Index

A
Addiction disorders, 66–67
ADHD. See Attention deficit/hyperactivity disorder
Adolescence substance use
biological underpinnings, 169–170
intervention and prevention, 170–173
personality change, 168–169
social dominance, 168
Adolescent drug use and deviant peer association, 284
Adolescent impulsive action, 110
Adolescent limited conduct disorder, 321
Adolescent risk taking behavior
contextual role, 180
covert behavior, 193–195
environmental contexts, 195, 196
functional analysis, 179
learning theory, 178, 179
negative consequences
delay discounting, 191–192
neurobiological factors, 192–193
negative reinforcement
negative urgency, 190–191
neurobiological factors, 191
peer influences
anticipatory, 214
cognitive control system, 213–217, 221
decision-making approaches, 212, 213
incidental, 215
socio-emotional reward system, 213, 216–220
positive consequences
delay discounting, 184–185
neurobiological factors, 187–188
personality, 182
positive reinforcement, 181–182
positive urgency, 185–186
risk-taking propensity, 186–187
sensation seeking, 183–184
trait impulsivity, 184
prevention and intervention, 195–198
Adolescents and intervention approaches, 115
Adolescent self-regulation, 286
Adverse outcomes
allostatic load, 230
brain activation, 236–238
Go/No Go task, 235, 237–238
grand average waveforms, 241
heterogeneity, foster children, 231–232
hypothalamic-pituitary-adrenal (HPA) axis, 233
neural mechanisms, 235–239
neural plasticity, 239–242
parameterizing early adversity effects, 232
pathways, 230
placement instability, 234–235, 239
Alcohol, inhibitory control
abuse, 90–92
acute effects, 87–89
impairment and vulnerability, 89–90
trait impulsivity and alcohol impairment, 93–94
Anticipatory emotions, 214
Attention, 126
Attention deficit/hyperactivity disorder (ADHD)
alcohol, inhibitory control, 93–94
substance use, risk, 319–320
Attention network task (ANT), 285

B
BAC. See Blood alcohol concentration
Behavioral approach system (BAS), 163, 165
Behavioral inhibitory processes, 7

Behavioral mechanism
behavioral control, 86–87
inhibitory control
and alcohol abuse, 90–92
alcohol, acute effects, 87–89
alcohol impairment
and vulnerability, 89–90
cognitive-behavioral therapies (CBTs), 94–97
trait impulsivity and alcohol impairment, 93–94

Behavioral processes
adjusting-amount (AdjAmt) procedure, 17–20, 31
definitions and measures, 14, 15
delay discounting and response inhibition
C57 and 129s mice, 23–24
stop task, 21–23
delay discounting functions, 15–18
Diagnostic and Statistical Manual of Mental Disorders IV, 14
humans
go reaction time (RT), 21
stop task procedure, 21–22
impulsive behavior, 14–16, 30–31
lapses of attention, 15, 25–27
limitations
C57 vs. 129s mouse strains, 33–34
drug abuse prevention implications, 34–35
drug self-administration, animals impulsive, 32–33
human vs. animal tasks measure, 31–32
impulsive behavior, 30–31
Behavioral self-regulation, 5
Blood alcohol concentration (BAC), 87–89
Borderline personality disorder (BPD), 146
Brain development and health behavior, 249–250
Brain mechanisms, self-regulation, 287–290

C
Cannabis, 73–74
Catechol-O-methyltransferase (COMT), 72
Cognitive-behavioral therapies (CBTs), 94–97
Cognitive control system, 213, 217, 220–221
Cognitive inhibition tasks, 131–132
Conceptual model, 290–291
Covert behavior, 193–195

D
DAT. See Dopamine transporter
DCCS. See Dimensional change card sort
Decision-making tasks, 132
Delay discounting, 16–18, 184–185
and response inhibition, 15
task, 18–20
DevMod approach, 26
Difficulty awaiting turn, 16
Diffusion tensor imaging (DTI), 104
Dimensional change card sort (DCCS), 254
Dishion's model, 321
Dopamine D1 receptor, 67–68
Dopamine D2 receptor, 69–70
Dopaminergic systems, monoaminergic regulation
attention, 47
behavioral flexibility, 46
cognitive flexibility, 46–47
decision making, 47–48
ventral tegmental area (VTA), 45
working memory, 46
Dopamine transporter (DAT), 70–71

E
Early life stressors, 75
Executive attention network, 288
Executive cognitive function (ECF) and behavioral health outcomes, 250–251
brain development and health behavior, 249–250
implications and future directions
developmental theory, use of, 254–255
diagnosis and classification, 257–258
health interventions, 258–259
and neural activity, 255–257
potential mediator, prevention trials, 251–254
Exon, 69–70

F
Feedback-related negativity (FRN), 240–241
Five Factor Model (FFM), 147, 148
Functional magnetic resonance imaging (fMRI), 101

G
Gene × environment (G × E) interactions, 75–76
Genetic and environment factors
cannabis, 73–74
catechol-O-methyltransferase, 72
dopamine D1 receptor, 67–68
dopamine D2 receptor, 69–70
dopamine transporter, 70–71
“Go” and “NoGo” concepts, 66
inhibitory control, 67
neurobiology of impulsivity, 65–66
prevention, 76–77
Go/No-Go task, 65–66, 103, 104

H
Haplotype, 68, 70
Heterogeneity, adversity, 131–132
High sensation seekers (HSS), 265, 269, 270
Hyperbolic function, 17
Hypothalamic-pituitary-adrenal (HPA) axis, 233
Hypothetical hyperbolic discount function, 17

I
Improving school learning environments (ISLE), 275–276
Impulsive behavior, 14–16, 30–31, 33–34
Impulsive behavior–positive urgency (PU), 149–150
Impulsive decision-making, 265–266
Impulsivity
  biopsychosocial definition, 127
  and deviance
  Diagnostic and Statistical Manual for Mental Disorders (DSM-IV), 146
  general theory of crime, 146
  UPPS model, 147–149, 152–154
  and inhibitory control, youth, 128–129
  theoretical models
    behavioral approach system (BAS), 163, 165
    extraversion, 163
    negative emotionality dimension, 167
    negative temperament, 167
    neuroticism, 166
    psychoticism, 164
    rash impulsiveness, 166
    sensation seeking, 164–165
Incidental emotion, 215
Inhibit maladaptive behavior, 13, 15, 16, 25
Inhibitory control (IC) deficits
  adolescent SUD, 133–136
  BART test, 318
  clinical considerations, 138–140
  cognitive inhibition tasks, 131–132
  decision-making tasks, 132
  and impulsivity
    definitions, 126–127
    disordered inhibitory control, 127
  laboratory measures, 131–133
  neural mechanisms, 235–239
  neural plasticity, 239–242
  neurobiological basis, 136–137
  placement instability, 234–235
  self-report measures, 128–131
  Interpersonal cognitive problem solving, 252
  Intron, 71
  ISLE. See Improving school learning environments

L
Laboratory measures, impulsivity, 131–133
Lack of perseverance (PSV), 146, 148
Lack of planning, 126
Lack of premeditation (PMD), 148, 149, 151
Lapses of attention
  C57 and 129s mice, 29–30
  choice RT task, 27–28
  DevMod approach, 26
  hypothetical distribution, 25
  impulsive behavior, 15
  Liveliness, 126
  Locus coeruleus (LC), 48–49
  Low sensation seekers (LSS), 265, 269, 270

M
Maladaptive behavior, 13
Mediational pathways, 274–275
Message sensation value, 269–270
Missense coding change, 69
Modified version of Reducing the Risk (MRTR), 272
Monoamine neurotransmitters
  dopaminergic influences
    attention, 47
    behavioral flexibility, 46
    cognitive flexibility, 46–47
    decision making, 47–48
    ventral tegmental area (VTA), 45
    working memory, 46
  noradrenergic influences
    attention, 50–51
    behavioral flexibility, 47
    cognitive flexibility, 46–47
    decision-making, 51
    working memory, 49
  prevention interventions, 55–56
  serotonergic influences
    attention, 54
    behavioral flexibility, 53–54
    cognitive flexibility, 53
Monoamine neurotransmitters (cont.)
  decision-making, 54–55
  working memory, 52–53
Monoamine oxidase A (MAOA), 324
Motor activation, 126
Motor inhibition tasks, 131
Multiple domain model (MDM), 274

N
Narrow impulsiveness, 126
Negative consequences
  delay discounting, 191–192
  neurobiological factors, 192–193
Negative reinforcement
  negative urgency, 190–191
  neurobiological factors, 191
Negative urgency (NU), 149
Neural activity, ECF, 255–257
Neural and behavioral analysis, 7
Neural plasticity, 239–242
Neurobehavioral inhibition, 132, 135
Neurobiological factors, 187–189
Neurobiological substrates. See Genetic and environment factors
Neurobiological systems, 64
Neurocognitive variables, 6
Neurocognitive systems, 4, 6
Neuroimaging
  adolescents and intervention approaches, 116
  adolescent substance, 102
decision making, 107–108
diffusion tensor imaging (DTI), 104
fMRI data, 106
impulsive action vs. choice, 113–114
impulsive choice and delay discounting of loss, 112–113
of rewards, 111–112
response inhibition, 102–106
self-control and impulsivity, 103
Niche finding, 282
Nonplanning, 126
Noradrenergic neurons, monoaminergic regulation
  noradrenergic influences
    attention, 50–51
    behavioral flexibility, 47
cognitive flexibility, 46–47
decision-making, 51
working memor, 49
Novelty seeking, 128
Nurturing environments
  inhibitory control, 308
  nature of, 311–312

O
Original UPPS model, 147–148

P
PMD. See Lack of premeditation
Polymorphism, 69, 70
Positive urgency, 149–151, 185–186
Prefrontal cortex (PFC), 48–49, 52
Project Alliance study, 283–284
Promoting alternative thinking strategies (PATHS), 5, 6, 253
PSV. See Lack of perseverance
Psychopathology approach, 3
Public service announcements (PSAs), 263, 269

R
Reaction time procedure, 27
Reducing the risk (RTR), 272
Response inhibition, 21–24
Response inhibition and adolescent substance, 102
Risk-taking, 126
Risk-taking propensity, 186–187
Risky sexual behavior
  activation model of information exposure, 266–267
  alcohol, 272–273
  extended model, 277
HSV/IDM curriculum, 272–273
  improving school learning environments (ISLE), 275–276
  impulsive decision-making, 265–266
  vs. individual differences, 267–268
  mediational pathways, 274–277
  message sensation value, 269–270
  novelty and sensation, 264–265
  sensation seeking, 264–265
two-city time-series study
  ONDCP marijuana initiative, 274
  safer sex campaign, 273

S
Self-control loss, 103
Self-regulation, 4
Self-regulation and adolescent-onset drug use
  attention network task (ANT), 285
  brain mechanisms underlying self-regulation, 287–289
  child-centered interventions, 292–293
  conceptual model, 290–291
  family-centered interventions, 292–293
Index

mindfulness, 291–292
susceptibility to peer influence, 283–284
  See also Impulsivity
Sensation seeking (SS), 146, 148, 149, 183–184, 265
Serotoninergic system, monoaminergic regulation
  attention, 54
  behavioral flexibility, 53–54
  cognitive flexibility, 53
  decision-making, 54–55
  working memory, 52–53
Social and emotional learning (SEL), 4
Socio-emotional reward system, 213, 216–220
SS. See Sensation seeking
Stop task procedure, 21–22, 24
Strengthening families program (SFP), 293
Substance use disorder (SUD). See Inhibitory control deficits

T
Trait impulsivity, 184
Translational prevention research
  coercive vs. positive reinforcements, 309
  evolutionary perspective, 310
  inhibitory control
    developmental phases, 306–309
    nurturing environments, 308–309
    promote inhibitory control, 310–312

U
UPPS model
  development, 147–149
  integrate research findings, 152–154
UPPS-P model, 149–154

V
Variable number tandem repeat polymorphism (VNTR), 70–71
Ventral tegmental area (VTA), 45
Ventromedial prefrontal cortex (VMPC), 156, 193