functional impairment 262–263
genetics 167

neuropsychological impairments 70

social cognition 54–56
bipolar disorder/schizophrenia comparison
assessment issues 61–62
clinical remission 58–59
diagnostic criteria 50–51
functional outcomes, predictors of 59–61
and history of psychosis 59
negative symptoms 58
neuropsychiological findings 56–57
profile and course of cognitive deficit 51–54
sex differences 57–58
trans-disorder effects 167
blunted affect 100
brain-derived neurotrophic factor (BDNF), effect of training on levels 309
Brain Fitness Program (BFP) 296–297
and improvements in neural operations during early auditory processes 304–305
and increase in serum BDNF and D-serine levels 309

“brain reserve capacity” theory 72
brain volume loss, in persistent psychosis 118
Brief Assessment of Cognition in Schizophrenia (BACS) 240–241
Brief Cognitive Assessment (BCA) 241
Brief Cognitive Assessment Tool for Schizophrenia (B-CATS) 241
brief version of UPSA 121, 257, 261–262
CACNA1C gene 168
Cambridge Neuropsychological Test Automated Battery (CANTAB) 242
cannabinoid receptor agents 277
chronicity of illness, impact on cognition 10
clinical remission 58–59
clinical trials on cognition 231–234
co-primary measures of functional capacity 238–239
design of 234–236
ear phase trials 236–237
further cognitive outcome measures 240–241
implementation issues 235
trials using cognitive neuroscience tests 238
interview-based measures 239
Cognitive Assessment Interview (CAI) 239
cognitive deficits/impairments of course of 52–54
effect sizes 4–5
heritability of 163
included as a dimension of psychosis 80
independence from psychosis 10–13
profile of 51–52
as stable traits in schizophrenia 163
see also generalized cognitive deficits
cognitive domains, similarities and differences between schizophrenia and comparison groups 38–41
Cognitive Drug Research (CDR) battery 242–243
cognitive enhancement, pharmacological approaches 266–267
compounds used in previous studies 272–277
methodology 270–271
negative results, reasons for 277–279
neurotransmitter interventions 267–270
Cognitive Enhancement Therapy (CET) 289
cognitive neuropsychiatry 12–13
cognitive neuroscience 25–26, 194
models of episodic memory 206–207
models of working memory 195
cognitive processing, normative age-related changes 112–113
cognitive remediation and vocational rehabilitation 102–103
cognitive training see computerized cognitive training
cognitively intact schizophrenia
explans for 72
and symptom severity 11
CogPack, computerized training 290–295
CogRehab software, computerized training 288
CogState schizophrenia battery 242
community functioning 87, 92–93

contribution of social cognition 132–133
performance-based assessment 255–257
competence see functional capacity; social competence
computational modeling and ph-fMRI 215–218
computerized cognitive training 284
important future directions 310–311
neurobiological effects of 304
prior meta-analytic work 284–286
programs 287
BPF (Brain Fitness Program) 296–297
CogPack exercises, studies using 290–295
CogRehab exercises, studies using 288–290
comparative effects of 297–298
NEAR (Neuropsychological & Educational Approach to Remediation) 295–296
psychophysical findings 308
serum biomarker and genetic findings 309–310
computerized social cognitive training 298–300
neurobiological effects of 307–308
<table>
<thead>
<tr>
<th>Page</th>
<th>Index</th>
</tr>
</thead>
</table>
event-related potentials (ERP)
assessment of early auditory processing 89
bipolar disorder/schizophrenia comparison 56–57
Everyday Functioning Battery (EFB) 259
exceptionality and verbal superiority 8 versus normality 5–7
executive control dysfunction 209
conflict detection/error monitoring 211–212
context processing 209–210
proactive and reactive control 210–211
experiential negative symptoms 93
experimental designs, control problem 213
experiential negative symptoms
factor analyses 131
externalizing attributional bias 13, 129–130
eye movement, deficits in smooth pursuit 56–57
face processing tasks, methodological issues 131–132
facial emotion recognition computerized training in 298–300
early visual deficits impairing 185
factor analyses bipolar disorder and schizophrenia comparison 51–52
of cognitive domains 38–41
social cognition and neurocognition 87–88, 131
false beliefs see delusions, theory of mind (ToM)
familial pattern of deficits 35–37
filtering deficits, working memory 199, 204–205
first episode psychosis (FEP) attrition rates in computerized tests 241–242
cognitive deficits in 10 psychosis studies 70
symptom dimensions and cognitive functioning 76–78
fMRI (functional magnetic resonance imaging) 147–149
cognitive functioning
computerized cognitive training, improved activation following 305–307
computerized social cognition training 307–308
functional capacity 90–91
co-primary measures 238–239
informant-based reports 119
interview-based measures 239
link to defeatist beliefs 92
performance-based measures 119–121
role in identifying determinants of disability 248–249
self-report measures, biases in 249–250
functional milestones, limited responsiveness of 250–251
functional outcome and neurocognition 85–86
bipolar disorder–schizophrenia comparison 59–61
cognitive ability as key predictor of 4, 14–15
contribution of social cognition to 132–133
integrating perception, ability and motivation 92–93
perceptual processes predicting 88
role of negative symptoms 90–92
social cognition as mediator between 86–88
funnel plot, publication bias
GABA (gamma-aminobutyric acid) and cortical disinhibition 214–215
interventions 277
reduced signaling levels 269
general intelligence, heritability of 166
generalized cognitive deficits 24–27, 32, 194
around the globe 35
factor analyses of cognitive domains 38–41
general discussion and conclusion 41–43
meta-analysis findings 27–32
over past three decades 32–34
pattern within families 35–37
treatment issues 42–43
vs. specific impairments 131–132
contextual processing 209–210
attention 164
episodic memory 165–166
general intelligence 166
working memory 164–165
global cognitive impairment see generalized cognitive deficits
comprehensive approach to treatment 177–178
and higher cognitive dysfunction 177–178
and impaired sensory processing 178–186
group treatment, social cognitive skills training 300

© in this web service Cambridge University Press
www.cambridge.org
hallucinations, effect on work functioning 99
heritability
  of cognitive deficits 163
  of schizophrenia 161–162
see also genetic factors
hierarchical model of
cognitive domain structure 38–41
hippocampus
  learning and declarative memory 178
  preservation of gray matter following CET 307
  role in episodic memory 206–207
and visual dysfunction 184–185
and 2NFL04A risk variant 167–168
hospitalization, impact on
  functional outcome 118
illness awareness see awareness of illness
Independent Living Scales (ILS) 260–261
informant-based reports of
  functional performance 119
variation in informant
  validity 250
in-person observation of
  functional activity, problems with 251
see also awareness of illness
intelligence, heritability of 166
interference control deficits, WM 199–200
interview-based measures 239, 261
inverted U hypothesis, prefrontal recruitment in WM 200–202
JTC (jumping to conclusions) effect 12–13
ketamine 213–214
  behavioral effects 214
  neurobiological effects 214–215
  specificity of response 178
  task-switching performance in monkeys 178–179
Kraepelin, E., dementia
  praeox, symptoms 2
laminotrigine treatment 274
learning and declarative
  memory, ketamine response 178
long-term memory 112–113
magnetoencephalography (MEG) studies 304–305
magnitude/severity of
  impairment 52–53
magnocellular pathway, visual dysfunction 182–184
maintenance deficits, working
  memory 196–199
  mechanisms contributing to 199–200
neuroimaging evidence 202–205
Maryland Assessment of Social Competence (MASC) 254
MATRICS Consensus
  Cognitive Battery
    (MCCB) 234–236
  MATRICS CT study 261
medial prefrontal cortex, activation during
  reality-monitoring training 307
medication 42–43
  administration problems 279
doses, effect on efficacy 278–279
  effect on cognition 9–10, 309
  and emotion recognition 133–134
  interference with cognitive enhancers 278
Medication Management
  Ability Assessment
    (MMAA) 258
  memory
    Bleuler’s work 1–2
    effect of medication on 10
    normative age-related changes 112–113
see also episodic memory (EM); working memory (WM)
mental state attribution 87
see also theory of mind (ToM)
meta-analyses, cognitive deficit findings
  comparative findings 4–5
  global cognition 27–32
meta-analysis, insight–cognition link 143–150
  studies included in analysis 152–156
meta-analytic studies of
  cognitive training 284–286
Micro-Expressions Training Tool (METT) 298–299
Micro-Module Learning Test (MMLT) 254–255
mild cognitive impairment (MCI) 114
mismatch negativity (MMN) 89, 182
missing data, computerized tests 241–242
MK-0777 treatment 277
modafinil treatment 275
motion detection deficits 183
motivation, ability and negative symptoms 90–91
muscarinic receptor systems 269–270
N-methyl-D-aspartate (NMDA) see NMDA receptor dysfunction
NEAR (Neuropsychological and Educational Approach to Remediation) 295–296
negative symptoms 58
  ability and motivation 90–91
  correlation with cognitive domains 74–76
  and dysfunctional beliefs 91–92
  experiential, reduced motivation 93
  interference with work 99–100
neurobiological determinants of cognition 176
  glutamatergic contributions to impaired sensory processing 178
auditory function 180–182
visual dysfunction 182–186
glutamatergic determinants of higher cognitive dysfunction 177–178
PCP/NMDA model of schizophrenia 176
summary 186
Neurocognitive Enhancement Therapy (NET) 290
neurocognitive measures 152–156
neurodegenerative disorders 114, 117
neurodevelopmental hypotheses
cognitive impairment 41
cognitively intact schizophrenia 72
neurogenesis-promoting compounds 277
neuroimaging
magnetoencephalography (MEG) studies 304–305
voxel-based morphometry (VBM) 307
see also fMRI (functional magnetic resonance imaging)
neurophysiological findings 56–57, 181–182
visual dysfunction 183
working memory abnormalities 202–204
neuroplasticity and decreased BDNF functioning 309
Neuropsychological and Educational Approach to Remediation (NEAR) 295–296
neurotransmitters 266–267
acetylcholine 269–270
dopamine 267–268
GABA 269
 glutamate 268–269
non-viable as cognitive enhancers 279
nicotinic agonists 272–273
nicotinic receptor density, alteration of 269
NMDA receptor dysfunction 176–177
and auditory deficits 180–182
and cognitive deficits 177–178
hypo-function hypothesis, ketamine effects 214–215
and visual deficits 182–186
non-transmitter interventions 277
noradrenergic interventions 274–275
normality 6–8
novel relational information, encoding and retrieval of, role of hippocampus 206–207
older patients 110–111, 121
assessment of cognitive and functional skills 118–121
and dementia 114–115
functional performance 115–118
hospitalization 118
see also aging
oxtocin, improving emotion recognition 134
paper–pencil test batteries 240–241
parvocellular pathway, visual dysfunction 182–183
PCP (phencyclidine)/NMDA model of schizophrenia 176–177
perception
integrating with ability and motivation 92–93
perceptual closure, visual function 184
as predictor of social cognition and outcome 88
see also social perception
performance-based measures of functioning 119–121, 248
advantages of over other modalities 249–251
future directions 261–263
limitations of 251
role in identifying determinants of disability 248–249
selected measures 251–252
Direct Assessment of Functional Status scale (DAFS) 253–254
Everyday Functioning Battery (EFB) 259
Independent Living Scales (ILS) 260–261
Maryland Assessment of Social Competence (MASC) 254
Medication Management Ability Assessment (MMAA) 258
Micro-Module Learning Test (MMLT) 254–255
Social Skills Performance Assessment (SSPA) 257–258
Test of Adaptive Behavior in Schizophrenia (TABS) 259–260
UCSD Performance-Based Skills Assessment (UPS A) 255
UPS A-Brief 257
summary and conclusions 263
use of in treatment studies 261
performance normality, definition and prevalence of 6–8
persecutory delusions and attributional style 56, 86, 129–130
JTC (jumping to conclusions) effect 12–13
personalizing attributional bias 56, 129–130
pharmacokinetics 279
pharmacological approaches to cognitive enhancement 266
cognitive enhancement methodology 270–271
mechanisms of action studied 272–273
acetylcholinesterase inhibitors 272
amphetamine 275
cannabinoid receptor agents 277
GABA-based interventions 277
pharmaceutical approaches to
cognitive enhancement (cont.)
glutamatergic
interventions 273–274
modafinil 275
nicotinic agonists
272–273
non-transmitter
interventions 277
noradrenergic
interventions 274–275
serotonergic medications
275–276
negative results, reasons for
277–279
transmitter manipulations
266–270
pharmacological models of
psychosis 213–214
behavioral effects of
ketamine 214
integration with
computational models
215–218
neurobiological effects of
ketamine
214–215
phencyclidine (PCP) model
176–177
positive symptoms
see psychotic symptoms
prefrontal cortex (PFC)
and episodic memory 207, 208
NMDA dysfunction
177–179
premorbid functioning and
vocational success 99
prevalence of impairment 9, 51
proactive and reactive control
210–211
problem solving training
295–296
prosodic-level impairments
180–181
prospective and procedural
memory 112–113
psychiatric rehabilitation
studies 102–104
psychological testing,
challenges of 235
psychosis
and cognition 15–16
features in bipolar disorder
59
future typology 80
persistent, link to poor
outcome 118
psychotic symptoms
classification 73–74
and cognitive deficits
10–13
and cognitive functioning
76–79
interference with work
99–100
see also persecutory delusions
publication bias 145, 147–149
quality of life improvements 15
RBANS (Repetable Battery for
the Assessment of
Neuropsychological
Status) 240
reactive and proactive control
210–211
reading
measures, effect sizes 30–31
of paragraphs, impact of
early visual deficits 185
premorbid performance level
issue 8
real-world functioning
see performance-based
measures
reality-monitoring, effects of
computerized training
on 307
rehabilitation see computerized
cognitive training
relational memory
evidence for impaired
DLPFC function 208
role of hippocampus
206–208
remission of symptoms
bipolar disorders 58–59
persistence of cognitive
impairment following
13
Repeatable Battery for the
Assessment of
Neuropsychological
Status (RBANS) 240
research on cognition in
schizophrenia, early
pioneers 1–3
retrieval-related processes
episodic memory, neural
correlates 206–208
working memory 203
role playing, measures using
254, 257–258
schizophrenia as a cognitive
disorder 15–17
schizophrenia and bipolar
disorder comparison 50
assessment issues 61–62
course of cognitive deficits
52–54
diagnostic criteria 50–51
functional outcomes 59–61
future directions 62–63
moderating variables 57–59
neurophysiological findings
56–57
profile of cognitive deficits
51–53
social cognition in bipolar
disorder 54–56
treatment of cognitive
deficits 62
Schizophrenia Cognition Rating
Scale (SCoRS) 239
self-appraisal/self-processing
143
self-report measures of
functioning, avoidance
of biases in 249–250
sensory functioning
glutamatergic contribution
178–186
normative age-related
changes 112
see also auditory (dys)
function; visual (dys)
function
sensory gating deficits 57, 304
serotonergic medications
275–276
serum biomarkers of training-
induced changes 309
set concept, early research by
Shakow 3
gender differences,
comparison studies
57–58
siblings, unaffected,
comparison of cognitive
deficits 35–37
skills training, tests assessing
254–258
smoking, effects of 269
social cognition 126
in bipolar disorder 54–56
definition of 126–127
domains of 127–130
and functional outcome
86–88
future directions 133–135
and neurocognition
130–133
perception as correlate and
predictor of 88
role of ZNF804A risk variant
168
and work problems 100
see also computerized social
training
Social Cognitive Interaction
Training (SCIT) 300
Social Cognitive Skills Training
(SCST) 300
social competence
assessment of 254
deficits, and work problems
100
social perception 86
bipolar disorder 55
computerized training
300–304
see also social cognition
Social Skills Performance
Assessment (SSPA)
257–258
specific/core cognitive deficits
194
"standard" vs. dual process
models 6
Standards for Educational and
Psychological Testing
(APA) 235
standards for psychological
testing 235
stimulants and alertness agents
267
amphetamines 275
modafinil 275
nicotinic agonists
272–273
Subtle Expressions Training
Tool (SETT) 298–299
symptom dimensions in
psychosis 69, 73–74
and neuropsychological
functioning 69–73
psychotic disorders
76–79
schizophrenia studies
74–76
summary and conclusion
79–80
symptoms
interference with work
99–100
severity of, and cognition
11–12
see also negative symptoms
targeted pro-cognitive
treatments 42–43
task switching, neural
correlates of 177–179
temporal differences in
generalized deficits
32–34
Test of Adaptive Behavior in
Schizophrenia (TABS)
259–260
theory of mind (ToM) 128
bipolar disorder 55
cognitive basis of persecutory
beliefs 13
link to insight 151–152
mental state attribution 87
tone-of-voice, impaired
discrimination 180–181
tone matching 180–181
training see computerized
cognitive training
Training of Affect Recognition
(TAR) 299
translational cognitive
neuroscience 193
neural correlates of cognitive
dysfunction 193–194
episodic memory 206–208
executive control 209–212
working memory 195–206
working memory example
212–213
computational modeling
and ph-fMRI 215–218
pharmacological
neuroimaging
(ph-fMRI) 213–215
treatment of cognitive deficits
62
twin studies
cognitive deficits 42, 163
working memory 164–165
two pathway model 90–91
UCSD Performance-Based
Skills Assessment
(UPSA) 255
use in older patients 117,
119–120
unaffected siblings, comparison
of cognitive deficits
35–37
UPSA-Brief (UPSA-B) 121,
257, 261–262
Validation of Intermediate
Measures (VIM) study
238–239
validity
of cognitive measures as
outcome predictors
14–15
of self-reports 250
of symptom dimensions
73–74
verbal learning and memory,
training program
296–297
verbal memory processes
Brain Fitness Program
improving 296–297
neural activation following
computerized training
305–306
visual processing 208
visual (dys)function
182–183
cognitive consequences of
early 183–186
normative age-related
changes 111–112
predicting social cognition
and outcome 88
visual training, improving
visual memory 308
vocational rehabilitation
101–103, 295, 297
voxel-based morphometry
(VBM) 307
work functioning 98–99
cognitive remediation and
vocational rehabilitation
102–103
effect of cognitive
impairments 101
premorbid functioning and
educational attainment
99
psychotic and negative
symptoms 99–100
social competence problems
100
<table>
<thead>
<tr>
<th>work functioning (cont.)</th>
<th>cognitive neuroscience models 195</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary and conclusions</td>
<td>computational modeling and ph-fMRI 215–218</td>
</tr>
<tr>
<td>103–105</td>
<td>context processing role 209–210</td>
</tr>
<tr>
<td>supported employment</td>
<td>heritability of 164–165</td>
</tr>
<tr>
<td>101–102</td>
<td>neurocognitive enhancement therapy improving 289–290</td>
</tr>
<tr>
<td>working memory (WM)</td>
<td>neuroimaging findings 200</td>
</tr>
<tr>
<td>behavioral findings 196</td>
<td>neural deficits across phases of WM 202–204</td>
</tr>
<tr>
<td>encoding/maintenance</td>
<td>prefrontal recruitment 200–202</td>
</tr>
<tr>
<td>deficits 196–199</td>
<td>summaries 205–206, 218</td>
</tr>
<tr>
<td>maintenance phase,</td>
<td>younger people</td>
</tr>
<tr>
<td>interference control/</td>
<td>greater potential</td>
</tr>
<tr>
<td>decay deficits 199–200</td>
<td>neuroplasticity 232</td>
</tr>
<tr>
<td></td>
<td>relevance of current test measures 262</td>
</tr>
<tr>
<td></td>
<td>ZNF (zinc finger protein) 804A gene 167–168</td>
</tr>
</tbody>
</table>