

# Bibliography

*Note:* Numbers in square brackets denote the chapter in which an entry is cited.

- Aarts, E., M. van Holstein, and R. Cools. 2011. Striatal Dopamine and the Interface between Motivation and Cognition. *Front. Psychol.* **2**:163. [4]
- Abbeel, P., D. Dolgov, A. Y. Ng, and S. Thrun. 2008. Apprenticeship Learning for Motion Planning with Application to Parking Lot Navigation. RSJ Intl. Conf. on Intelligent Robots and Systems. IROS 2008, pp. 1083–1090. Piscataway, NJ: IEEE Press. [14]
- Abbeel, P., and A. Ng. 2004. Apprenticeship Learning via Inverse Reinforcement Learning. Proc. 21st Intl. Conf. on Machine Learning, vol. 69, p. 8. Banff: ACM Series. [14]
- Abi-Dargham, A., L. S. Kegeles, Y. Zea-Ponce, et al. 2004. Striatal Amphetamine-Induced Dopamine Release in Patients with Schizotypal Personality Disorder Studied with Single Photon Emission Computed Tomography and [<sup>123</sup>I]Iodobenzamide. *Biol. Psychiatry* **55**:1001–1006. [4]
- Abi-Dargham, A., O. Mawlawi, I. Lombardo, et al. 2002. Prefrontal Dopamine D1 Receptors and Working Memory in Schizophrenia. *J. Neurosci.* **22**:3708–3719. [5]
- Abi-Dargham, A., E. van de Giessen, M. Slifstein, L. S. Kegeles, and M. Laruelle. 2009. Baseline and Amphetamine-Stimulated Dopamine Activity Are Related in Drug-Naïve Schizophrenic Subjects. *Biol. Psychiatry* **65**:1091–1093. [4]
- Abrahams, B. S., and D. H. Geschwind. 2008. Advances in Autism Genetics: on the Threshold of a New Neurobiology. *Nat. Rev. Genet.* **9**:341–355. [3]
- Abramowitz, J. S. 2013. The Practice of Exposure Therapy: Relevance of Cognitive-Behavioral Theory and Extinction Theory. *Behav. Ther.* **44**:548–558. [5]
- Abramson, L. Y., G. I. Metalsky, and L. B. Alloy. 1989. Hopelessness Depression: A Theory-Based Subtype of Depression. *Psychol. Rev.* **96**:358–372. [15]
- Adams, D. H., L. Zhang, B. A. Millen, B. J. Kinon, and J. C. Gomez. 2014. Pomaglumetad Methionil (LY2140023 Monohydrate) and Aripiprazole in Patients with Schizophrenia: A Phase 3, Multicenter, Double-Blind Comparison. *Schizophr. Res.* **2014**:758212. [16]
- Adams, R. A., K. E. Stephan, H. R. Brown, and K. J. Friston. 2013. The Computational Anatomy of Psychosis. *Front. Psychiatry* **4**:47. [7, 12]
- Addington, J., I. Epstein, L. Liu, et al. 2011. A Randomized Controlled Trial of Cognitive Behavioral Therapy for Individuals at Clinical High Risk of Psychosis. *Schizophr. Res.* **125**:54–61. [3]
- Adler, C. M., P. McDonough-Ryan, K. W. Sax, et al. 2000. fMRI of Neuronal Activation with Symptom Provocation in Unmedicated Patients with Obsessive Compulsive Disorder. *J. Psychiatr. Res.* **34**:317–324. [12]
- Adriano, F., C. Caltagirone, and G. Spalletta. 2012. Hippocampal Volume Reduction in First-Episode and Chronic Schizophrenia: A Review and Meta-Analysis. *Neuroscientist* **18**:180–200. [1, 4]
- Adriano, F., I. Spoltini, C. Caltagirone, and G. Spalletta. 2010. Updated Meta-Analyses Reveal Thalamus Volume Reduction in Patients with First-Episode and Chronic Schizophrenia. *Schizophr. Res.* **123**:1–14. [4]
- Afraz, A., D. L. Yamins, and J. J. DiCarlo. 2014. Neural Mechanisms Underlying Visual Object Recognition. *Cold Spring Harb. Symp. Quant. Biol.* **79**:99–107. [5]

- Agid, O., L. Schulze, T. Arenovich, et al. 2013. Antipsychotic Response in First-Episode Schizophrenia: Efficacy of High Doses and Switching. *Eur. Neuropsychopharmacology* **23**:1017–1022. [12]
- Agius, M., C. Goh, S. Ulhaq, and P. McGorry. 2010. The Staging Model in Schizophrenia, and Its Clinical Implications. *Psychiatria Danubina* **22**:211–220. [16]
- Agnew-Blais, J., and L. J. Seidman. 2013. Neurocognition in Youth and Young Adults under Age 30 at Familial Risk for Schizophrenia: A Quantitative and Qualitative Review. *Cogn. Neuropsychiatry* **18**:44–82. [4]
- Ahmari, S. E., T. Spellman, N. L. Douglass, et al. 2013. Repeated Cortico-Striatal Stimulation Generates Persistent OCD-Like Behavior. *Science* **340**:1234–1239. [10]
- Ainslie, G. 1992. *Picoeconomics*. Cambridge: Cambridge Univ. Press. [2]
- . 2001. *Breakdown of Will*. Cambridge: Cambridge Univ. Press. [2]
- Akil, H., S. Brenner, E. Kandel, et al. 2010. Medicine. The Future of Psychiatric Research: Genomes and Neural Circuits. *Science* **327**:1580–1581. [1]
- Albin, R. L., A. B. Young, and J. B. Penney. 1989. The Functional Anatomy of Basal Ganglia Disorders. *Trends Neurosci.* **12**:366–374. [2]
- Allen, P., C. A. Chaddock, O. D. Howes, et al. 2012. Abnormal Relationship between Medial Temporal Lobe and Subcortical Dopamine Function in People with an Ultra High Risk for Psychosis. *Schizophr. Bull.* **38**:1040–1049. [4]
- Alloy, L. B., L. Y. Abramson, M. E. Hogan, et al. 2000. The Temple-Wisconsin Cognitive Vulnerability to Depression Project: Lifetime History of Axis I Psychopathology in Individuals at High and Low Cognitive Risk for Depression. *J. Abnorm. Psychol.* **109**:403–418. [15]
- Alloy, L. B., L. Y. Abramson, W. G. Whitehouse, et al. 1999. Depressogenic Cognitive Styles: Predictive Validity, Information Processing and Personality Characteristics, and Developmental Origins. *Behav. Res. Ther.* **37**:503–531. [15]
- Alptekin, K., B. Degirmenci, B. Kivircik, et al. 2001. Tc-99m HMPAO Brain Perfusion SPECT in Drug-Free Obsessive-Compulsive Patients without Depression. *Psychiatry Res.* **107**:51–56. [10]
- Amemori, K.-I., and A. M. Graybiel. 2012. Localized Microstimulation of Primate Pregenual Cingulate Cortex Induces Negative Decision-Making. *Nat. Neurosci.* **15**:776–785. [15]
- Amsel, L., and J. J. Mann. 2001. Suicide Risk Assessment and the Suicide Process Approach. In: *Understanding Suicidal Behaviour: The Suicidal Process Approach to Research, Treatment and Prevention*, ed. K. van Heeringen, pp. 163–181. Chichester: John Wiley. [3]
- Anand, A., D. S. Charney, D. A. Oren, et al. 2000a. Attenuation of the Neuropsychiatric Effects of Ketamine with Lamotrigine: Support for Hyperglutamatergic Effects of N-Methyl-D-Aspartate Receptor Antagonists. *Arch. Gen. Psychiatry* **57**:270–276. [16]
- Anand, A., P. Verhoeff, N. Seneca, et al. 2000b. Brain SPECT Imaging of Amphetamine-Induced Dopamine Release in Euthymic Bipolar Disorder Patients. *Am. J. Psychiatry* **157**:1108–1114. [16]
- Anda, R. F., V. J. Felitti, J. D. Bremner, et al. 2006. The Enduring Effects of Abuse and Related Adverse Experiences in Childhood. A Convergence of Evidence from Neurobiology and Epidemiology. *Eur. Arch. Psychiatry Clin. Neurosci.* **256**:174–186. [3]
- Anders, S. L., C. K. Peterson, L. M. James, et al. 2015. Neural Communication in Posttraumatic Growth. *Exp. Brain Res.* **233**:2013–2020. [10]
- Anderson, I. M., and S. Pilling. 2010. *Depression: The Treatment and Management of Depression in Adults* (Updated edition). Leicester: British Psychological Society. [15]

- Anderson, I. M., and B. M. Tomenson. 1995. Treatment Discontinuation with Selective Serotonin Reuptake Inhibitors Compared with Tricyclic Antidepressants: A Meta-Analysis. *BMJ* **310**:1433–1438. [15]
- Anderson, M. L., and T. Oates. 2007. A Review of Recent Research in Metareasoning and Metalearning. *AI Mag.* **28**:12. [15]
- Andreasen, N. C., P. Nopoulos, V. Magnotta, et al. 2011. Progressive Brain Change in Schizophrenia: A Prospective Longitudinal Study of First-Episode Schizophrenia. *Biol. Psychiatry* **70**:672–679. [16]
- Andrews, A., M. Knapp, P. McCrone, and M. Parsonage. 2012. Effective Interventions in Schizophrenia the Economic Case: A Report Prepared for the Schizophrenia Commission. London: Personal Social Services Research Unit, London School of Economics and Political Science. [3]
- Andrews, G., T. Brugha, M. E. Thase, et al. 2007. Dimensionality and the Category of Major Depressive Episode. *Int. J. Methods Psychiatr. Res.* **16** 541–551. [8]
- Andrews, G., D. S. Charney, P. J. Sirovacka, and D. A. Regier. 2009. Stress-Induced and Fear Circuitry Disorders Refining the Research Agenda for DSM-V. Arlington, VA: American Psychiatric Association. [8]
- Andrews, P. W., S. G. Kornstein, L. J. Halberstadt, C. O. Gardner, and M. C. Neale. 2011. Blue Again: Perturbational Effects of Antidepressants Suggest Monoaminergic Homeostasis in Major Depression. *Front. Psychol.* **2**:159. [15]
- Angst, J. 1992. Epidemiology of Depression. *Psychopharmacology (Berl.)* **106**:S71–S74. [15]
- Anticevic, A., M. W. Cole, J. D. Murray, et al. 2012a. The Role of Default Network Deactivation in Cognition and Disease. *Trends Cogn. Sci.* **16**:584–592. [16]
- Anticevic, A., M. W. Cole, G. Repovs, et al. 2014a. Characterizing Thalamo-Cortical Disturbances in Schizophrenia and Bipolar Illness. *Cereb. Cortex* **24**:3116–3130. [16]
- Anticevic, A., P. R. Corlett, M. W. Cole, et al. 2015a. N-Methyl-D-Aspartate Receptor Antagonist Effects on Prefrontal Cortical Connectivity Better Model Early Than Chronic Schizophrenia. *Biol. Psychiatry* **77**:569–580. [16]
- Anticevic, A., M. Gancos, J. D. Murray, et al. 2012b. NMDA Receptor Function in Large-Scale Anticorrelated Neural Systems with Implications for Cognition and Schizophrenia. *PNAS* **109**:16720–16725. [16]
- Anticevic, A., K. Haut, J. D. Murray, et al. 2015b. Association of Thalamic Dysconnectivity and Conversion to Psychosis in Youth and Young Adults at Elevated Clinical Risk. *JAMA Psychiatry* **72**:882–891. [16]
- Anticevic, A., X. Hu, Y. Xiao, et al. 2015c. Early-Course Unmedicated Schizophrenia Patients Exhibit Elevated Prefrontal Connectivity Associated with Longitudinal Change. *J. Neurosci.* **35**:267–286. [16]
- Anticevic, A., J. D. Murray, and D. M. Barch. 2015d. Bridging Levels of Understanding in Schizophrenia through Computational Modeling. *Clin. Psychol. Sci.* **3**:433–459. [16]
- Anticevic, A., G. Yang, A. Savic, et al. 2014b. Mediodorsal and Visual Thalamic Connectivity Differ in Schizophrenia and Bipolar Disorder with and without Psychosis History. *Schizophr. Bull.* **40**:1227–1243. [16]
- Aoyama, N., J. Theberge, D. J. Drost, et al. 2011. Grey Matter and Social Functioning Correlates of Glutamatergic Metabolite Loss in Schizophrenia. *Br. J. Psychiatry* **198**:448–456. [16]
- APA. 1980. Diagnostic and Statistical Manual of Mental Disorders, DSM-III. Arlington: American Psychiatric Association Publishing. [8, 10]
- . 2000. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), 4th Edition. Arlington, VA: American Psychiatric Association Publishing. [2, 8, 15]

- APA. 2013. Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Arlington: American Psychiatric Association Publishing. [1, 2, 8, 10, 14, 16]
- APA Task Force on Laboratory Tests in Psychiatry. 1987. The Dexamethasone Suppression Test: An Overview of Its Current Status in Psychiatry. *Am. J. Psychiatry* **144**:1253–1262. [1]
- Argyelan, M., T. Ikuta, P. DeRosse, et al. 2014. Resting-State fMRI Connectivity Impairment in Schizophrenia and Bipolar Disorder. *Schizophr. Bull.* **40**:100–110. [16]
- Arnsten, A. F. T. 2011. Catecholamine Influences on Dorsolateral Prefrontal Cortical Networks. *Biol. Psychiatry* **69**:e89–e99. [3]
- Autism Genome Project Consortium. 2007. Mapping Autism Risk Loci Using Genetic Linkage and Chromosomal Rearrangements. *Nat. Genet.* **39**:319–328. [3]
- Badcock, J. C., P. T. Michiel, and D. Rock. 2005. Spatial Working Memory and Planning Ability: Contrasts between Schizophrenia and Bipolar I Disorder. *Cortex* **41**:753–763. [16]
- Badre, D., B. B. Doll, N. M. Long, and M. J. Frank. 2012. Rostrolateral Prefrontal Cortex and Individual Differences in Uncertainty-Driven Exploration. *Neuron* **73**: 595–607. [6]
- Barabási, A.-L., N. Gulbahce, and J. Loscalzo. 2011. Network Medicine: A Network-Based Approach to Human Disease. *Nat. Rev. Genet.* **12**:56–68. [3]
- Barch, D. M. 2004. Pharmacological Manipulation of Human Working Memory. *Psychopharmacology* **174**:126–135. [4]
- . 2005. The Cognitive Neuroscience of Schizophrenia. In: Annual Review of Clinical Psychology, ed. T. Cannon and S. Mineka, pp. 321–353, vol. 1. Washington, D.C.: American Psychological Association. [4]
- Barch, D. M., and T. S. Braver. 2007. Cognitive Control in Schizophrenia: Psychological and Neural Mechanisms. In: Cognitive Limitations in Aging and Psychopathology, ed. R. W. Engle et al., pp. 122–159. Cambridge: Cambridge Univ. Press. [4]
- Barch, D. M., T. S. Braver, C. S. Carter, R. A. Poldrack, and T. W. Robbins. 2009. CNTRICS Final Task Selection: Executive Control. *Schizophr. Bull.* **35**:115–135. [4]
- Barch, D. M., and C. S. Carter. 2005. Amphetamine Improves Cognitive Function in Medicated Individuals with Schizophrenia and in Healthy Volunteers. *Schizophr. Res.* **77**:43–58. [4]
- Barch, D. M., C. S. Carter, T. S. Braver, et al. 2001. Selective Deficits in Prefrontal Cortex Regions in Medication Naïve Schizophrenia Patients. *Arch. Gen. Psychiatry* **50**:280–288. [4]
- Barch, D. M., and A. E. Ceaser. 2012. Cognition in Schizophrenia: Core Psychological and Neural Mechanisms. *Trends Cogn. Sci.* **16**:27–34. [4]
- Barch, D. M., and J. M. Sheffield. 2014. Cognitive Impairments in Psychotic Disorders: Common Mechanisms and Measurement. *World Psychiatry* **13**:224–232. [4]
- . 2016. Cognitive Control in Schizophrenia: Psychological and Neural Mechanisms. In: Handbook of Cognitive Control, ed. T. Egner. Chichester: John Wiley & Sons, in press. [4]
- Barch, D. M., M. T. Treadway, and N. Schoen. 2014. Effort, Anhedonia, and Function in Schizophrenia: Reduced Effort Allocation Predicts Amotivation and Functional Impairment. *J. Abnorm. Psychol.* **123**:387–397. [4]
- Barker, J. M., M. M. Torregrossa, A. P. Arnold, and J. R. Taylor. 2010. Dissociation of Genetic and Hormonal Influences on Sex Differences in Alcoholism-Related Behaviors. *J. Neurosci.* **30**:9140–9144. [3]

- Barto, A. G. 1995. Adaptive Critics and the Basal Ganglia. In: Models of Information Processing in the Basal Ganglia, ed. J. C. Houk et al., pp. 215–232. Cambridge, MA: MIT Press. [5]
- Barton, J. J., M. V. Cherkasova, K. Lindgren, et al. 2002. Antisaccades and Task Switching: Studies of Control Processes in Saccadic Function in Normal Subjects and Schizophrenic Patients. *Ann. NY Acad. Sci.* **956**:250–263. [4]
- Bartos, M., I. Vida, and P. Jonas. 2007. Synaptic Mechanisms of Synchronized Gamma Oscillations in Inhibitory Interneuron Networks. *Nat. Rev. Neurosci.* **8**:45–56. [4]
- Bastos, A. M., W. Usrey, R. A. Adams, et al. 2012. Canonical Microcircuits for Predictive Coding. *Neuron* **76**:695–711. [7, 12]
- Bauer, M., A. Pfennig, E. Severus, et al. 2013. World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines for Biological Treatment of Unipolar Depressive Disorders, Part 1: Update 2013 on the Acute and Continuation Treatment of Unipolar Depressive Disorders. *World J. Biol. Psychiatry* **14**:334–385. [15]
- Baxter, L. R., Jr., J. M. Schwartz, K. S. Bergman, et al. 1992. Caudate Glucose Metabolic Rate Changes with Both Drug and Behavior Therapy for Obsessive-Compulsive Disorder. *Arch. Gen. Psychiatry* **49**:681–689. [1]
- Baxter, L. R., Jr., J. M. Schwartz, J. C. Mazziotta, et al. 1988. Cerebral Glucose Metabolic Rates in Nondepressed Patients with Obsessive-Compulsive Disorder. *Am. J. Psychiatry* **145**:1560–1563. [10]
- Bayes, T., and R. Price. 1763. An Essay Towards Solving a Problem in the Doctrine of Chances. By the Late Rev. Mr. Bayes, F. R. S. Communicated by Mr. Price, in a Letter to John Canton. *Phi. Trans.* **53**:370–418. [7]
- Beck, A. T. 1967. Depression: Clinical, Experimental and Theoretical Aspects. New York: Harper & Row. [15]
- Bedi, G., F. Carrillo, G. A. Cecchi, et al. 2015. Automated Analysis of Free Speech Predicts Psychosis Onset in High-Risk Youths. *NPJ Schizophr.* **1**:15030. [3]
- Beeler, J. A., M. J. Frank, J. McDaid, et al. 2012. A Role for Dopamine-Mediated Learning in the Pathophysiology and Treatment of Parkinson's Disease. *Cell Rep.* **2**:1747–1761. [3, 5]
- Beesdo, K., S. Knappe, and D. Pine. 2009. Anxiety and Anxiety Disorders in Children and Adolescents: Developmental Issues and Implications for DSM-V. *Psychiatr. Clin. North Am.* **32**:483–524. [3]
- Behrens, T. E., M. W. Woolrich, M. E. Walton, and M. F. Rushworth. 2007. Learning the Value of Information in an Uncertain World. *Nat. Neurosci.* **10**:1214–1221. [6, 14]
- Belforte, J. E., V. Zsiros, E. R. Sklar, et al. 2010. Postnatal NMDA Receptor Ablation in Corticolimbic Interneurons Confers Schizophrenia-Like Phenotypes. *Nat. Neurosci.* **13**:76–83. [16]
- Belin, D., A. C. Mar, J. W. Dalley, T. W. Robbins, and B. J. Everitt. 2008. High Impulsivity Predicts the Switch to Compulsive Cocaine-Taking. *Science* **320**:1352–1355. [2]
- Bellman, R. 1957. Dynamic Programming. Princeton: Princeton Univ. Press. [13]
- Beltramo, R., G. D'Urso, M. Dal Maschio, et al. 2013. Layer-Specific Excitatory Circuits Differentially Control Recurrent Network Dynamics in the Neocortex. *Nat. Neurosci.* **16**:227–234. [3]
- Beninger, R. J., J. Wasserman, K. Zanibbi, et al. 2003. Typical and Atypical Antipsychotic Medications Differentially Affect Two Nondeclarative Memory Tasks in Schizophrenic Patients: A Double Dissociation. *Schizophr. Res.* **61**:281–292. [4]

- Bernard, J. A., J. M. Orr, and V. A. Mittal. 2015. Abnormal Hippocampal-Thalamic White Matter Tract Development and Positive Symptom Course in Individuals at Ultra-High Risk for Psychosis. *NPJ Schizophr.* **1**:15009. [3]
- Berridge, K. C. 2006. The Debate over Dopamine's Role in Reward: The Case for Incentive Salience. *Psychopharmacology* **191**:391–431. [3]
- Bickel, W. K., R. D. Landes, Z. Kurth-Nelson, and A. D. Redish. 2014. A Quantitative Signature of Self-Control Repair Rate-Dependent Effects of Successful Addiction Treatment. *Clin. Psychol. Sci.* **2**:685–695. [2]
- Bickel, W. K., A. J. Quisenberry, L. Moody, and A. G. Wilson. 2015. Therapeutic Opportunities for Self-Control Repair in Addiction and Related Disorders: Change and the Limits of Change in Trans-Disease Processes. *Clin. Psychol. Sci.* **3**:140–153. [2]
- Bickel, W. K., R. Yi, R. D. Landes, P. F. Hill, and C. Baxter. 2011. Remember the Future: Working Memory Training Decreases Delay Discounting among Stimulant Addicts. *Biol. Psychiatry* **69**:260–265. [2]
- Billingslea, E. N., V. M. Tatard-Leitman, J. Anguiano, et al. 2014. Parvalbumin Cell Ablation of NMDA-R1 Causes Increased Resting Network Excitability with Associated Social and Self-Care Deficits. *Neuropsychopharmacology* **39**:1603–1613. [16]
- Binder, E. B., R. G. Bradley, W. Liu, et al. 2008. Association of FKBP5 Polymorphisms and Childhood Abuse with Risk of Posttraumatic Stress Disorder Symptoms in Adults. *JAMA* **299**:1291–1305. [3]
- Black, J. E., I. M. Kodish, A. W. Grossman, et al. 2004. Pathology of Layer V Pyramidal Neurons in the Prefrontal Cortex of Patients with Schizophrenia. *Am. J. Psychiatry* **161**:742–744. [16]
- Blackburn, I. M., K. M. Eunson, and S. Bishop. 1986. A Two-Year Naturalistic Follow-up of Depressed Patients Treated with Cognitive Therapy, Pharmacotherapy and a Combination of Both. *J. Affect. Disord.* **10**:67–75. [15]
- Blackwood, D. H., A. Fordyce, M. T. Walker, et al. 2001. Schizophrenia and Affective Disorders: Cosegregation with a Translocation at Chromosome 1q42 That Directly Disrupts Brain-Expressed Genes: Clinical and P300 Findings in a Family. *Am. J. Hum. Genet.* **69**:428–433. [3]
- Bloch, M. H., C. A. Bartley, L. Zipperer, et al. 2014. Meta-Analysis: Hoarding Symptoms Associated with Poor Treatment Outcome in Obsessive-Compulsive Disorder. *Mol. Psychiatry* **19**:1025–1030. [10]
- Bloch, M. H., A. Landeros-Weisenberger, B. Kelmendi, et al. 2006. A Systematic Review: Antipsychotic Augmentation with Treatment Refractory Obsessive-Compulsive Disorder. *Mol. Psychiatry* **11**:622–632. [10]
- Bloch, M. H., and C. Pittenger. 2010. The Genetics of Obsessive-Compulsive Disorder. *Curr. Psychiatry Rev.* **6**:91–103. [10]
- Blumberg, H. P., J. H. Krystal, R. Bansal, et al. 2006. Age, Rapid-Cycling, and Pharmacotherapy Effects on Ventral Prefrontal Cortex in Bipolar Disorder: A Cross-Sectional Study. *Biol. Psychiatry* **59**:611–618. [16]
- Boccaletti, S., V. Latora, Y. Moreno, M. Chavez, and D. Hwang. 2006. Complex Networks: Structure and Dynamics. *Phys. Rep.* **424**:175–308. [3]
- Bogacz, R., and K. Gurney. 2007. The Basal Ganglia and Cortex Implement Optimal Decision Making between Alternative Actions. *Neural Comput.* **19**:442–477. [5, 6]
- Bois, C., L. Levita, I. Ripp, et al. 2015. Hippocampal, Amygdala and Nucleus Accumbens Volume in First-Episode Schizophrenia Patients and Individuals at High Familial Risk: A Cross-Sectional Comparison. *Schizophr. Res.* **165**:45–51. [3]

- Boland, R. J., and M. B. Keller. 2002. The Course of Depression. In: *Neuropsychopharmacology: The Fifth Generation of Progress*, ed. K. L. Davis et al., pp. 1009–1015. Philadelphia: Lippincott Williams and Wilkins. [1]
- Boly, M., M. I. Garrido, O. Gosseries, et al. 2011. Preserved Feedforward but Impaired Top-Down Processes in the Vegetative State. *Science* **332**:858–862. [10]
- Bondi, C. O., A. Y. Taha, J. L. Tock, et al. 2014. Adolescent Behavior and Dopamine Availability Are Uniquely Sensitive to Dietary Omega-3 Fatty Acid Deficiency. *Biol. Psychiatry* **75**:38–46. [3]
- Bonoldi, I., and O. D. Howes. 2013. The Enduring Centrality of Dopamine in the Pathophysiology of Schizophrenia: *In Vivo* Evidence from the Prodrome to the First Psychotic Episode. *Adv. Pharmacol.* **68**:199–220. [4, 16]
- Bora, E., A. Fornito, J. Radua, et al. 2011. Neuroanatomical Abnormalities in Schizophrenia: A Multimodal Voxelwise Meta-Analysis and Meta-Regression Analysis. *Schizophr. Res.* **127**:46–57. [4]
- Bora, E., and R. M. Murray. 2014. Meta-Analysis of Cognitive Deficits in Ultra-High Risk to Psychosis and First-Episode Psychosis: Do the Cognitive Deficits Progress over, or after, the Onset of Psychosis? *Schizophr. Bull.* **40**:744–755. [4]
- Borsboom, D., and A. O. J. Cramer. 2013. Network Analysis: An Integrative Approach to the Structure of Psychopathology. *Annu. Rev. Clin. Psychol.* **9**:91–121. [5, 17]
- Borsboom, D., A. O. J. Cramer, V. D. Schmittmann, S. Epskamp, and W. L. J. 2011. The Small World of Psychopathology. *PLoS One* **6**:e27407. [5, 17]
- Bosl, W., A. Tierney, H. Tager-Flusberg, and C. Nelson. 2011. EEG Complexity as a Biomarker for Autism Spectrum Disorder Risk. *BMC Med.* **9**:18. [3]
- Botvinick, M. M., T. S. Braver, D. M. Barch, C. S. Carter, and J. D. Cohen. 2001. Conflict Monitoring and Cognitive Control. *Psychol. Rev.* **108**:624. [13]
- Botvinick, M. M., Y. Niv, and A. C. Barto. 2009. Hierarchically Organized Behavior and Its Neural Foundations: A Reinforcement Learning Perspective. *Cognition* **113**: 262–280. [6, 12, 13]
- Botvinick, M. M., L. E. Nystrom, K. Fissell, C. S. Carter, and J. D. Cohen. 1999. Conflict Monitoring versus Selection-for-Action in Anterior Cingulate Cortex. *Nature* **402**:179–181. [13]
- Botvinick, M. M., and A. Weinstein. 2014. Model-Based Hierarchical Reinforcement Learning and Human Action Control. *Phil. Trans. R. Soc. B* **369**:20130480. [12]
- Boureau, Y. L., and P. Dayan. 2011. Opponency Revisited: Competition and Cooperation between Dopamine and Serotonin. *Neuropsychopharmacology* **36**:74–97. [6]
- Brandon, N. J., and A. Sawa. 2011. Linking Neurodevelopmental and Synaptic Theories of Mental Illness through DISC1. *Nat. Rev. Neurosci.* **12**:707–722. [1]
- Braver, T. S. 1997. Mechanisms of Cognitive Control: A Neurocomputational Model. Ph.D. Thesis, Psychology Department, Carnegie Mellon University, Pittsburgh, PA. [4]
- Braver, T. S., and D. M. Barch. 2002. A Theory of Cognitive Control, Aging Cognition, and Neuromodulation. *Neurosci. Biobehav. Rev.* **26**:809–817. [4]
- Braver, T. S., D. M. Barch, and J. D. Cohen. 1999. Cognition and Control in Schizophrenia: A Computational Model of Dopamine and Prefrontal Function. *Biol. Psychiatry* **46**:312–328. [4]
- Braver, T. S., J. R. Gray, and G. C. Burgess. 2007. Explaining the Many Varieties of Working Memory Variation: Dual Mechanisms of Cognitive Control, Part 1. In: *Variation in Working Memory*, ed. A. R. Conway et al. Oxford: Oxford Univ. Press. [4]

- Braver, T. S., J. L. Paxton, H. S. Locke, and D. M. Barch. 2009. Flexible Neural Mechanisms of Cognitive Control within Human Prefrontal Cortex. *PNAS* **106**:7351–7356. [4]
- Breakspear, M., G. Roberts, M. J. Green, et al. 2015. Network Dysfunction of Emotional and Cognitive Processes in Those at Genetic Risk of Bipolar Disorder. *Brain* **138**:3427–3439. [12]
- Breakspear, M., J. A. Roberts, J. R. Terry, et al. 2006. A Unifying Explanation of Primary Generalized Seizures through Nonlinear Brain Modeling and Bifurcation Analysis. *Cereb. Cortex* **16**:1296–1313. [12]
- Breier, A., J. L. Schreiber, J. Dyer, and D. Pickar. 1992. Course of Illness and Predictors of Outcome in Chronic Schizophrenia: Implications for Pathophysiology. *Br. J. Psychiatry Suppl.* 38–43. [16]
- Breiman, L. 2001. Random Forests. *Mach. Learn.* **45**:5–32. [14]
- Brennan, M. D. 2014. Pharmacogenetics of Second-Generation Antipsychotics. *Pharmacogenomics* **15**:869–884. [11]
- Bressloff, P. C., J. D. Cowan, P. J. Golubitsky, and M. C. Wiener. 2002. What Geometric Visual Hallucinations Tell Us About the Visual Cortex. *Neural Comput.* **14**:473–491. [2]
- Brian, A. J., C. Roncadin, E. Duku, et al. 2014. Emerging Cognitive Profiles in High-Risk Infants with and without Autism Spectrum Disorder. *Res. Autism Spectr. Disord.* **8**:1557–1566. [3]
- Brodersen, K. H., L. Deserno, F. Schlagenhauf, et al. 2014. Dissecting Psychiatric Spectrum Disorders by Generative Embedding. *NeuroImage Clin.* **4**:98–111. [12]
- Brodersen, K. H., T. M. Schofield, A. P. Leff, et al. 2011. Generative Embedding for Model-Based Classification of fMRI Data. *PLoS Comput. Biol.* **7**:e1002079. [12]
- Brosey, E., and N. D. Woodward. 2015. Schizotypy and Clinical Symptoms, Cognitive Function, and Quality of Life in Individuals with a Psychotic Disorder. *Schizophr. Res.* **166**:92–97. [16]
- Brown, A. S. 2011. The Environment and Susceptibility to Schizophrenia. *Prog. Neurobiol.* **93**:23–58. [4]
- Brown, A. S., and E. J. Derkits. 2010. Prenatal Infection and Schizophrenia: A Review of Epidemiologic and Translational Studies. *Am. J. Psychiatry* **167**:261–280. [3, 4]
- Brown, H. R., R. A. Adams, I. Parees, M. Edwards, and K. J. Friston. 2013. Active Inference, Sensory Attenuation and Illusions. *Cogn. Process.* **14**:411–427. [7]
- Brown, R., and J. Kulik. 1977. Flashbulb Memories. *Cognition* **5**:73–99. [10]
- Browning, M., T. E. Behrens, G. Jocham, J. X. O'Reilly, and S. J. Bishop. 2015. Anxious Individuals Have Difficulty Learning the Causal Statistics of Aversive Environments. *Nat. Neurosci.* **18**:590–596. [6]
- Brunel, N., and X. J. Wang. 2001. Effects of Neuromodulation in a Cortical Network Model of Object Working Memory Dominated by Recurrent Inhibition. *J. Comput. Neurosci.* **11**:63–85. [6]
- Buchanan, A. 1999. Risk and Dangerousness. *Psychol. Med.* **29**:465–473. [5]
- Buckley, P. F., B. J. Miller, D. S. Lehrer, and D. J. Castle. 2009. Psychiatric Comorbidities and Schizophrenia. *Schizophr. Bull.* **35**:383–402. [9]
- Bullmore, E., and O. Sporns. 2009. Complex Brain Networks: Graph Theoretical Analysis of Structural and Functional Systems. *Nat. Rev. Neurosci.* **10**:186–198. [3]
- Burcusa, S. L., and W. G. Iacono. 2007. Risk for Recurrence in Depression. *Clin. Psychol. Rev.* **27**:959–985. [15]
- Bush, R. R., and F. Mosteller. 1951a. A Mathematical Model for Simple Learning. *Psychol. Rev.* **58**:313–323. [13]

- . 1951b. A Model for Stimulus Generalization and Discrimination. *Psychol. Rev.* **58**:413–423. [13]
- . 1953. A Stochastic Model with Applications to Learning. *Ann. Math. Stat.* **24**:559–585. [13]
- . 1955. Stochastic Models for Learning. New York: Wiley. [13]
- Buzsáki, G., and K. Mizuseki. 2014. The Log-Dynamic Brain: How Skewed Distributions Affect Network Operations. *Nat. Rev. Neurosci.* **15**:264–278. [3]
- Caballero, A., E. Flores-Barrera, D. K. Cass, and K. Y. Tseng. 2014. Differential Regulation of Parvalbumin and Calretinin Interneurons in the Prefrontal Cortex During Adolescence. *Brain Struct. Funct.* **219**:395–406. [16]
- Cai, X., G. D. Evrony, H. S. Lehmann, et al. 2014. Single-Cell, Genome-Wide Sequencing Identifies Clonal Somatic Copy-Number Variation in the Human Brain. *Cell Rep.* **8**:1280–1289. [3]
- Calkins, M. E., and W. G. Iacono. 2000. Eye Movement Dysfunction in Schizophrenia: A Heritable Characteristic for Enhancing Phenotype Definition. *Am. J. Med. Genet.* **97**:72–76. [1]
- Camchong, J., A. W. I. MacDonald, B. A. Mueller, et al. 2014. Changes in Resting Functional Connectivity During Abstinence in Stimulant Use Disorder: A Preliminary Comparison of Relapsers and Abstainers. *Drug Alcohol Depend.* **139**:145–151. [2]
- Camperi, M., and X. J. Wang. 1998. A Model of Visuospatial Working Memory in Prefrontal Cortex: Recurrent Network and Cellular Bistability. *J. Comput. Neurosci.* **5**:383–405. [4]
- Cannon, M., P. B. Jones, and R. M. Murray. 2002. Obstetric Complications and Schizophrenia: Historical and Meta-Analytic Review. *Am. J. Psychiatry* **159**:1080–1092. [4]
- Cannon, T. D., and M. C. Keller. 2006. Endophenotypes in the Genetic Analyses of Mental Disorders. *Annu. Rev. Clin. Psych.* **2**:267–290. [5]
- Cantor, C. 2005. Evolution and Posttraumatic Stress: Disorders of Vigilance and Defence. London: Routledge. [10]
- Cardin, J. A., M. Carlén, K. Meletis, et al. 2009. Driving Fast-Spiking Cells Induces Gamma Rhythm and Controls Sensory Responses. *Nature* **459**:663–667. [3]
- Cardno, A. G., and M. J. Owen. 2014. Genetic Relationships between Schizophrenia, Bipolar Disorder, and Schizoaffective Disorder. *Schizophr. Bull.* **40**:504–515. [16]
- Carr, J. 1981. Applications of Centre Manifold Theory. Berlin: Springer-Verlag. [11]
- Carroll, L. S., and M. J. Owen. 2009. Genetic Overlap between Autism, Schizophrenia and Bipolar Disorder. *Genome Med.* **1**: [3]
- Carter, C. S., T. S. Braver, D. M. Barch, et al. 1998. Anterior Cingulate Cortex, Error Detection, and the Online Monitoring of Performance. *Science* **280**:747–749. [13]
- Cartmell, J., J. A. Monn, and D. D. Schoepp. 1999. The Metabotropic Glutamate 2/3 Receptor Agonists LY354740 and LY379268 Selectively Attenuate Phenacyclidine versus D-Amphetamine Motor Behaviors in Rats. *J. Pharmacol. Exp. Ther.* **291**:161–170. [16]
- Caspi, A., A. R. Hariri, A. Holmes, R. Uher, and T. E. Moffitt. 2010. Genetic Sensitivity to the Environment: The Case of the Serotonin Transporter Gene and Its Implications for Studying Complex Diseases and Traits. *Am. J. Psychiatry* **167**:509–527. [3]
- Caspi, A., K. Sugden, T. E. Moffitt, et al. 2003. Influence of Life Stress on Depression: Moderation by a Polymorphism in the 5-HTT Gene. *Science* **301**:386–389. [3]
- Castner, S. A., J. L. Arriza, J. C. Roberts, et al. 2010. Reversal of Ketamine-Induced Working Memory Impairments by the GABA $\alpha$ 2/3 Agonist TPA023. *Biol. Psychiatry* **67**:998–1001. [16]

- Castner, S. A., N. V. Murthy, K. Ridler, et al. 2014. Relationship between Glycine Transporter 1 Inhibition as Measured with Positron Emission Tomography and Changes in Cognitive Performances in Nonhuman Primates. *Neuropsychopharmacology* **39**:2742–2749. [16]
- Castner, S. A., G. N. Smagin, T. M. Piser, et al. 2011. Immediate and Sustained Improvements in Working Memory after Selective Stimulation of Alpha7 Nicotinic Acetylcholine Receptors. *Biol. Psychiatry* **69**:12–18. [16]
- Cavanagh, J. F., T. V. Wiecki, M. X. Cohen, et al. 2011. Subthalamic Nucleus Stimulation Reverses Mediofrontal Influence over Decision Threshold. *Nat. Neurosci.* **14**:1462–1467. [5, 6]
- CDC. 2014. Fatal Injury Data. Web-Based Injury Statistics Query and Reporting System. [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html) (accessed March 2, 2016). [3]
- Ceaser, A. E., T. E. Goldberg, M. F. Egan, et al. 2008. Set-Shifting Ability and Schizophrenia: A Marker of Clinical Illness or an Intermediate Phenotype? *Biol. Psychiatry* **64**:782–788. [4]
- Cetin, M. S., F. Christensen, C. C. Abbott, et al. 2014. Thalamus and Posterior Temporal Lobe Show Greater Inter-Network Connectivity at Rest and across Sensory Paradigms in Schizophrenia. *NeuroImage* **97**:117–126. [16]
- Cha, C. B., S. Najmi, J. M. Park, C. T. Finn, and M. K. Nock. 2010. Attentional Bias toward Suicide-Related Stimuli Predicts Suicidal Behavior. *J. Abnorm. Psychol.* **119**:616–622. [3]
- Chan, M. K., M.-O. Krebs, D. Cox, et al. 2015. Development of a Blood-Based Molecular Biomarker Test for Identification of Schizophrenia before Disease Onset. *Transl. Psychiatry* **5**:e601. [3]
- Charney, D. S., D. H. Barlow, K. Botteron, et al. 2002. Neuroscience Research Agenda to Guide Development of a Pathophysiologically Based Classification System. In: A Research Agenda for DSM-V, ed. D. J. Kupfer et al., pp. 31–84. Washington, D.C.: American Psychiatric Association. [8]
- Chekroud, A. M., and J. H. Krystal. 2015. Personalised Pharmacotherapy: An Interim Solution for Antidepressant Treatment? *BMJ* **350**:h2502. [11]
- Chen, C., T. Takahashi, S. Nakagawa, T. Inoue, and I. Kusumi. 2015. Reinforcement Learning in Depression: A Review of Computational Research. *Neurosci. Biobehav. Rev.* **55**:247–267. [3]
- Cheney, D. L., and R. M. Seyfarth. 1990. How Monkeys See the World. Chicago: Univ. of Chicago Press. [2]
- Cheng, G. L., J. C. Tang, F. W. Li, E. Y. Lau, and T. M. Lee. 2012. Schizophrenia and Risk-Taking: Impaired Reward but Preserved Punishment Processing. *Schizophr. Res.* **136**:122–127. [4]
- Chiu, C. Q., G. Lur, T. M. Morse, et al. 2013. Compartmentalization of Gabaergic Inhibition by Dendritic Spines. *Science* **340**:759–762. [16]
- Chiu, P. H., T. M. Lohrenz, and P. R. Montague. 2008. Smokers' Brains Compute, but Ignore, a Fictive Error Signal in a Sequential Investment Task. *Nat. Neurosci.* **11**:514–520. [2]
- Cho, K. K., R. Hoch, A. T. Lee, et al. 2015. Gamma Rhythms Link Prefrontal Interneuron Dysfunction with Cognitive Inflexibility in Dlx5/6(+/-) Mice. *Neuron* **85**:1332–1343. [1]
- Cho, R. Y., R. O. Konecky, and C. S. Carter. 2006. Impairments in Frontal Cortical Gamma Synchrony and Cognitive Control in Schizophrenia. *PNAS* **103**:19878–19883. [4]

- Chu, C. M., S. D. Thomas, J. R. Ogloff, and M. Daffern. 2013. The Short- to Medium-Term Predictive Accuracy of Static and Dynamic Risk Assessment Measures in a Secure Forensic Hospital. *Assessment* **20**:230–241. [5]
- Chubb, J. E., N. J. Bradshaw, D. C. Soares, D. J. Porteous, and J. K. Millar. 2008. The DISC Locus in Psychiatric Illness. *Mol. Psychiatry* **13**:36–64. [3]
- Chudasama, Y., and T. W. Robbins. 2004. Psychopharmacological Approaches to Modulating Attention in the Five-Choice Serial Reaction Time Task: Implications for Schizophrenia. *Psychopharmacology (Berl.)* **174**:86–98. [4]
- Churchland, P., and T. J. Sejnowski. 1994. The Computational Brain. Cambridge, MA: MIT Press. [2]
- Cicchetti, D., and F. Rogosch. 1996. Equifinality and Multifinality in Developmental Psychopathology. *Dev. Psychopathol.* **8**:597–600. [10]
- Cicero, D. C., E. A. Martin, T. M. Becker, and J. G. Kerns. 2014. Reinforcement Learning Deficits in People with Schizophrenia Persist after Extended Trials. *Psychiatry Res.* **220**:760–764. [4]
- Cipriani, A., T. A. Furukawa, G. Salanti, et al. 2009. Comparative Efficacy and Acceptability of 12 New-Generation Antidepressants: A Multiple-Treatments Meta-Analysis. *Lancet* **373**:746–758. [15]
- Clark, L. 2010. Decision-Making During Gambling: An Integration of Cognitive and Psychobiological Approaches. *Phil. Trans. R. Soc. B* **365**:319–330. [12]
- Clark, L. A. 2005. Temperament as a Unifying Concept in the Study of Personality and Psychopathology. *J. Abnorm. Psychol.* **114**:505–521. [8]
- Clark, L. A., D. Watson, and S. Reynolds. 1995. Diagnosis and Classification of Psychopathology: Challenges to the Current System and Future Directions. *Annu. Rev. Psychol.* **46**:121–153. [8]
- Clarke, D. E., W. E. Narrow, D. A. Regier, et al. 2013. DSM-5 Field Trials in the United States and Canada, Part I: Study Design, Sampling Strategy, Implementation, and Analytic Approaches. *Am. J. Psychiatry* **170**:43–58. [7]
- Clementz, B. A., J. A. Sweeney, J. P. Hamm, et al. 2016. Identification of Distinct Psychosis Biotypes Using Brain-Based Biomarkers. *Am. J. Psychiatry* **173**:373–384. [5, 17]
- Cloninger, C. R. 1998. A New Conceptual Paradigm from Genetics and Psychobiology for the Science of Mental Health. *Aust. NZ J. Psychiatry* **33**:174–186. [8]
- Coan, J. A., and J. J. Allen. 2007. Handbook of Emotion Elicitation and Assessment. Oxford Univ. Press. [15]
- Cohen, J. 1983. The Cost of Dichotomization. *Appl. Psychol. Measurement* **7**:249–253. [8]
- Cohen, J. D., D. M. Barch, C. Carter, and D. Servan-Schreiber. 1999. Context-Processing Deficits in Schizophrenia: Converging Evidence from Three Theoretically Motivated Cognitive Tasks. *J. Abnorm. Psychol.* **108**:120–133. [4]
- Cohen, J. D., T. S. Braver, and J. W. Brown. 2002. Computational Perspectives on Dopamine Function in Prefrontal Cortex. *Curr. Opin. Neurobiol.* **12**:223–229. [5, 6]
- Cohen, J. D., S. M. McClure, and A. J. Yu. 2007. Should I Stay or Should I Go? How the Human Brain Manages the Trade-Off between Exploitation and Exploration. *Phil. Trans. R. Soc. B* **362**:933–942. [6]
- Cohen, J. D., and D. Servan-Schreiber. 1992. Context, Cortex, and Dopamine: A Connectionist Approach to Behavior and Biology in Schizophrenia. *Psychol. Rev.* **99**:45–77. [5]
- Cohen, J. Y., M. W. Amoroso, and N. Uchida. 2015. Serotonergic Neurons Signal Reward and Punishment on Multiple Timescales. *eLife* **4**: [15]

- Collins, A. G. E., J. K. Brown, J. M. Gold, J. A. Waltz, and M. J. Frank. 2014. Working Memory Contributions to Reinforcement Learning Impairments in Schizophrenia. *J. Neurosci.* **34**:13747–13756. [4]
- Collins, A. G. E., and M. J. Frank. 2012. How Much of Reinforcement Learning Is Working Memory, Not Reinforcement Learning? A Behavioral, Computational, and Neurogenetic Analysis. *Eur. J. Neurosci.* **35**:1024–1035. [6]
- . 2013. Cognitive Control over Learning: Creating, Clustering and Generalizing Task-Set Structure. *Psychol. Rev.* **120**:190–229. [6, 12]
- . 2014. Opponent Actor Learning (OpAL): Modeling Interactive Effects of Striatal Dopamine on Reinforcement Learning and Choice Incentive. *Psychol. Rev.* **121**:337–366. [3, 5, 6]
- Colzato, L. S., W. P. M. Van Den Wildenberg, and B. Hommel. 2007. Impaired Inhibitory Control in Recreational Cocaine Users. *PLoS One* **2**:e1143. [14]
- Conant, R. C., and R. W. Ashby. 1970. Every Good Regulator of a System Must Be a Model of That System. *Int. J. Syst. Sci.* **1**:89–97. [7]
- Conklin, C. A., and S. T. Tiffany. 2002. Applying Extinction Research and Theory to Cue-Exposure Addiction Treatments. *Addiction* **97**:155–167. [5]
- CONVERGE Consortium. 2015. Sparse Whole-Genome Sequencing Identifies Two Loci for Major Depressive Disorder. *Nature* **523**:588–591. [3]
- Cook, N. R. 2007. Use and Misuse of the Receiver Operating Characteristic Curve in Risk Prediction. *Circulation* **115**:928–935. [14]
- Cools, R. 2011. Dopaminergic Control of the Striatum for High-Level Cognition. *Curr. Opin. Neurobiol.* **21**:402–407. [4]
- Cools, R., and M. D’Esposito. 2011. Inverted-U-Shaped Dopamine Actions on Human Working Memory and Cognitive Control. *Biol. Psychiatry* **69**:e113–125. [4, 6]
- Cools, R., K. Nakamura, and N. D. Daw. 2011. Serotonin and Dopamine: Unifying Affective, Activational, and Decision Functions. *Neuropsychopharmacology* **36**:98–113. [15]
- Cooray, G. K., B. Sengupta, P. Douglas, et al. 2015. Characterising Seizures in Anti-NMDA-Receptor Encephalitis with Dynamic Causal Modelling. *NeuroImage* **118**:508–519. [12]
- Corlett, P. R., G. D. Honey, J. H. Krystal, and P. C. Fletcher. 2011. Glutamatergic Model Psychoses: Prediction Error, Learning, and Inference. *Neuropsychopharmacology* **36**:294–315. [12]
- Cortes, C., and V. Vapnik. 1995. Support-Vector Networks. *Mach. Learn.* **20**:273–297. [5]
- Cottam, J. C., S. L. Smith, and M. Hausser. 2013. Target-Specific Effects of Somatostatin-Expressing Interneurons on Neocortical Visual Processing. *J. Neurosci.* **33**:19567–19578. [16]
- Courtet, P., I. I. Gottesman, F. Jollant, and T. D. Gould. 2011. The Neuroscience of Suicidal Behaviors: What Can We Expect from Endophenotype Strategies? *Transl. Psychiatry* **1**:e7. [3]
- Cox, R. T. 1946. Probability, Frequency and Reasonable Expectation. *Am. J. Phys.* **14**:1–13. [7, 10]
- Cox, S. M. L., M. J. Frank, K. Larcher, et al. 2015. Striatal D1 and D2 Signaling Differentially Predict Learning from Positive and Negative Outcomes. *NeuroImage* **109**:95–101. [12]
- Craddock, N., and M. J. Owen. 2010. The Kraepelinian Dichotomy: Going, Going...But Still Not Gone. *Br. J. Psychiatry* **196**:92–95. [7]
- Craske, M. G., K. Kircanski, M. Zelikowsky, et al. 2008. Optimizing Inhibitory Learning During Exposure Therapy. *Behav. Res. Ther.* **46**:5–27. [5]

- Critchley, H., and A. Seth. 2012. Will Studies of Macaque Insula Reveal the Neural Mechanisms of Self-Awareness? *Neuron* **74**:423–426. [12]
- Crockett, M. J., L. Clark, A. M. Apergis-Schoute, S. Morein-Zamir, and T. W. Robbins. 2012. Serotonin Modulates the Effects of Pavlovian Aversive Predictions on Response Vigor. *Neuropsychopharmacology* **37**:2244–2252. [15]
- Cross-Disorder Group of the Psychiatric Genomics Consortium, S. H. Lee, S. Ripke, et al. 2013. Genetic Relationship between Five Psychiatric Disorders Estimated from Genome-Wide Snps. *Nat. Genet.* **45**:984–994. [3]
- Curtis, D., A. E. Vine, A. McQuillin, et al. 2011. Case-Case Genome-Wide Association Analysis Shows Markers Differentially Associated with Schizophrenia and Bipolar Disorder and Implicates Calcium Channel Genes. *Psychiatr. Genet.* **21**:1–4. [1]
- Cuthbert, B. N. 2014a. Research Domain Criteria: Toward Future Psychiatric Nosology. *Asian J. Psychiatry* **7**:4–5. [4]
- . 2014b. Translating Intermediate Phenotypes to Psychopathology: The NIMH Research Domain Criteria. *Psychophysiology* **51**:1205–1206. [16]
- Cuthbert, B. N., and T. R. Insel. 2010. The Data of Diagnosis: New Approaches to Psychiatric Classification. *Psychiatry* **73**:311–314. [8, 17]
- Cuthbert, B. N., and M. J. Kozak. 2013. Constructing Constructs for Psychopathology: The NIMH Research Domain Criteria. *J. Abnorm. Psychol.* **122**:928–937. [4, 9]
- Dahle, K. P. 2006. Strengths and Limitations of Actuarial Prediction of Criminal Reoffence in a German Prison Sample: A Comparative Study of LSI-R, HCR-20 and PCL-R. *Int. J. Law Psychiatry* **29**:431–442. [5]
- Dahlem, M. A., and E. P. Chronicle. 2004. A Computational Perspective on Migraine Aura. *Prog. Neurobiol.* **74**:351–361. [2]
- Dalley, J. W., R. N. Cardinal, and T. W. Robbins. 2004. Prefrontal Executive and Cognitive Functions in Rodents: Neural and Neurochemical Substrates. *Neurosci. Biobehav. Rev.* **28**:771–784. [2]
- Dapretto, M., M. S. Davies, and J. H. Pfeifer. 2006. Understanding Emotions in Others: Mirror Neuron Dysfunction in Children with Autism Spectrum Disorders. *Nat. Neurosci.* **9**:28–30. [2]
- Datta, A., D. Truong, P. Minhas, L. C. Parra, and M. Bikson. 2012. Inter-Individual Variation During Transcranial Direct Current Stimulation and Normalization of Dose Using MRI-Derived Computational Models. *Front. Psychiatry* **3**:91. [5]
- Datta, D., D. Arion, J. P. Corradi, and D. A. Lewis. 2015. Altered Expression of CDC42 Signaling Pathway Components in Cortical Layer 3 Pyramidal Cells in Schizophrenia. *Biol. Psychiatry* **78**:775–785. [16]
- Daunizeau, J., O. David, and K. E. Stephan. 2011a. Dynamic Causal Modelling: A Critical Review of the Biophysical and Statistical Foundations. *NeuroImage* **58**:312–322. [11]
- Daunizeau, J., H. E. M. den Ouden, M. Pessiglione, et al. 2010. Observing the Observer (II): Deciding When to Decide. *PLoS One* **5**:e15555. [7]
- Daunizeau, J., K. Preuschoff, K. J. Friston, and K. E. Stephan. 2011b. Optimizing Experimental Design for Comparing Models of Brain Function. *PLoS Comput. Biol.* **7**:e1002280. [12]
- Davidson, L., and T. H. McGlashan. 1997. The Varied Outcomes of Schizophrenia. *Can. J. Psychiatry* **42**:34–43. [16]
- Davidson, L., M. J. O'Connell, J. Tondora, M. Lawless, and A. C. Evans. 2005. Recovery in Serious Mental Illness: A New Wine or Just a New Bottle? *Prof. Psychol. Res. Pr.* **36**:480. [12]

- Davidson, M., P. D. Harvey, P. Powchik, et al. 1995. Severity of Symptoms in Chronically Institutionalized Geriatric Schizophrenic Patients. *Am. J. Psychiatry* **152**: 197–207. [16]
- Davis, G. W. 2006a. Homeostatic Control of Neural Activity: From Phenomenology to Molecular Design. *Annu. Rev. Neurosci.* **29**:307–323. [16]
- Davis, M. J. 2006b. Low-Dimensional Manifolds in Reaction-Diffusion Equations. 1. Fundamental Aspects. *J. Phys. Chem. A* **110**:5235–5256. [11]
- Daw, N. D., and P. Dayan. 2014. The Algorithmic Anatomy of Model-Based Evaluation. *Phil. Trans. R. Soc. B* **369**: [15]
- Daw, N. D., S. J. Gershman, B. Seymour, P. Dayan, and R. J. Dolan. 2011. Model-Based Influences on Humans' Choices and Striatal Prediction Errors. *Neuron* **69**:1204–1215. [4, 6, 15]
- Daw, N. D., Y. Niv, and P. Dayan. 2005. Uncertainty-Based Competition between Prefrontal and Dorsolateral Striatal Systems for Behavioral Control. *Nat. Neurosci.* **8**:1704–1711. [6, 15]
- Daw, N. D., J. P. O'Doherty, P. Dayan, B. Seymour, and R. J. Dolan. 2006. Cortical Substrates for Exploratory Decisions in Humans. *Nature* **441**:876–879. [6, 15]
- Daw, N. D., and D. S. Touretzky. 2002. Long-Term Reward Prediction in TD Models of the Dopamine System. *Neural Comput.* **14**:2567–2583. [14]
- Day, L. B., M. Weisend, R. J. Sutherland, and T. Schallert. 1999. The Hippocampus Is Not Necessary for a Place Response but May Be Necessary for Pliancy. *Behav. Neurosci.* **113**:914–924. [2]
- Dayan, P. 2009. Dopamine, Reinforcement Learning, and Addiction. *Pharmacopsychiatry* **42(Suppl 1)**:S56–65. [4]
- . 2012. Twenty-Five Lessons from Computational Neuromodulation. *Neuron* **76**:240–256. [13, 15]
- Dayan, P., and L. F. Abbot. 2001. Theoretical Neuroscience: Computational and Mathematical Modeling of Neural Systems. Cambridge, MA: MIT Press. [13]
- Dayan, P., and B. W. Balleine. 2002. Reward, Motivation, and Reinforcement Learning. *Neuron* **36**:285–298. [10, 15]
- Dayan, P., and K. C. Berridge. 2014. Model-Based and Model-Free Pavlovian Reward Learning: Revaluation, Revision, and Revelation. *Cogn. Affect. Behav. Neurosci.* **14**:473–492. [10]
- Dayan, P., and N. D. Daw. 2008. Decision Theory, Reinforcement Learning, and the Brain. *Cogn. Affect. Behav. Neurosci.* **8**:429–453. [13]
- Dayan, P., G. E. Hinton, R. M. Neal, and R. S. Zemel. 1995. The Helmholtz Machine. *Neural Comput.* **7**:889–904. [7]
- Dayan, P., and Q. J. M. Huys. 2008. Serotonin, Inhibition, and Negative Mood. *PLoS Comput. Biol.* **4**:e4. [12, 15]
- Dayan, P., and Q. J. M. Huys. 2009. Serotonin in Affective Control. *Annu. Rev. Neurosci.* **32**:95–126. [15]
- Dayan, P., and Q. J. M. Huys. 2015. Serotonin's Many Meanings Elude Simple Theories. *eLife* **4**: [12, 15]
- Dayan, P., S. Kakade, and P. R. Montague. 2000. Learning and Selective Attention. *Nat. Neurosci.* **3**:1218–1223. [13]
- Dayan, P., and Y. Niv. 2008. Reinforcement Learning: The Good, the Bad, and the Ugly. *Curr. Opin. Neurobiol.* **18**:185–196. [13]
- Dayan, P., and M. E. Walton. 2012. A Step-by-Step Guide to Dopamine. *Biol. Psychiatry* **71**:842–843. [4]

- Deakin, J. F. W., and F. G. Graeff. 1991. 5-HT and Mechanisms of Defence. *J. Psychopharmac.* **5**:305–316. [15]
- DeBattista, C., G. Kinrys, D. Hoffman, et al. 2011. The Use of Referenced-EEG (rEEG) in Assisting Medication Selection for the Treatment of Depression. *J. Psychiatr. Res.* **45**:64–75. [15]
- de Boer, R. J., and A. S. Perelson. 1991. Size and Connectivity as Emergent Properties of a Developing Immune Network. *J. Theor. Biol.* **149**:381–424. [11]
- Decker, H. 2007. How Kraepelin Was Kraepelin? Joe Kraepelinian Are the Neo-Kraepelinians? From Emil Kraepelin to DSM-III. *Hist. Psychiatry* **18**:337–360. [8]
- Deco, G., V. K. Jirsa, P. A. Robinson, M. Breakspear, and K. J. Friston. 2008. The Dynamic Brain: From Spiking Neurons to Neural Masses and Cortical Fields. *PLoS Comput. Biol.* **4**:e1000092. [12]
- Deco, G., and M. L. Kringelbach. 2014. Great Expectations: Using Whole-Brain Computational Connectomics for Understanding Neuropsychiatric Disorders. *Neuron* **84**:892–905. [12]
- Deco, G., A. Ponce-Alvarez, D. Mantini, et al. 2013. Resting-State Functional Connectivity Emerges from Structurally and Dynamically Shaped Slow Linear Fluctuations. *J. Neurosci.* **33**:11239–11252. [16]
- de Koning, P. P., M. Figee, P. van den Munckhof, P. R. Schuurman, and D. Denys. 2011. Current Status of Deep Brain Stimulation for Obsessive-Compulsive Disorder: A Clinical Review of Different Targets. *Curr. Psychiatry Rep.* **13**:274–282. [10]
- de la Fuente-Sandoval, C., P. Leon-Ortiz, R. Favila, et al. 2011. Higher Levels of Glutamate in the Associative-Striatum of Subjects with Prodromal Symptoms of Schizophrenia and Patients with First-Episode Psychosis. *Neuropsychopharmacology* **36**: 1781–1791. [16]
- Demjaha, A., A. Egerton, R. M. Murray, et al. 2014. Antipsychotic Treatment Resistance in Schizophrenia Associated with Elevated Glutamate Levels but Normal Dopamine Function. *Biol. Psychiatry* **75**:e11–13. [16]
- Demjaha, A., R. M. Murray, P. K. McGuire, S. Kapur, and O. D. Howes. 2012. Dopamine Synthesis Capacity in Patients with Treatment-Resistant Schizophrenia. *Am. J. Psychiatry* **169**:1203–1210. [4]
- Deng, Z. D., S. H. Lisanby, and A. V. Peterchev. 2013. Controlling Stimulation Strength and Focality in Electroconvulsive Therapy via Current Amplitude and Electrode Size and Spacing: Comparison with Magnetic Seizure Therapy. *J. ECT* **29**:325–335. [5]
- Der-Avakian, A., and A. Markou. 2012. The Neurobiology of Anhedonia and Other Reward-Related Deficits. *Trends Neurosci.* **35**:68–77. [14]
- DeRubeis, R. J., Z. D. Cohen, N. R. Forand, et al. 2014. The Personalized Advantage Index: Translating Research on Prediction into Individualized Treatment Recommendations. A Demonstration. *PLoS One* **9**:e83875. [15]
- DeRubeis, R. J., L. A. Gelfand, T. Z. Tang, and A. D. Simons. 1999. Medications versus Cognitive Behavior Therapy for Severely Depressed Outpatients: Mega-Analysis of Four Randomized Comparisons. *Am. J. Psychiatry* **156**:1007–1013. [15]
- DeRubeis, R. J., G. J. Siegle, and S. D. Hollon. 2008. Cognitive Therapy versus Medication for Depression: Treatment Outcomes and Neural Mechanisms. *Nat. Rev. Neurosci.* **9**:788–796. [15]
- Deserno, L., Q. J. M. Huys, R. Boehme, et al. 2015. Ventral Striatal Dopamine Reflects Behavioral and Neural Signatures of Model-Based Control During Sequential Decision Making. *PNAS* **112**:1595–1600. [15]

- Deumens, R., A. Blokland, and J. Prickaerts. 2002. Modeling Parkinson's Disease in Rats: An Evaluation of 6-OHDA Lesions of the Nigrostriatal Pathway. *Exp. Neurol.* **175**:303–317. [2]
- Dezfouli, A., and B. W. Balleine. 2012. Habits, Action Sequences and Reinforcement Learning. *Eur. J. Neurosci.* **35**:1036–1051. [10]
- Diaconescu, A. O., C. Mathys, L. A. E. Weber, et al. 2014. Inferring on the Intentions of Others by Hierarchical Bayesian Learning. *PLoS Comput. Biol.* **10**:e1003810. [7]
- Dickman, D. K., and G. W. Davis. 2009. The Schizophrenia Susceptibility Gene Dysbindin Controls Synaptic Homeostasis. *Science* **326**:1127–1130. [16]
- Dickson, H., K. R. Laurens, A. E. Cullen, and S. Hodgins. 2012. Meta-Analyses of Cognitive and Motor Function in Youth Aged 16 Years and Younger Who Subsequently Develop Schizophrenia. *Psychol. Med.* **42**:743–755. [10]
- Dima, D., D. E. Dietrich, W. Dillo, and H. M. Emrich. 2010. Impaired Top-Down Processes in Schizophrenia: A Dem Study of ERPs. *NeuroImage* **52**:824–832. [12]
- Dima, D., J. P. Roiser, D. E. Dietrich, et al. 2009. Understanding Why Patients with Schizophrenia Do Not Perceive the Hollow-Mask Illusion Using Dynamic Causal Modelling. *NeuroImage* **46**:1180–1186. [12]
- Docx, L., J. de la Asuncion, B. Sabbe, et al. 2015. Effort Discounting and Its Association with Negative Symptoms in Schizophrenia. *Cogn. Neuropsychiatry* **20**:172–185. [4]
- Dolan, R. J., and P. Dayan. 2013. Goals and Habits in the Brain. *Neuron* **80**:312–325. [10]
- Doll, B. B., K. D. Duncan, D. A. Simon, D. Shohamy, and N. D. Daw. 2015. Model-Based Choices Involve Prospective Neural Activity. *Nat. Neurosci.* **18**:767–772. [15]
- Doll, B. B., D. A. Simon, and N. D. Daw. 2012. The Ubiquity of Model-Based Reinforcement Learning. *Curr. Opin. Neurobiol.* **22**:1075–1081. [4, 6]
- Dorph-Petersen, K. A., J. N. Pierri, J. M. Perel, et al. 2005. The Influence of Chronic Exposure to Antipsychotic Medications on Brain Size before and after Tissue Fixation: A Comparison of Haloperidol and Olanzapine in Macaque Monkeys. *Neuropharmacology* **30**:1649–1661. [16]
- Douglas, R. J. 1995. News and Views: The Bee's Needs. *Nature* **377**:683–684. [13]
- Douglas, R. J., and K. A. Martin. 1991. A Functional Microcircuit for Cat Visual Cortex. *J. Physiology* **440**:735–769. [7]
- Downar, J., J. Geraci, T. V. Salomons, et al. 2014. Anhedonia and Reward-Circuit Connectivity Distinguish Nonresponders from Responders to Dorsomedial Prefrontal Repetitive Transcranial Magnetic Stimulation in Major Depression. *Biol. Psychiatry* **76**:176–185. [3]
- Downing, A. M., B. J. Kinon, B. A. Millen, et al. 2014. A Double-Blind, Placebo-Controlled Comparator Study of LY2140023 Monohydrate in Patients with Schizophrenia. *BMC Psychiatry* **14**:351. [16]
- Doya, K. 2000. Reinforcement Learning in Continuous Time and Space. *Neural Comput.* **12**:219–245. [6]
- Drevets, W. C. 2000. Functional Anatomical Abnormalities in Limbic and Prefrontal Cortical Structures in Major Depression. *Prog. Brain Res.* **126**:413–431. [3]
- Driesen, N. R., G. McCarthy, Z. Bhagwagar, et al. 2013. Relationship of Resting Brain Hyperconnectivity and Schizophrenia-Like Symptoms Produced by the NMDA Receptor Antagonist Ketamine in Humans. *Mol. Psychiatry* **18**:1199–1204. [16]
- D'Souza, D. C., W. M. Abi-Saab, S. Madonick, et al. 2005. Delta-9-Tetrahydrocannabinol Effects in Schizophrenia: Implications for Cognition, Psychosis, and Addiction. *Biol. Psychiatry* **57**:594–608. [16]

- D'Souza, D. C., E. Perry, L. MacDougall, et al. 2004. The Psychotomimetic Effects of Intravenous Delta-9-Tetrahydrocannabinol in Healthy Individuals: Implications for Psychosis. *Neuropsychopharmacology* **29**:1558–1572. [16]
- Du, Y., and A. A. Grace. 2013. Peripubertal Diazepam Administration Prevents the Emergence of Dopamine System Hyperresponsivity in the MAM Developmental Disruption Model of Schizophrenia. *Neuropsychopharmacology* **38**:1881–1888. [3]
- Duan, A. R., C. Varela, Y. Zhang, et al. 2015. Delta Frequency Optogenetic Stimulation of the Thalamic Nucleus Reuniens Is Sufficient to Produce Working Memory Deficits: Relevance to Schizophrenia. *Biol. Psychiatry* **77**:1098–1107. [16]
- Dunlop, B. W., P. Holland, W. Bao, P. T. Ninan, and M. B. Keller. 2012. Recovery and Subsequent Recurrence in Patients with Recurrent Major Depressive Disorder. *J. Psychiatr. Res.* **46**:708–715. [15]
- Durstewitz, D., and T. Gabriel. 2007. Dynamical Basis of Irregular Spiking in NMDA-Driven Prefrontal Cortex Neurons. *Cereb. Cortex* **17**:894–908. [5]
- Durstewitz, D., and J. K. Seamans. 2002. The Computational Role of Dopamine D1 Receptors in Working Memory. *Neural Netw.* **15**:561–572. [5]
- . 2008. The Dual-State Theory of Prefrontal Cortex Dopamine Function with Relevance to Catechol-O-Methyltransferase Genotypes and Schizophrenia. *Biol. Psychiatry* **64**:739–749. [2, 5, 6]
- Durstewitz, D., J. K. Seamans, and T. J. Sejnowski. 2000. Dopamine-Mediated Stabilization of Delay-Period Activity in a Network Model of Prefrontal Cortex. *J. Neurophysiol.* **83**:1733–1750. [5]
- Durstewitz, D., N. M. Vittoz, S. B. Floresco, and J. K. Seamans. 2010. Abrupt Transitions between Prefrontal Neural Ensemble States Accompany Behavioral Transitions During Rule Learning. *Neuron* **66**:438–448. [5]
- Dykshoorn, K. L. 2014. Trauma-Related Obsessive-Compulsive Disorder: A Review. *Health Psychol. Behav. Med.* **2**:517–528. [10]
- Eaton, R. C., ed. 1984. Neural Mechanisms of Startle Behavior. New York: Springer. [2]
- Eaton, W. W., R. Thara, B. Federman, B. Melton, and K. Y. Liang. 1995. Structure and Course of Positive and Negative Symptoms in Schizophrenia. *Arch. Gen. Psychiatry* **52**:127–134. [3]
- Edwards, B. G., D. M. Barch, and T. S. Braver. 2010. Improving Prefrontal Cortex Function in Schizophrenia through Focused Training of Cognitive Control. *Front. Hum. Neurosci.* **4**:32. [4]
- Edwards, M. J., R. A. Adams, H. R. Brown, I. Pareés, and K. J. Friston. 2012. A Bayesian Account of "Hysteria." *Brain* **135**:3495–3512. [7]
- Egerton, A., S. Brugger, M. Raffin, et al. 2012. Anterior Cingulate Glutamate Levels Related to Clinical Status Following Treatment in First-Episode Schizophrenia. *Neuropsychopharmacology* **37**:2515–2521. [3]
- Egerton, A., C. A. Chaddock, T. T. Winton-Brown, et al. 2013. Presynaptic Striatal Dopamine Dysfunction in People at Ultra-High Risk for Psychosis: Findings in a Second Cohort. *Biol. Psychiatry* **74**:106–112. [4]
- Eggan, S. M., D. S. Melchitzky, S. R. Sesack, K. N. Fish, and D. A. Lewis. 2010. Relationship of Cannabinoid CB1 Receptor and Cholecystokinin Immunoreactivity in Monkey Dorsolateral Prefrontal Cortex. *Neuroscience* **169**:1651–1661. [16]
- Eichenbaum, H., C. Stewart, and R. G. M. Morris. 1990. Hippocampal Representation in Place Learning. *J. Neurosci.* **10**:3531–3542. [2]
- El-Mallakh, R. S., and B. Briscoe. 2012. Studies of Long-Term Use of Antidepressants: How Should the Data from Them Be Interpreted? *CNS Drugs* **26**:97–109. [15]

- Elia, J., X. Gai, H. M. Xie, et al. 2010. Rare Structural Variants Found in Attention-Deficit Hyperactivity Disorder Are Preferentially Associated with Neurodevelopmental Genes. *Mol. Psychiatry* **15**:637–646. [3]
- Elliott, R., P. J. McKenna, T. W. Robbins, and B. J. Sahakian. 1995. Neuropsychological Evidence for Frontostriatal Dysfunction in Schizophrenia. *Psychol. Med.* **25**:619–630. [4]
- Ellison-Wright, I., D. C. Glahn, A. R. Laird, S. M. Thelen, and E. Bullmore. 2008. The Anatomy of First-Episode and Chronic Schizophrenia: An Anatomical Likelihood Estimation Meta-Analysis. *Am. J. Psychiatry* **165**:1015–1023. [4]
- Elvevåg, B., J. Duncan, and P. J. McKenna. 2000. The Use of Cognitive Context in Schizophrenia: An Investigation. *Psychol. Med.* **30**:885–897. [4]
- Eppinger, B., N. W. Schuck, L. E. Nystrom, and J. D. Cohen. 2013. Reduced Striatal Responses to Reward Prediction Errors in Older Compared with Younger Adults. *J. Neurosci.* **33**:9905–9912. [12]
- Eshel, N., and J. P. Roiser. 2010. Reward and Punishment Processing in Depression. *Biol. Psychiatry* **68**:118–124. [14]
- Esslinger, C., S. Englisch, D. Inta, et al. 2012. Ventral Striatal Activation During Attribution of Stimulus Saliency and Reward Anticipation Is Correlated in Unmedicated First Episode Schizophrenia Patients. *Schizophr. Res.* **140**:114–121. [4]
- Evans, M. D., S. D. Hollon, R. J. DeRubeis, et al. 1992. Differential Relapse Following Cognitive Therapy and Pharmacotherapy for Depression. *Arch. Gen. Psychiatry* **49**:802–808. [15]
- Everitt, B. J., and T. W. Robbins. 2005. Neural Systems of Reinforcement for Drug Addiction: From Actions to Habits to Compulsion. *Nat. Neurosci.* **8**:1481–1489. [12]
- \_\_\_\_\_. 2013. From the Ventral to the Dorsal Striatum: Devolving Views of Their Roles in Drug Addiction. *Neurosci. Biobehav. Rev.* **37**:1946–1954. [12]
- Fani, N., T. Z. King, T. Jovanovic, et al. 2012. White Matter Integrity in Highly Traumatized Adults with and without Post-Traumatic Stress Disorder. *Neuropsychopharmacology* **37**:2740–2746. [3]
- Farb, N. A. S., A. K. Anderson, R. T. Bloch, and Z. V. Segal. 2011. Mood-Linked Responses in Medial Prefrontal Cortex Predict Relapse in Patients with Recurrent Unipolar Depression. *Biol. Psychiatry* **70**:366–372. [15]
- Farb, N. A. S., J. A. Irving, A. K. Anderson, and Z. V. Segal. 2015. A Two-Factor Model of Relapse/Recurrence Vulnerability in Unipolar Depression. *J. Abnorm. Psychol.* **124**:38–53. [15]
- Farrar, A. M., K. N. Segovia, P. A. Randall, et al. 2010. Nucleus Accumbens and Effort-Related Functions: Behavioral and Neural Markers of the Interactions between Adenosine A2A and Dopamine D2 Receptors. *Neuroscience* **166**:1056–1067. [4]
- Fatouros-Bergman, H., S. Cervenka, L. Flyckt, G. Edman, and L. Farde. 2014. Meta-Analysis of Cognitive Performance in Drug-Naïve Patients with Schizophrenia. *Schizophr. Res.* **158**:156–162. [4]
- Fava, G. A., A. Gatti, C. Belaise, J. Guidi, and E. Offidani. 2015. Withdrawal Symptoms after Selective Serotonin Reuptake Inhibitor Discontinuation: A Systematic Review. *Psychother. Psychosom.* **84**:72–81. [15]
- Fava, G. A., C. Ruini, C. Rafanelli, et al. 2004. Six-Year Outcome of Cognitive Behavior Therapy for Prevention of Recurrent Depression. *Am. J. Psychiatry* **161**:1872–1876. [15]
- Fazzari, P., A. Snellinx, V. Sabanov, et al. 2014. Cell Autonomous Regulation of Hippocampal Circuitry via Aph1b-G-Secretase/Neuregulin 1 Signalling. *eLife* **3**:e02196. [3]

- Feighner, J. P., E. Robins, S. B. Guze, et al. 1972. Diagnostic Criteria for Use in Psychiatric Research. *Arch. Gen. Psychiatry* **26**:57–63. [9]
- Feinberg, I. 1982. Schizophrenia: Caused by a Fault in Programmed Synaptic Elimination During Adolescence? *J. Psychiatr. Res.* **17**:319–334. [3]
- Felmingham, K. L., C. Dobson-Stone, P. R. Schofield, G. J. Quirk, and R. A. Bryant. 2013. The Brain-Derived Neurotrophic Factor Val66Met Polymorphism Predicts Response to Exposure Therapy in Posttraumatic Stress Disorder. *Biol. Psychiatry* **73**:1059–1063. [3]
- Fergusson, D. M., and L. J. Horwood. 1995. Predictive Validity of Categorically and Dimensionally Scored Measures of Disruptive Childhood Behaviors. *J. Am. Acad. Child Adolesc. Psychiatry* **34**:477–485; discussion 485–477. [10]
- Fergusson, D. M., L. J. Horwood, E. M. Ridder, and A. L. Beautrais. 2005. Subthreshold Depression in Adolescence and Mental Health Outcomes in Adulthood. *Arch. Gen. Psychiatry* **62**:66–72. [10]
- Ferrarelli, F., and G. Tononi. 2011. The Thalamic Reticular Nucleus and Schizophrenia. *Schizophr. Bull.* **37**:306–315. [16]
- Ferreira, M. A., M. C. O'Donovan, Y. A. Meng, et al. 2008. Collaborative Genome-Wide Association Analysis Supports a Role for ANK3 and CACNA1C in Bipolar Disorder. *Nat. Genet.* **40**:1056–1058. [3]
- Fervaha, G., O. Agid, G. Foussias, and G. Remington. 2013a. Impairments in Both Reward and Punishment Guided Reinforcement Learning in Schizophrenia. *Schizophr. Res.* **150**:592–593. [4]
- Fervaha, G., A. Graff-Guerrero, K. K. Zakzanis, et al. 2013b. Incentive Motivation Deficits in Schizophrenia Reflect Effort Computation Impairments During Cost-Benefit Decision-Making. *J. Psychiatr. Res.* **47**:1590–1596. [4]
- Figuee, M., P. de Koning, S. Klaassen, et al. 2014. Deep Brain Stimulation Induces Striatal Dopamine Release in Obsessive-Compulsive Disorder. *Biol. Psychiatry* **75**:647–652. [10]
- First, M. B. 2005a. Clinical Utility: A Prerequisite for the Adoption of a Dimensional Approach in DSM. *J. Abnorm. Psychol.* **114**:560–564. [8]
- . 2005b. Mutually Exclusive versus Co-Occurring Diagnostic Categories: The Challenge of Diagnostic Comorbidity. *Psychopathology* **38**:206–210. [8]
- . 2013. Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, and Clinical Utility. *J. Nerv. Ment. Disorder* **201**:727–729. [8]
- First, M. B., and D. Westen. 2007. Classification for Clinical Practice: How to Make ICD and DSM Better Able to Serve Clinicians. *Int. Rev. Psychiatry* **19**:473–481. [8]
- Foa, E. B., M. R. Liebowitz, M. J. Kozak, et al. 2005. Randomized, Placebo-Controlled Trial of Exposure and Ritual Prevention, Clomipramine, and Their Combination in the Treatment of Obsessive-Compulsive Disorder. *Am. J. Psychiatry* **162**:151–161. [1]
- Forbes, N. F., L. A. Carrick, A. M. McIntosh, and S. M. Lawrie. 2009. Working Memory in Schizophrenia: A Meta-Analysis. *Psychol. Med.* **39**:889–905. [4]
- Ford, J. M., D. H. Mathalon, S. Whitfield, W. O. Faustman, and W. T. Roth. 2002. Reduced Communication between Frontal and Temporal Lobes During Talking in Schizophrenia. *Biol. Psychiatry* **51**:485–492. [3]
- Ford, J. M., S. E. Morris, R. E. Hoffman, et al. 2014. Studying Hallucinations within the NIMH RDoC Framework. *Schizophr. Bull.* **40** (Suppl. 4):S295–S304. [9]
- Fox, H. C., M. Garcia, K. Kemp, et al. 2006. Gender Differences in Cardiovascular and Corticoadrenal Response to Stress and Drug Cues in Cocaine Dependent Individuals. *Psychopharmacology* **185**:348–357. [3]

- Frank, E., R. F. Prien, R. B. Jarrett, et al. 1991. Conceptualization and Rationale for Consensus Definitions of Terms in Major Depressive Disorder. Remission, Recovery, Relapse, and Recurrence. *Arch. Gen. Psychiatry* **48**:851–855. [15]
- Frank, G. K. W., J. R. Reynolds, M. E. Shott, and R. C. O'Reilly. 2011. Altered Temporal Difference Learning in Bulimia Nervosa. *Biol. Psychiatry* **70**:728–735. [12]
- Frank, M. J. 2005. Dynamic Dopamine Modulation in the Basal Ganglia: A Neurocomputational Account of Cognitive Deficits in Medicated and Nonmedicated Parkinsonism. *J. Cogn. Neurosci.* **17**:51–72. [6, 15]
- \_\_\_\_\_. 2006. Hold Your Horses: A Dynamic Computational Role for the Subthalamic Nucleus in Decision Making. *Neural Netw.* **19**:1120–1136. [12]
- \_\_\_\_\_. 2011. Computational Models of Motivated Action Selection in Corticostriatal Circuits. *Curr. Opin. Neurol.* **21**:381–386. [2]
- \_\_\_\_\_. 2015. Linking across Levels of Computation in Model-Based Cognitive Neuroscience. In: An Introduction to Model-Based Cognitive Neuroscience, ed. B. U. Forstmann and E.-J. Wagenmakers, pp. 159–177. New York: Springer. [5, 6]
- Frank, M. J., B. B. Doll, J. Oas-Terpstra, and F. Moreno. 2009. Prefrontal and Striatal Dopaminergic Genes Predict Individual Differences in Exploration and Exploitation. *Nat. Neurosci.* **12**:1062–1068. [6]
- Frank, M. J., and J. A. Fossella. 2011. Neurogenetics and Pharmacology of Learning, Motivation, and Cognition. *Neuropsychopharmacology* **36**:133–152. [5]
- Frank, M. J., C. Gagne, E. Nyhus, et al. 2015. fMRI and EEG Predictors of Dynamic Decision Parameters During Human Reinforcement Learning. *J. Neurosci.* **35**:484–494. [5]
- Frank, M. J., B. Loughry, and R. C. O'Reilly. 2001. Interactions between Frontal Cortex and Basal Ganglia in Working Memory: A Computational Model. *Cogn. Affect. Behav. Neurosci.* **1**:137–160. [6]
- Frank, M. J., A. A. Moustafa, H. M. Haughey, T. Curran, and K. E. Hutchison. 2007a. Genetic Triple Dissociation Reveals Multiple Roles for Dopamine in Reinforcement Learning. *PNAS* **104**:16311–16316. [2]
- Frank, M. J., J. Samanta, A. A. Moustafa, and S. J. Sherman. 2007b. Hold Your Horses: Impulsivity, Deep Brain Stimulation and Medication in Parkinsonism. *Science* **318**:1309–1312. [6]
- Frank, M. J., L. C. Seeberger, and R. C. O'Reilly. 2004. By Carrot or by Stick: Cognitive Reinforcement Learning in Parkinsonism. *Science* **306**:1940–1943. [2, 12, 15]
- Frank, T. D. 2004. Nonlinear Fokker-Planck Equations: Fundamentals and Applications. Springer Series in Synergetics. Berlin: Springer. [11]
- Franke, C., B. Reuter, L. Schulz, and N. Kathmann. 2007. Schizophrenia Patients Show Impaired Response Switching in Saccade Tasks. *Biological psychology* **76**:91–99. [4]
- Frankle, W. G., R. Gil, E. Hackett, et al. 2004. Occupancy of Dopamine D2 Receptors by the Atypical Antipsychotic Drugs Risperidone and Olanzapine: Theoretical Implications. *Psychopharmacology (Berl.)* **175**:473–480. [16]
- Franklin, N. T., and M. J. Frank. 2015. A Cholinergic Feedback Circuit to Regulate Striatal Population Uncertainty and Optimize Reinforcement Learning. *eLife* **4**:e12029. [6]
- Freedman, D. 2001. False Prediction of Future Dangerousness: Error Rates and Psychopathy Checklist—revised. *J. Am. Acad. Psychiatry Law* **29**:89–95. [5]
- Freedman, R., D. A. Lewis, R. Michels, et al. 2013. The Initial Field Trials of DSM-5: New Blooms and Old Thorns. *Am. J. Psychiatry* **170**:1–5. [1, 7, 16]
- Freeman, W. J. 1975. Mass Action in the Nervous System. New York: Academic Press. [12]

- Friedman, A. K., J. J. Walsh, and B. Juarez. 2014. Enhancing Depression Mechanisms in Midbrain Dopamine Neurons Achieves Homeostatic Resilience. *Science* **344**:313–319. [5]
- Friston, K. J. 1998. The Disconnection Hypothesis. *Schizophr. Res.* **30**:115–125. [12]
- . 2005. A Theory of Cortical Responses. *Phil. Trans. R. Soc. B* **360**:815–836. [7]
- . 2008. Hierarchical Models in the Brain. *PLoS Comput. Biol.* **4**:e1000211. [7]
- . 2009. The Free-Energy Principle: A Rough Guide to the Brain? *Trends Cogn. Sci.* **13**:293–301. [12]
- Friston, K. J., L. Harrison, and W. D. Penny. 2003. Dynamic Causal Modelling. *NeuroImage* **19**:1273–1302. [11, 12]
- Friston, K. J., J. Kilner, and L. Harrison. 2006. A Free Energy Principle for the Brain. *J. Physiol. (Paris)* **100**:70–87. [12]
- Friston, K. J., J. Mattout, N. Trujillo-Barreto, J. Ashburner, and W. Penny. 2007. Variational Free Energy and the Laplace Approximation. *NeuroImage* **34**:220–234. [7]
- Friston, K. J., and W. D. Penny. 2011. Post Hoc Bayesian Model Selection. *NeuroImage* **56**:2089–2099. [11]
- Friston, K. J., K. E. Stephan, R. Montague, and R. J. Dolan. 2014. Computational Psychiatry: The Brain as a Phantastic Organ. *Lancet Psychiatry* **1**:148–158. [16]
- Friston, K. J., N. Trujillo-Barreto, and J. Daunizeau. 2008. Dem: A Variational Treatment of Dynamic Systems. *NeuroImage* **41**:849–885. [11]
- Fu, C. H. Y., H. Steiner, and S. G. Costafreda. 2013. Predictive Neural Biomarkers of Clinical Response in Depression: A Meta-Analysis of Functional and Structural Neuroimaging Studies of Pharmacological and Psychological Therapies. *Neurobiol. Dis.* **52**:75–83. [15]
- Fusar-Poli, P., A. Bechdolf, M. J. Taylor, et al. 2013a. At Risk for Schizophrenic or Affective Psychoses? A Meta-Analysis of DSM/ICD Diagnostic Outcomes in Individuals at High Clinical Risk. *Schizophr. Bull.* **39**:923–932. [3, 10]
- Fusar-Poli, P., I. Bonoldi, A. R. Yung, et al. 2012a. Predicting Psychosis: Meta-Analysis of Transition Outcomes in Individuals at High Clinical Risk. *Arch. Gen. Psychiatry* **69**:220–229. [10]
- Fusar-Poli, P., S. Borgwardt, A. Bechdolf, et al. 2013b. The Psychosis High-Risk State: A Comprehensive State-of-the-Art Review. *JAMA Psychiatry* **70**:107–120. [10]
- Fusar-Poli, P., W. T. Carpenter, S. W. Woods, and T. H. McGlashan. 2014. Attenuated Psychosis Syndrome: Ready for DSM-5.1? *Annu. Rev. Clin. Psych.* **10**:155–192. [3]
- Fusar-Poli, P., G. Deste, R. Smieskova, et al. 2012b. Cognitive Functioning in Prodromal Psychosis: A Meta-Analysis. *Arch. Gen. Psychiatry* **69**:562–571. [10]
- Fusar-Poli, P., O. D. Howes, P. Allen, et al. 2010. Abnormal Frontostriatal Interactions in People with Prodromal Signs of Psychosis: A Multimodal Imaging Study. *Arch. Gen. Psychiatry* **67**:683–691. [4]
- Fusar-Poli, P., O. D. Howes, P. Allen, et al. 2011. Abnormal Prefrontal Activation Directly Related to Pre-Synaptic Striatal Dopamine Dysfunction in People at Clinical High Risk for Psychosis. *Mol. Psychiatry* **16**:67–75. [4]
- Fusar-Poli, P., and A. Meyer-Lindenberg. 2013. Striatal Presynaptic Dopamine in Schizophrenia, Part II: Meta-Analysis of [(18)F/(11)C]-DOPA PET Studies. *Schizophr. Bull.* **39**:33–42. [4]
- Galletly, C. A., A. C. McFarlane, and C. R. Clark. 2007. Impaired Updating of Working Memory in Schizophrenia. *Int. J. Psychophysiol.* **63**:265–274. [4]
- Gandal, M. J., J. C. Edgar, K. Kloock, and S. J. Siegel. 2012. Gamma Synchrony: Towards a Translational Biomarker for the Treatment-Resistant Symptoms of Schizophrenia. *Neuropharmacology* **62**:1504–1518. [16]

- Garrido, M. I., J. M. Kilner, K. E. Stephan, and K. J. Friston. 2009. The Mismatch Negativity: A Review of Underlying Mechanisms. *Clin. Neurophysiol.* **120**:453–463. [12]
- Gasser, T. 2009. Mendelian Forms of Parkinson's Disease. *Biochim. Biophys. Acta* **1792**:587–596. [2]
- Gaugler, T., L. Klei, S. J. Sanders, et al. 2014. Most Genetic Risk for Autism Resides with Common Variation. *Nat. Genet.* **46**:881–885. [3]
- Geddes, J. R., S. M. Carney, C. Davies, et al. 2003. Relapse Prevention with Antidepressant Drug Treatment in Depressive Disorders: A Systematic Review. *Lancet* **361**:653–661. [15]
- Georgiev, D., D. Arion, J. F. Enwright, et al. 2014. Lower Gene Expression for Kcns3 Potassium Channel Subunit in Parvalbumin-Containing Neurons in the Prefrontal Cortex in Schizophrenia. *Am. J. Psychiatry* **171**:62–71. [16]
- Georgopoulos, A. P., H. R. Tan, S. M. Lewis, et al. 2010. The Synchronous Neural Interactions Test as a Functional Neuromarker for Post-Traumatic Stress Disorder (PTSD): A Robust Classification Method Based on the Bootstrap. *J. Neural Eng.* **7**:16011. [10]
- Gerds, T. A., T. Cai, and M. Schumacher. 2008. The Performance of Risk Prediction Models. *Biometrical J.* **50**:457–479. [14]
- Gershman, S. J., and Y. Niv. 2010. Learning Latent Structure: Carving Nature at Its Joints. *Curr. Opin. Neurol.* **20**:251–256. [2]
- Gershman, S. J., B. Pesaran, and N. D. Daw. 2009. Human Reinforcement Learning Subdivides Structured Action Spaces by Learning Effector-Specific Values. *J. Neurosci.* **29**:13524–13531. [13]
- Geurts, D. E. M., Q. J. M. Huys, H. E. M. den Ouden, and R. Cools. 2013. Aversive Pavlovian Control of Instrumental Behavior in Humans. *J. Cogn. Neurosci.* **25**:1428–1441. [15]
- Ghahramani, Z., and G. E. Hinton. 2000. Variational Learning for Switching State-Space Models. *Neural Comput.* **12**:831–864. [5]
- Gibson, J. R., K. M. Huber, and T. C. Südhof. 2009. Neuroligin-2 Deletion Selectively Decreases Inhibitory Synaptic Transmission Originating from Fast-Spiking but Not from Somatostatin-Positive Interneurons. *J. Neurosci.* **29**:13883–13897. [3]
- Gilani, A. I., M. O. Chohan, M. Inan, et al. 2014. Interneuron Precursor Transplants in Adult Hippocampus Reverse Psychosis-Relevant Features in a Mouse Model of Hippocampal Disinhibition. *PNAS* **111**:7450–7455. [16]
- Gilbertson, M. W., M. E. Shenton, A. Ciszewski, et al. 2002. Smaller Hippocampal Volume Predicts Pathologic Vulnerability to Psychological Trauma. *Nat. Neurosci.* **5**:1242–1247. [2, 10]
- Gill, K. M., J. M. Cook, M. M. Poe, and A. A. Grace. 2014. Prior Antipsychotic Drug Treatment Prevents Response to Novel Antipsychotic Agent in the Methylazoxymethanol Acetate Model of Schizophrenia. *Schizophr. Bull.* **40**:341–350. [3]
- Gillan, C. M., A. M. Apergis-Schoute, S. Morein-Zamir, et al. 2015. Functional Neuroimaging of Avoidance Habits in Obsessive-Compulsive Disorder. *Am. J. Psychiatry* **172**:284–293. [10]
- Gillan, C. M., M. Kosinski, R. Whelan, E. A. Phelps, and N. D. Daw. 2016. Characterizing a Psychiatric Symptom Dimension Related to Deficits in Goal-Directed Control. *eLife* **5**:e11305. [17]
- Gillan, C. M., S. Morein-Zamir, G. P. Urceley, et al. 2014. Enhanced Avoidance Habits in Obsessive-Compulsive Disorder. *Biol. Psychiatry* **75**:631–638. [10]

- Gillan, C. M., M. Papmeyer, S. Morein-Zamir, et al. 2011. Disruption in the Balance between Goal-Directed Behavior and Habit Learning in Obsessive-Compulsive Disorder. *Am. J. Psychiatry* **168**:718–726. [10]
- Gilman, S. R., I. Iossifov, D. Levy, et al. 2011. Rare de Novo Variants Associated with Autism Implicate a Large Functional Network of Genes Involved in Formation and Function of Synapses. *Neuron* **70**:898–907. [3]
- Gilpin, N. W., M. A. Herman, and M. Roberto. 2014. The Central Amygdala as an Integrative Hub for Anxiety and Alcohol Use Disorders. *Biol. Psychiatry* **77**:859–869. [1]
- Giuliano, A. J., H. Li, R. I. Mesholam-Gately, et al. 2012. Neurocognition in the Psychosis Risk Syndrome: A Quantitative and Qualitative Review. *Curr. Pharm. Des.* **18**:399–415. [3]
- Glahn, D. C., A. R. Laird, I. Ellison-Wright, et al. 2008. Meta-Analysis of Gray Matter Anomalies in Schizophrenia: Application of Anatomic Likelihood Estimation and Network Analysis. *Biol. Psychiatry* **64**:774–781. [4]
- Gläscher, J., N. Daw, P. Dayan, and J. P. O'Doherty. 2010. States versus Rewards: Dissociable Neural Prediction Error Signals Underlying Model-Based and Model-Free Reinforcement Learning. *Neuron* **66**:585–595. [4, 12]
- Glassman, R. B. 1987. An Hypothesis About Redundancy and Reliability in the Brains of Higher Species : Analogies with Genes, Internal Organs, and Engineering Systems. *Neurosci. Biobehav. Rev.* **11**:275–285. [9]
- Glausier, J. R., K. N. Fish, and D. A. Lewis. 2014. Altered Parvalbumin Basket Cell Inputs in the Dorsolateral Prefrontal Cortex of Schizophrenia Subjects. *Mol. Psychiatry* **19**:30–36. [16]
- Glausier, J. R., and D. A. Lewis. 2013. Dendritic Spine Pathology in Schizophrenia. *Neuroscience* **251**:90–107. [16]
- Glimcher, P. W. 2011. Understanding Dopamine and Reinforcement Learning: The Dopamine Reward Prediction Error Hypothesis. *PNAS* **108**:15647–15654. [12, 13]
- Glue, P., M. R. Donovan, S. Kolluri, and B. Emir. 2010. Meta-Analysis of Relapse Prevention Antidepressant Trials in Depressive Disorders. *Aust. NZ J. Psychiatry* **44**:697–705. [15]
- Gold, J. I., and M. N. Shadlen. 2007. The Neural Basis of Decision Making. *Annu. Rev. Neurosci.* **30**:535–574. [5, 6]
- Gold, J. M., R. L. Fuller, B. M. Robinson, et al. 2006. Intact Attentional Control of Working Memory Encoding in Schizophrenia. *J. Abnorm. Psychol.* **115**:658–673. [4]
- Gold, J. M., B. Hahn, W. W. Zhang, et al. 2010. Reduced Capacity but Spared Precision and Maintenance of Working Memory Representations in Schizophrenia. *Arch. Gen. Psychiatry* **67**:570–577. [4]
- Gold, J. M., W. Kool, M. M. Botvinick, et al. 2015. Cognitive Effort Avoidance and Detection in People with Schizophrenia. *Cogn Affect Behav Neurosci* **15**:145–154. [4]
- Gold, J. M., G. P. Strauss, J. A. Waltz, et al. 2013. Negative Symptoms of Schizophrenia Are Associated with Abnormal Effort-Cost Computations. *Biol. Psychiatry* **74**:130–136. [4]
- Gold, J. M., J. A. Waltz, T. M. Matveeva, et al. 2012. Negative Symptoms and the Failure to Represent the Expected Reward Value of Actions: Behavioral and Computational Modeling Evidence. *Arch. Gen. Psychiatry* **69**:129–138. [4, 5]
- Gold, J. M., C. M. Wilk, R. P. McMahon, R. W. Buchanan, and S. J. Luck. 2003. Working Memory for Visual Features and Conjunctions in Schizophrenia. *J. Abnorm. Psychol.* **112**:61–71. [4]

- Goldberg, D. 1996. A Dimensional Model for Common Mental Disorders. *Br. J. Psychiatry* **168**:44–49. [8]
- Goldman-Rakic, P. S. 1995. Cellular Basis of Working Memory. *Neuron* **14**:477–485. [3]
- Goldman-Rakic, P. S. 1996. Regional and Cellular Fractionation of Working Memory. *PNAS* **93**:13473–13480. [3]
- Goldman-Rakic, P. S., S. A. Castner, T. H. Svensson, L. J. Siever, and G. V. Williams. 2004. Targeting the Dopamine D1 Receptor in Schizophrenia: Insights for Cognitive Dysfunction. *Psychopharmacology (Berl.)* **174**:3–16. [5, 13]
- Goldstein, D. S., and B. S. McEwen. 2002. Allostasis, Homeostats, and the Nature of Stress. *Stress* **5**:55–58. [2]
- Gonzalez-Burgos, G., R. Y. Cho, and D. A. Lewis. 2015. Alterations in Cortical Network Oscillations and Parvalbumin Neurons in Schizophrenia. *Biol. Psychiatry* **77**: 1031–1040. [16]
- Gonzalez-Burgos, G., and D. A. Lewis. 2012. NMDA Receptor Hypofunction, Parvalbumin-Positive Neurons, and Cortical Gamma Oscillations in Schizophrenia. *Schizophr. Bull.* **38**:950–957. [12]
- Gonzalez-Pinto, A., M. Gutierrez, F. Mosquera, et al. 1998. First Episode in Bipolar Disorder: Misdiagnosis and Psychotic Symptoms. *J. Affect. Disord.* **50**:41–44. [3]
- Goodman, W. K., K. D. Foote, B. D. Greenberg, et al. 2010. Deep Brain Stimulation for Intractable Obsessive Compulsive Disorder: Pilot Study Using a Blinded, Staggered-Onset Design. *Biol. Psychiatry* **67**:535–542. [10]
- Gosseries, O., C. Schnakers, D. Ledoux, et al. 2011. Automated EEG Entropy Measurements in Coma, Vegetative State/Unresponsive Wakefulness Syndrome and Minimally Conscious State. *Funct. Neurol.* **26**:25–30. [3]
- Gotlib, I. H., and J. Joormann. 2010. Cognition and Depression: Current Status and Future Directions. *Annu Rev Clin Psychol* **6**:285–312. [15]
- Gottesman, I. I., and T. D. Gould. 2003. The Endophenotype Concept in Psychiatry: Etymology and Strategic Intentions. *Am. J. Psychiatry* **160**:636–645. [5, 16]
- Grace, A. A. 2006. Disruption of Cortical-Limbic Interaction as a Substrate for Comorbidity. *Neurotox. Res.* **10**:93–101. [3]
- . 2010. Dopamine System Dysregulation by the Ventral Subiculum as the Common Pathophysiological Basis for Schizophrenia Psychosis, Psychostimulant Abuse, and Stress. *Neurotox. Res.* **18**:367–376. [3]
- Gradin, V. B., P. Kumar, G. Waiter, et al. 2011. Expected Value and Prediction Error Abnormalities in Depression and Schizophrenia. *Brain* **134**:1751–1764. [4]
- Grassian, S. 1983. Psychopathological Effects of Solitary Confinement. *Am. J. Psychiatry* **140**:1450–1454. [2]
- Green, E. K., D. Grozeva, I. Jones, et al. 2010. The Bipolar Disorder Risk Allele at CACNA1C Also Confers Risk of Recurrent Major Depression and of Schizophrenia. *Mol. Psychiatry* **15**:1016–1022. [1, 3]
- Green, M. F. 2006. Cognitive Impairment and Functional Outcome in Schizophrenia and Bipolar Disorder. *J. Clin. Psychiatry* **67**(Suppl 9):3–8; discussion 36–42. [16]
- Green, N., R. Bogacz, J. Huebl, et al. 2013. Reduction of Influence of Task Difficulty on Perceptual Decision Making by STN Deep Brain Stimulation. *Curr. Biol.* **23**:1681–1684. [5]
- Greenberg, B. D., L. A. Gabriels, D. A. Malone, Jr., et al. 2010. Deep Brain Stimulation of the Ventral Internal Capsule/Ventral Striatum for Obsessive-Compulsive Disorder: Worldwide Experience. *Mol. Psychiatry* **15**:64–79. [10]

- Greenberg, B. D., D. A. Malone, G. M. Friehs, et al. 2006. Three-Year Outcomes in Deep Brain Stimulation for Highly Resistant Obsessive-Compulsive Disorder. *Neuropsychopharmacology* **31**:2384–2393. [10]
- Greenzang, C., D. S. Manoach, D. C. Goff, and J. J. Barton. 2007. Task-Switching in Schizophrenia: Active Switching Costs and Passive Carry-over Effects in an Antisaccade Paradigm. *Exp. Brain Res.* **181**:493–502. [4]
- Gregory, S. G., J. J. Connelly, A. J. Towers, et al. 2009. Genomic and Epigenetic Evidence for Oxytocin Receptor Deficiency in Autism. *BMC Med.* **7**:62. [3]
- Grimm, O., S. Vollstadt-Klein, L. Krebs, M. Zink, and M. N. Smolka. 2012. Reduced Striatal Activation During Reward Anticipation Due to Appetite-Provoking Cues in Chronic Schizophrenia: A fMRI Study. *Schizophr. Res.* **134**:151–157. [4]
- Gross, J. J. 1998. Antecedent- and Response-Focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology. *J. Pers. Soc. Psychol.* **74**:224–237. [15]
- Grunze, H. C., D. G. Rainnie, M. E. Hasselmo, et al. 1996. NMDA-Dependent Modulation of CA1 Local Circuit Inhibition. *J. Neurosci.* **16**:2034–2043. [16]
- Gu, X., P. R. Hof, K. J. Friston, and J. Fan. 2013. Anterior Insular Cortex and Emotional Awareness. *J. Comp. Neurol.* **521**:3371–3388. [12]
- Guilmatre, A., C. Dubourg, A.-L. Mosca, et al. 2009. Recurrent Rearrangements in Synaptic and Neurodevelopmental Genes and Shared Biologic Pathways in Schizophrenia, Autism, and Mental Retardation. *Arch. Gen. Psychiatry* **66**:947–956. [3]
- Guitart-Masip, M., Q. J. M. Huys, L. Fuentemilla, et al. 2012. Go and No-Go Learning in Reward and Punishment: Interactions between Affect and Effect. *NeuroImage* **62**:154–166. [15]
- Gulsuner, S., T. Walsh, A. C. Watts, et al. 2013. Spatial and Temporal Mapping of de Novo Mutations in Schizophrenia to a Fetal Prefrontal Cortical Network. *Cell* **154**:518–529. [16]
- Gutman, D. A., P. E. Holtzheimer, T. E. Behrens, H. Johansen-Berg, and H. S. Mayberg. 2009. A Tractography Analysis of Two Deep Brain Stimulation White Matter Targets for Depression. *Biol. Psychiatry* **65**:276–282. [5]
- Haase, L., B. Cerf-Ducastel, and C. Murphy. 2009. Cortical Activation in Response to Pure Taste Stimuli During the Physiological States of Hunger and Satiety. *NeuroImage* **44**:1008–1021. [14]
- Haddon, J. E., and S. Killcross. 2007. Contextual Control of Choice Performance: Behavioral, Neurobiological, and Neurochemical Influences. *Ann. NY Acad. Sci.* **1104**:250–269. [4]
- Haeffel, G. J., L. Y. Abramson, P. C. Brazy, et al. 2007. Explicit and Implicit Cognition: A Preliminary Test of a Dual-Process Theory of Cognitive Vulnerability to Depression. *Behav. Res. Ther.* **45**:1155–1167. [15]
- Haeffel, G. J., L. Y. Abramson, Z. R. Voelz, et al. 2005. Negative Cognitive Styles, Dysfunctional Attitudes, and the Remitted Depression Paradigm: A Search for the Elusive Cognitive Vulnerability to Depression Factor among Remitted Depressives. *Emotion* **5**:343–348. [15]
- Haeffel, G. J., B. E. Gibb, G. I. Metalsky, et al. 2008. Measuring Cognitive Vulnerability to Depression: Development and Validation of the Cognitive Style Questionnaire. *Clin. Psychol. Rev.* **28**:824–836. [15]
- Haeusler, S., and W. Maass. 2007. A Statistical Analysis of Information-Processing Properties of Lamina-Specific Cortical Microcircuit Models. *Cereb. Cortex* **17**:149–162. [7]

- Hagmann, P., L. Cammoun, X. Gigandet, et al. 2008. Mapping the Structural Core of Human Cerebral Cortex. *PLoS Biol.* **6**:e159. [16]
- Hahn, B., B. M. Robinson, S. T. Kaiser, et al. 2010. Failure of Schizophrenia Patients to Overcome Salient Distractors During Working Memory Encoding. *Biol. Psychiatry* **68**:603–609. [4]
- Hajos, M., W. E. Hoffmann, and B. Kocsis. 2008. Activation of Cannabinoid-1 Receptors Disrupts Sensory Gating and Neuronal Oscillation: Relevance to Schizophrenia. *Biol. Psychiatry* **63**:1075–1083. [16]
- Haken, H. 1983. Synergetics: An Introduction. Non-Equilibrium Phase Transition and Self-Selforganisation in Physics, Chemistry and Biology. Berlin: Springer-Verlag. [11]
- Hammen, C. 1991. Generation of Stress in the Course of Unipolar Depression. *J. Abnorm. Psychol.* **100**:555–561. [15]
- Hammer, M. 1993. An Identified Neuron Mediates the Unconditioned Stimulus in Associative Olfactory Learning in Honeybees. *Nature* **366**:59–63. [13]
- Hammer, M., and R. Menzel. 1995. Learning and Memory in the Honeybee. *J. Neurosci.* **15**:1617–1630. [13]
- Hariri, A. R., V. S. Mattay, A. Tessitore, et al. 2002. Serotonin Transporter Genetic Variation and the Response of the Human Amygdala. *Science* **297**:400–403. [3]
- Harkness, K. L., S. M. Monroe, A. D. Simons, and M. Thase. 1999. The Generation of Life Events in Recurrent and Non-Recurrent Depression. *Psychol. Med.* **29**:135–144. [15]
- Harlé, K. M., P. Shenoy, J. L. Stewart, et al. 2014. Altered Neural Processing of the Need to Stop in Young Adults at Risk for Stimulant Dependence. *J. Neurosci.* **34**:4567–4580. [14]
- Harris, A., T. Hare, and A. Rangel. 2013. Temporally Dissociable Mechanisms of Self-Control: Early Attentional Filtering versus Late Value Modulation. *J. Neurosci.* **33**:18917–18931. [6]
- Harrison, P. J., and D. R. Weinberger. 2005. Schizophrenia Genes, Gene Expression, and Neuropathology: On the Matter of Their Convergence. *Mol. Psychiatry* **10**:40–68–image 45. [3]
- Härter, M., M. Berger, F. Schneider, and G. Ollenschläger, eds. 2009. Nationale Versorgungs Leitlinie Unipolare Depression. Praxisleitlinien in Psychiatrie und Psychotherapie. Berlin: Springer. [15]
- Hartmann, M. N., O. M. Hager, A. V. Reimann, et al. 2015. Apathy but Not Diminished Expression in Schizophrenia Is Associated with Discounting of Monetary Rewards by Physical Effort. *Schizophr. Bull.* **41**:503–512. [4]
- Harvey, P. D. 2014. What Is the Evidence for Changes in Cognition and Functioning over the Lifespan in Patients with Schizophrenia? *J. Clin. Psychiatry* **75 Suppl** **2**:34–38. [16]
- Harvey, P. D., J. Lombardi, M. Leibman, et al. 1997. Age-Related Differences in Formal Thought Disorder in Chronically Hospitalized Schizophrenic Patients: A Cross-Sectional Study across Nine Decades. *Am. J. Psychiatry* **154**:205–210. [16]
- Hastie, T., R. Tibshirani, and J. H. Friedman. 2001. The Elements of Statistical Learning: Data Mining, Inference, and Prediction. New York: Springer. [14]
- Hauser, T. U., R. Iannaccone, J. Ball, et al. 2014. Role of the Medial Prefrontal Cortex in Impaired Decision Making in Juvenile Attention-Deficit/Hyperactivity Disorder. *JAMA Psychiatry* **71**:1165–1173. [7]
- Hay, N., and S. J. Russell. 2011. Metareasoning for Monte Carlo Tree Search. <http://www.eecs.berkeley.edu/Pubs/TechRpts/2011/EECS-2011-119.pdf> (accessed July 12, 2016). [15]

- Hayes, P. E., and P. Ettigi. 1983. Dexamethasone Suppression Test in Diagnosis of Depressive Illness. *Clin. Pharm.* **2**:538–545. [1]
- Hazy, T. E., M. J. Frank, and R. C. O'Reilly. 2006. Banishing the Homunculus: Making Working Memory Work. *Neuroscience* **139**:105–118. [4]
- Hebb, D. O. 1949. The Organization of Behavior. New York: Wiley. [13]
- Heerey, E. A., K. R. Bell-Warren, and J. M. Gold. 2008. Decision-Making Impairments in the Context of Intact Reward Sensitivity in Schizophrenia. *Biol. Psychiatry* **64**:62–69. [4]
- Helmholtz, H. 1860/1962. Handbuch Der Physiologischen Optik (English Translation), vol. 3. Dover, NY: Southall JPC. [7]
- Herman, J. P., and W. E. Cullinan. 1997. Neurocircuitry of Stress: Central Control of the Hypothalamo–Pituitary–Adrenocortical Axis. *Trends Neurosci.* **20**:78–84. [12]
- Hershberger, W. A. 1986. An Approach through the Looking-Glass. *Anim. Learn. Behav.* **14**:443–451. [15]
- Hertag, L., J. Hass, T. Golovko, and D. Durstewitz. 2012. An Approximation to the Adaptive Exponential Integrate-and-Fire Neuron Model Allows Fast and Predictive Fitting to Physiological Data. *Front. Comput. Neurosci.* **6**:62. [5]
- Herzallah, M. M., A. A. Moustafa, J. Y. Natsheh, et al. 2013. Depression Impairs Learning, Whereas the Selective Serotonin Reuptake Inhibitor, Paroxetine, Impairs Generalization in Patients with Major Depressive Disorder. *J. Affect. Disord.* **151**:484–492. [3]
- Hester, R., C. Simoes-Franklin, and H. Garavan. 2007. Post-Error Behavior in Active Cocaine Users: Poor Awareness of Errors in the Presence of Intact Performance Adjustments. *Neuropsychopharmacology* **32**:1974–1984. [14]
- Heyman, G. 2009. Addiction: A Disorder of Choice. Cambridge, MA: Harvard Univ. Press. [2]
- Higley, M. J. 2014. Localized Gabaergic Inhibition of Dendritic  $\text{Ca}^{2+}$  Signalling. *Nat. Rev. Neurosci.* **15**:567–572. [16]
- Hikida, T., K. Kimura, N. Wada, K. Funabiki, and S. Nakanishi. 2010. Distinct Roles of Synaptic Transmission in Direct and Indirect Striatal Pathways to Reward and Aversive Behavior. *Neuron* **66**:896–907. [6]
- Hikosaka, O., and M. Isoda. 2010. Switching from Automatic to Controlled Behavior: Cortico-Basal Ganglia Mechanisms. *Trends Cogn. Sci.* **14**:154–161. [6]
- Hill, A., M. Rettenberger, N. Habermann, et al. 2012. The Utility of Risk Assessment Instruments for the Prediction of Recidivism in Sexual Homicide Perpetrators. *J. Interpers. Violence* **27**:3553–3578. [5]
- Hill, A. B. 1965. The Environment and Disease: Association or Causation? *Proc. R. Soc. Med.* **58**:295–300. [14]
- Hill, J. J., T. Hashimoto, and D. A. Lewis. 2006. Molecular Mechanisms Contributing to Dendritic Spine Alterations in the Prefrontal Cortex of Subjects with Schizophrenia. *Mol. Psychiatry* **11**:557–566. [3]
- Hille, B. 2007. Ionic Channels in Excitable Membranes. New York: Sinauer. [13]
- Hioki, H., S. Okamoto, M. Konno, et al. 2013. Cell Type-Specific Inhibitory Inputs to Dendritic and Somatic Compartments of Parvalbumin-Expressing Neocortical Interneuron. *J. Neurosci.* **33**:544–555. [16]
- Hirano, Y., N. Oribe, S. Kanba, et al. 2015. Spontaneous Gamma Activity in Schizophrenia. *JAMA Psychiatry* **72**:813–821. [16]
- Hirsch, S., and R. Bolles. 1980. On the Ability of Prey to Recognize Predators. *Z. Tierpsychol* **54**:71–84. [15]

- Hodgkin, A. L., and A. F. Huxley. 1952. A Quantitative Description of Membrane Current and Its Application to Conduction and Excitation in Nerve. *J. Physiol.* **117**:500–544. [9, 12]
- Hoel, E. P., L. Albantakis, and G. Tononi. 2013. Quantifying Causal Emergence Shows That Macro Can Beat Micro. *PNAS* **110**:19790–19795. [14]
- Hoffman, P., and M. A. L. Ralph. 2011. Reverse Concreteness Effects Are Not a Typical Feature of Semantic Dementia: Evidence for the Hub-and-Spoke Model of Conceptual Representation. *Cereb. Cortex* **21**:2103–2112. [12]
- Hoffman, R. E., and I. Cavus. 2002. Slow Transcranial Magnetic Stimulation, Long-Term Depotentiation, and Brain Hyperexcitability Disorders. *Am. J. Psychiatry* **159**:1093–1102. [5]
- Hoffman, R. E., R. Gueorguieva, K. A. Hawkins, et al. 2005. Temporoparietal Transcranial Magnetic Stimulation for Auditory Hallucinations: Safety, Efficacy and Moderators in a Fifty Patient Sample. *Biol. Psychiatry* **58**:97–104. [16]
- Hoffman, R. E., M. Hampson, K. Wu, et al. 2007. Probing the Pathophysiology of Auditory/Verbal Hallucinations by Combining Functional Magnetic Resonance Imaging and Transcranial Magnetic Stimulation. *Cereb. Cortex* **17**:2733–2743. [5]
- Hoftman, G. D., D. W. Volk, H. H. Bazmi, et al. 2015. Altered Cortical Expression of GABA-Related Genes in Schizophrenia: Illness Progression Vs Developmental Disturbance. *Schizophr. Bull.* **41**:180–191. [16]
- Hollon, S. D., R. J. DeRubeis, J. Fawcett, et al. 2014. Effect of Cognitive Therapy with Antidepressant Medications Vs Antidepressants Alone on the Rate of Recovery in Major Depressive Disorder: A Randomized Clinical Trial. *JAMA Psychiatry* **71**:1157–1164. [15]
- Hollon, S. D., R. J. DeRubeis, R. C. Shelton, et al. 2005. Prevention of Relapse Following Cognitive Therapy Vs Medications in Moderate to Severe Depression. *Arch. Gen. Psychiatry* **62**:417–422. [15]
- Hollon, S. D., R. C. Shelton, S. Wisniewski, et al. 2006. Presenting Characteristics of Depressed Outpatients as a Function of Recurrence: Preliminary Findings from the Star\*D Clinical Trial. *J. Psychiatr. Res.* **40**:59–69. [15]
- Homayoun, H., and B. Moghaddam. 2008. Orbitofrontal Cortex Neurons as a Common Target for Classic and Glutamatergic Antipsychotic Drugs. *PNAS* **105**:18041–18046. [3]
- Hong, L. E., M. T. Avila, and G. K. Thaker. 2005. Response to Unexpected Target Changes During Sustained Visual Tracking in Schizophrenic Patients. *Exp. Brain Res.* **165**:125–131. [7]
- Horan, W. P., D. L. Braff, K. H. Nuechterlein, et al. 2008. Verbal Working Memory Impairments in Individuals with Schizophrenia and Their First-Degree Relatives: Findings from the Consortium on the Genetics of Schizophrenia. *Schizophr. Res.* **103**:218–228. [4]
- Horga, G., T. V. Maia, R. Marsh, et al. 2015. Changes in Corticostratial Connectivity During Reinforcement Learning in Humans. *Hum. Brain Mapp.* **36**:793–803. [12]
- Howes, O. D., S. K. Bose, F. Turkheimer, et al. 2011a. Progressive Increase in Striatal Dopamine Synthesis Capacity as Patients Develop Psychosis: A PET Study. *Mol. Psychiatry* **16**:885–886. [4]
- Howes, O. D., S. K. Bose, F. Turkheimer, et al. 2011b. Dopamine Synthesis Capacity before Onset of Psychosis: A Prospective [<sup>18</sup>f]-DOPA PET Imaging Study. *Am. J. Psychiatry* **168**:1311–1317. [4]

- Howes, O. D., J. Kambeitz, E. Kim, et al. 2012. The Nature of Dopamine Dysfunction in Schizophrenia and What This Means for Treatment. *Arch. Gen. Psychiatry* **69**: 776–786. [4]
- Howes, O. D., and S. Kapur. 2009. The Dopamine Hypothesis of Schizophrenia: Version III: The Final Common Pathway. *Schizophr. Bull.* **35**:549–562. [4]
- Howes, O. D., R. McCutcheon, and J. Stone. 2015. Glutamate and Dopamine in Schizophrenia: An Update for the 21st Century. *J Psychopharmacol* **29**:97–115. [4]
- Howes, O. D., A. J. Montgomery, M.-C. Asselin, et al. 2009. Elevated Striatal Dopamine Function Linked to Prodromal Signs of Schizophrenia. *Arch. Gen. Psychiatry* **66**: 13–20. [3, 4]
- Howes, O. D., and R. M. Murray. 2014. Schizophrenia: An Integrated Socio-developmental-Cognitive Model. *Lancet* **383**:1677–1687. [4]
- Hoy, K. E., N. W. Bailey, S. L. Arnold, and P. B. Fitzgerald. 2015. The Effect of Transcranial Direct Current Stimulation on Gamma Activity and Working Memory in Schizophrenia. *Psychiatry Res.* **228**:191–196. [16]
- Hradetzky, E., T. M. Sanderson, T. M. Tsang, et al. 2012. The Methylazoxymethanol Acetate (MAM-E17) Rat Model: Molecular and Functional Effects in the Hippocampus. *Neuropsychopharmacology* **37**:364–377. [3]
- Hrdlicka, M., and I. Dudova. 2015. Atypical Antipsychotics in the Treatment of Early-Onset Schizophrenia. *Neuropsychiatr. Dis. Treat.* **11**:907–913. [11]
- Hunt, L., R. J. Dolan, and T. E. Behrens. 2014. Hierarchical Competitions Subserving Multi-Attribute Choice. *Nat. Neurosci.* **17**:1613–1622. [6]
- Huttenlocher, P. R. 1979. Synaptic Density in Human Frontal Cortex - Developmental Changes and Effects of Aging. *Brain Res.* **163**:195–205. [16]
- Hutton, S. B., B. K. Puri, L. J. Duncan, et al. 1998. Executive Function in First-Episode Schizophrenia. *Psychol. Med.* **28**:463–473. [4]
- Huttunen, J., M. Heinimaa, T. Svirskis, et al. 2008. Striatal Dopamine Synthesis in First-Degree Relatives of Patients with Schizophrenia. *Biol. Psychiatry* **63**:114–117. [4]
- Huys, Q. J. M. 2007. Reinforcers and Control: Towards a Computational Aetiology of Depression. Ph.D. Thesis, Gatsby Computational Neuroscience Unit, University College London. [2, 17]
- Huys, Q. J. M., R. Cools, M. Gölzer, et al. 2011. Disentangling the Roles of Approach, Activation and Valence in Instrumental and Pavlovian Responding. *PLoS Comput. Biol.* **7**:e1002028. [6, 14, 15]
- Huys, Q. J. M., N. D. Daw, and P. Dayan. 2015a. Depression: A Decision-Theoretic Analysis. *Annu. Rev. Neurosci.* **38**:1–23. [3, 12, 15, 17]
- Huys, Q. J. M., and P. Dayan. 2009. A Bayesian Formulation of Behavioral Control. *Cognition* **113**:314–328. [15]
- Huys, Q. J. M., N. Eshel, E. O’Nions, et al. 2012. Bonsai Trees in Your Head: How the Pavlovian System Sculpts Goal-Directed Choices by Pruning Decision Trees. *PLoS Comput. Biol.* **8**:e1002410. [3, 6, 15]
- Huys, Q. J. M., M. Guitart-Masip, R. J. Dolan, and P. Dayan. 2015b. Decision-Theoretic Psychiatry. *Clin. Psychol. Sci.* **3**:400–421. [5, 6, 15]
- Huys, Q. J. M., N. Lally, P. Faulkner, et al. 2015c. Interplay of Approximate Planning Strategies. *PNAS* **112**:3098–3103. [15]
- Huys, Q. J. M., D. A. Pizzagalli, R. Bogdan, and P. Dayan. 2013. Mapping Anhedonia onto Reinforcement Learning: A Behavioural Meta-Analysis. *Biol. Mood Anxiety Disord.* **3**:12. [3]

- Huys, Q. J. M., P. N. Tobler, G. Hasler, and S. B. Flagel. 2014. The Role of Learning-Related Dopamine Signals in Addiction Vulnerability. *Prog. Brain Res.* **211**:31–77. [15]
- Huys, Q. J. M., J. Vogelstein, and P. Dayan. 2009. Psychiatry: Insights into Depression through Normative Decision-Making Models. In: Advances in Neural Information Processing Systems 21, ed. D. Koller et al., pp. 729–736. MIT Press. [15]
- Hyman, S. E. 2003. Forward. In: Advancing DSM: Dilemmas in Psychiatric Diagnosis, ed. K. Phillips et al., pp. xi–xix. Washington, D.C.: American Psychiatric Association. [8]
- . 2007. Can Neuroscience Be Integrated into the DSM-V? *Nat. Rev. Neurosci.* **8**:725–732. [8]
- . 2010. The Diagnosis of Mental Disorders: The Problem of Reification. *Annu. Rev. Clin. Psych.* **6**:155–179. [8, 9, 10]
- . 2012. Revolution Stalled. *Sci. Transl. Med.* **4**:155cm111. [7]
- . 2014. Revitalizing Psychiatric Therapeutics. *Neuropsychopharmacology* **39**:220–229. [1]
- Hyman, S. M., P. Paliwal, T. M. Chaplin, et al. 2008. Severity of Childhood Trauma Is Predictive of Cocaine Relapse Outcomes in Women but Not Men. *Drug Alcohol Depend.* **92**:208–216. [3]
- Iacoviello, B. M., L. B. Alloy, L. Y. Abramson, and J. Y. Choi. 2010. The Early Course of Depression: A Longitudinal Investigation of Prodromal Symptoms and Their Relation to the Symptomatic Course of Depressive Episodes. *J. Abnorm. Psychol.* **119**:459–467. [15]
- ICD-10. 1992. International Statistical Classification of Diseases and Related Health Problems: Tenth Revision, vol. 2, World Health Organization. <http://apps.who.int/classifications/icd10/browse/2016/en> (accessed May 5, 2016). [2, 16]
- Ide, J. S., P. Shenoy, A. J. Yu, and C. S. Li. 2013. Bayesian Prediction and Evaluation in the Anterior Cingulate Cortex. *J. Neurosci.* **33**:2039–2047. [14]
- Iglesias, S., C. Mathys, K. H. Brodersen, et al. 2013. Hierarchical Prediction Errors in Midbrain and Basal Forebrain During Sensory Learning. *Neuron* **80**:519–530. [7, 12]
- Insel, C., J. Reinen, J. Weber, et al. 2014. Antipsychotic Dose Modulates Behavioral and Neural Responses to Feedback During Reinforcement Learning in Schizophrenia. *Cogn Affect Behav Neurosci* **14**:189–201. [4]
- Insel, T. R. 2010. Rethinking Schizophrenia. *Nature* **468**:187–193. [16]
- . 2011. Treatment Development: The Past 50 Years. NIMH Director’s Blog. <http://www.nimh.nih.gov/about/director/2011/treatment-development-the-past-50-years.shtml> (accessed June 10, 2016). [1]
- . 2012. Next-Generation Treatments for Mental Disorders. *Sci. Transl. Med.* **4**:155ps119. [7, 14]
- Insel, T. R., and B. N. Cuthbert. 2009. Endophenotypes: Bridging Genomic Complexity and Disorder Heterogeneity. *Biol. Psychiatry* **66**:988–989. [8, 9, 10]
- . 2015. Medicine. Brain Disorders? Precisely. *Science* **348**:499–500. [14, 16]
- Insel, T. R., B. N. Cuthbert, M. Garvey, et al. 2010. Research Domain Criteria (RDoC): Toward a New Classification Framework for Research on Mental Disorders. *Am. J. Psychiatry* **167**:748–751. [2, 4, 8, 14, 17]
- Intl. Schizophrenia Consortium. 2009. Common Polygenic Variation Contributes to Risk of Schizophrenia and Bipolar Disorder. *Nature* **460**:748–752. [1, 3]
- Iordanova, M. D. 2009. Dopaminergic Modulation of Appetitive and Aversive Predictive Learning. *Rev. Neurosci.* **20**:383–404. [14]

- Iossifov, I., B. J. O'Roak, S. J. Sanders, et al. 2014. The Contribution of *de Novo* Coding Mutations to Autism Spectrum Disorder. *Nature* **515**:216–221. [1]
- Irish, M., J. R. Hodges, and O. Piguet. 2014. Right Anterior Temporal Lobe Dysfunction Underlies Theory of Mind Impairments in Semantic Dementia. *Brain* **137**:1241–1253. [12]
- Irwin, D. E., B. Stucky, M. M. Langer, et al. 2010. An Item Response Analysis of the Pediatric PROMIS Anxiety and Depressive Symptoms Scale. *Qual. Life Res.* **21**:195–207. [8]
- Iwata, Y., S. Nakajima, T. Suzuki, et al. 2015. Effects of Glutamate Positive Modulators on Cognitive Deficits in Schizophrenia: A Systematic Review and Meta-Analysis of Double-Blind Randomized Controlled Trials. *Mol. Psychiatry* **20**:1151–1160. [16]
- Jaaro-Peled, H., A. Hayashi-Takagi, S. Seshadri, et al. 2009. Neurodevelopmental Mechanisms of Schizophrenia: Understanding Disturbed Postnatal Brain Maturation through Neuregulin-1-ErbB4 and DISC1. *Trends Neurosci.* **32**:485–495. [3]
- Jacobs, W. J., and L. Nadel. 1998. Neurobiology of Reconstructed Memory. *Psychol. Public Policy Law* **4**:1110–1134. [2, 10]
- Jaeger, D., and J. M. Bower. 1999. Synaptic Control of Spiking in Cerebellar Purkinje Cells: Dynamic Current Clamp Based on Model Conductances. *J. Neurosci.* **19**:6090–6101. [12]
- Jamadar, S., P. Michie, and F. Karayanidis. 2010. Compensatory Mechanisms Underlie Intact Task-Switching Performance in Schizophrenia. *Neuropsychologia* **48**:1305–1323. [4]
- James, G., J. G. Witten, T. Hastie, and R. Tibshirani. 2013. An Introduction to Statistical Learning. Springer Texts in Statistics. New York: Springer. [14]
- Jansen, B. H., and V. G. Rit. 1995. Electroencephalogram and Visual Evoked Potential Generation in a Mathematical Model of Coupled Cortical Columns. *Biol. Cybern.* **73**:357–366. [12]
- Jardri, R., and S. Denève. 2013. Circular Inferences in Schizophrenia. *Brain* **136**:3227–3241. [5]
- Jarrett, R. B., D. Kraft, J. Doyle, et al. 2001. Preventing Recurrent Depression Using Cognitive Therapy with and without a Continuation Phase: A Randomized Clinical Trial. *Arch. Gen. Psychiatry* **58**:381–388. [15]
- Jarrett, R. B., A. Minhajuddin, H. Gershensonfeld, E. S. Friedman, and M. E. Thase. 2013. Preventing Depressive Relapse and Recurrence in Higher-Risk Cognitive Therapy Responders: A Randomized Trial of Continuation Phase Cognitive Therapy, Fluoxetine, or Matched Pill Placebo. *JAMA Psychiatry* [15]
- Javitt, D. C., M. Steinschneider, C. E. Schroeder, and J. C. Arezzo. 1996. Role of Cortical N-Methyl-D-Aspartate Receptors in Auditory Sensory Memory and Mismatch Negativity Generation: Implications for Schizophrenia. *PNAS* **93**:11962–11967. [12]
- Jaynes, E. T. 2003. Probability Theory: The Logic of Science: Cambridge Univ. Press. [7, 17]
- Jazbec, S., C. Pantelis, T. Robbins, et al. 2007. Intra-Dimensional/Extra-Dimensional Set-Shifting Performance in Schizophrenia: Impact of Distractors. *Schizophr. Res.* **89**:339–349. [4]
- Jirsa, V. K., W. C. Stacey, P. P. Quilichini, A. I. Ivanov, and C. Bernard. 2014. On the Nature of Seizure Dynamics. *Brain* **137**:2210–2230. [12]
- Jocham, G., T. A. Klein, and M. Ullsperger. 2011. Dopamine-Mediated Reinforcement Learning Signals in the Striatum and Ventromedial Prefrontal Cortex Underlie Value-Based Choices. *J. Neurosci.* **31**:1606–1613. [6]

- Johnson, A., and A. D. Redish. 2007. Neural Ensembles in Ca3 Transiently Encode Paths Forward of the Animal at a Decision Point. *J. Neurosci.* **27**:12176–12189. [15]
- Johnson, S. A., N. M. Fournier, and L. E. Kalynchuk. 2006. Effect of Different Doses of Corticosterone on Depression-Like Behavior and HPA Axis Responses to a Novel Stressor. *Behav. Brain Res.* **168**:280–288. [12]
- Joormann, J. 2004. Attentional Bias in Dysphoria: The Role of Inhibitory Processes. *Cogn. Emot.* **18**:125–147. [15]
- . 2006. Differential Effects of Rumination and Dysphoria on the Inhibition of Irrelevant Emotional Material: Evidence from a Negative Priming Task. *Cogn. Ther. Res.* **30**:149–160. [15]
- Jovanovic, T., and K. J. Ressler. 2010. How the Neurocircuitry and Genetics of Fear Inhibition May Inform Our Understanding of PTSD. *Am. J. Psychiatry* **167**:648–662. [10]
- Joyce, E., S. Hutton, S. Mutsatsa, et al. 2002. Executive Dysfunction in First-Episode Schizophrenia and Relationship to Duration of Untreated Psychosis: The West London Study. *Br. J. Psychiatry Suppl.* **43**:s38–44. [4]
- Juckel, G., F. Schlagenhauf, M. Koslowski, et al. 2006a. Dysfunction of Ventral Striatal Reward Prediction in Schizophrenic Patients Treated with Typical, Not Atypical, Neuroleptics. *Psychopharmacology (Berl.)* **187**:222–228. [4]
- . 2006b. Dysfunction of Ventral Striatal Reward Prediction in Schizophrenia. *NeuroImage* **29**:409–416. [4]
- Judd, L. L., and H. S. Akiskal. 2000. Delineating the Longitudinal Structure of Depressive Illness: Beyond Clinical Subtypes and Duration Thresholds. *Pharmacopsychiatry* **33**:3–7. [15]
- Judd, L. L., H. S. Akiskal, J. D. Maser, et al. 1998. Major Depressive Disorder: A Prospective Study of Residual Subthreshold Depressive Symptoms as Predictor of Rapid Relapse. *J. Affect. Disord.* **50**:97–108. [15]
- Judd, L. L., M. J. Paulus, P. J. Schettler, et al. 2000. Does Incomplete Recovery from First Lifetime Major Depressive Episode Herald a Chronic Course of Illness? *Am. J. Psychiatry* **157**:1501–1504. [15]
- Just, M., V. Cherkassky, T. Keller, and N. Minshew. 2004. Cortical Activation and Synchronization During Sentence Comprehension in High-Functioning Autism: Evidence of Underconnectivity. *Brain* **127**:1811–1821. [3]
- Kaabí, B., J. Gelernter, S. W. Woods, et al. 2006. Genome Scan for Loci Predisposing to Anxiety Disorders Using a Novel Multivariate Approach: Strong Evidence for a Chromosome 4 Risk Locus. *Am. J. Hum. Genet.* **78**:543–553. [3]
- Kaddurah-Daouk, R., and R. Weinshilboum. 2015. Pharmacometabolomics Research Network: Metabolomic Signatures for Drug Response Phenotypes: Pharmacometabolomics Enables Precision Medicine. *Clin. Pharmacol. Ther.* **98**:71–75. [5]
- Kalin, N. H., S. C. Risch, D. S. Janowsky, and D. L. Murphy. 1981. Use of Dexamethasone Suppression Test in Clinical Psychiatry. *J. Clin. Psychopharmacol.* **1**:64–69. [1]
- Kalivas, P. W. 2004. Glutamate Systems in Cocaine Addiction. *Curr. Opin. Pharm.* **4**:23–29. [12]
- . 2009. The Glutamate Homeostasis Hypothesis of Addiction. *Nat. Rev. Neurosci.* **10**:561–572. [12]
- Kalivas, P. W., and N. D. Volkow. 2014. The Neural Basis of Addiction: A Pathology of Motivation and Choice. *Am. J. Psychiatry* **162**:1403–1413. [12]
- Kalivas, P. W., N. D. Volkow, and J. Seamans. 2005. Unmanageable Motivation in Addiction: A Pathology in Prefrontal-Accumbens Glutamate Transmission. *Neuron* **45**:647–650. [12]

- Kalman, R. E. 1964. When Is a Linear Control System Optimal? *J. Basic Engineer.* **4**:51–60. [14]
- Kambeitz, J., A. Abi-Dargham, S. Kapur, and O. D. Howes. 2014. Alterations in Cortical and Extrastriatal Subcortical Dopamine Function in Schizophrenia: Systematic Review and Meta-Analysis of Imaging Studies. *Br. J. Psychiatry* **204**:420–429. [4, 16]
- Kapur, S., A. G. Phillips, and T. R. Insel. 2012. Why Has It Taken So Long for Biological Psychiatry to Develop Clinical Tests and What to Do About It? *Mol. Psychiatry* **17**:1174–1179. [7, 12]
- Karayannidis, F., R. Nicholson, U. Schall, et al. 2006. Switching between Univalent Task-Sets in Schizophrenia: Erp Evidence of an Anticipatory Task-Set Reconfiguration Deficit. *Clin. Neurophysiol.* **117**:2172–2190. [4]
- Karayiorgou, M., M. A. Morris, B. Morrow, et al. 1995. Schizophrenia Susceptibility Associated with Interstitial Deletions of Chromosome 22q11. *PNAS* **92**:7612–7616. [1]
- Karayiorgou, M., T. J. Simon, and J. A. Gogos. 2010. 22q11.2 Microdeletions: Linking DNA Structural Variation to Brain Dysfunction and Schizophrenia. *Nat. Rev. Neurosci.* **11**:402–416. [5]
- Kass, R. E., and D. Steffey. 1989. Approximate Bayesian Inference in Conditionally Independent Hierarchical Models (Parametric Empirical Bayes Models). *J. Am. Stat. Assoc.* **407**:717–726. [11]
- Kaufman, J., J. Gelernter, J. J. Hudziak, A. R. Tyrka, and J. D. Coplan. 2015. The Research Domain Criteria (RDoC) Project and Studies of Risk and Resilience in Maltreated Children. *J. Am. Acad. Child Adolesc. Psychiatry* **54**:617–625. [11]
- Kay, S. R. 1990. Positive-Negative Symptom Assessment in Schizophrenia: Psychometric Issues and Scale Comparison. *Psych. Quart.* **61**:163–178. [11]
- Kaymaz, N., J. van Os, A. J. M. Loonen, and W. A. Nolen. 2008. Evidence That Patients with Single versus Recurrent Depressive Episodes Are Differentially Sensitive to Treatment Discontinuation: A Meta-Analysis of Placebo-Controlled Randomized Trials. *J. Clin. Psychiatry* **69**:1423–1436. [15]
- Kayser, A., J. M. Mitchell, D. Weinstein, and M. J. Frank. 2015. Dopamine, Locus of Control, and the Exploration-Exploitation Tradeoff. *Neuropsychopharmacology* **40**:454–462. [6]
- Keck, P. E., Jr., and H. K. Manji. 2002. Current and Emerging Treatments for Acute Mania and Long-Term Prophylaxis in Bipolar Disorder. In: *Neuropsychopharmacology: The Fifth Generation of Progress*, ed. K. L. Davis et al., pp. 1109–1118. Philadelphia: Lippincott Williams and Wilkins. [1]
- Kegeles, L. S., A. Abi-Dargham, W. G. Frankle, et al. 2010. Increased Synaptic Dopamine Function in Associative Regions of the Striatum in Schizophrenia. *Arch. Gen. Psychiatry* **67**:231–239. [4, 16]
- Keller, M. B., P. W. Lavori, C. E. Lewis, and G. L. Klerman. 1983. Predictors of Relapse in Major Depressive Disorder. *JAMA* **250**:3299–3304. [15]
- Keller, M. B., M. H. Trivedi, M. E. Thase, et al. 2007. The Prevention of Recurrent Episodes of Depression with Venlafaxine for Two Years (PREVENT) Study: Outcomes from the 2-Year and Combined Maintenance Phases. *J. Clin. Psychiatry* **68**:1246–1256. [15]
- Kendler, K. S. 1996. Major Depression and Generalized Anxiety Disorder: Same Genes, (Partly) Different Environments—Revisited. *Br. J. Psychiatry* **168**:68–75. [8]
- . 2001. Twin Studies of Psychiatric Illness. *Arch. Gen. Psych.* **58**:1005–1014. [8]
- . 2006. Reflections on the Relationship between Psychiatric Genetics and Psychiatric Nosology. *Am. J. Psychiatry* **163**:1138–1146. [1]

- Kendler, K. S. 2012. The Dappled Nature of Causes of Psychiatric Illness: Replacing the Organic-Functional/Hardware-Software Dichotomy with Empirically Based Pluralism. *Mol. Psychiatry* **17**:377–388. [14]
- Kendler, K. S., C. G. Davis, and R. C. Kessler. 1997. The Familial Aggregation of Common Psychiatric and Substance Use Disorders in the National Comorbidity Survey: A Family History Study. *Br. J. Psychiatry* **170**:541–548. [8]
- Kendler, K. S., and C. O. Gardner. 2010. Dependent Stressful Life Events and Prior Depressive Episodes in the Prediction of Major Depression: The Problem of Causal Inference in Psychiatric Epidemiology. *Arch. Gen. Psychiatry* **67**:1120–1127. [14]
- . 2014. Sex Differences in the Pathways to Major Depression: A Study of Opposite-Sex Twin Pairs. *Am. J. Psychiatry* **171**:426–435. [14]
- Kendler, K. S., and C. O. Gardner, Jr. 1998. Boundaries of Major Depression: An Evaluation of DSM-IV Criteria. *Am. J. Psychiatry* **155**:172–177. [10]
- Kendler, K. S., L. M. Karkowski, and C. A. Prescott. 1999. Causal Relationship between Stressful Life Events and the Onset of Major Depression. *Am. J. Psychiatry* **156**:837–841. [15]
- Kendler, K. S., R. C. Kessler, E. E. Walters, et al. 1995. Stressful Life Events, Genetic Liability, and Onset of an Episode of Major Depression in Women. *Am. J. Psychiatry* **152**:833–842. [15]
- Kendler, K. S., and M. C. Neale. 2010. Endophenotype: A Conceptual Analysis. *Mol. Psychiatry* **15**:789–797. [5]
- Kendler, K. S., L. M. Thornton, and C. O. Gardner. 2000. Stressful Life Events and Previous Episodes in the Etiology of Major Depression in Women: An Evaluation of the “Kindling” Hypothesis. *Am. J. Psychiatry* **157**:1243–1251. [15]
- . 2001. Genetic Risk, Number of Previous Depressive Episodes, and Stressful Life Events in Predicting Onset of Major Depression. *Am. J. Psychiatry* **158**:582–586. [15]
- Kendler, K. S., and D. Walsh. 1995. Gender and Schizophrenia. Results of an Epidemiologically-Based Family Study. *Br. J. Psychiatry* **167**:184–192. [16]
- Kennedy, N., R. Abbott, and E. S. Paykel. 2003. Remission and Recurrence of Depression in the Maintenance Era: Long-Term Outcome in a Cambridge Cohort. *Psychol. Med.* **33**:827–838. [15]
- Kenny, E. M., P. Cormican, S. Furlong, et al. 2014. Excess of Rare Novel Loss-of-Function Variants in Synaptic Genes in Schizophrenia and Autism Spectrum Disorders. *Mol. Psychiatry* **19**:872–879. [3]
- Kent, L., J. Emerton, V. Bhadravathi, et al. 2008. X-Linked Ichthyosis (Steroid Sulfatase Deficiency) Is Associated with Increased Risk of Attention Deficit Hyperactivity Disorder, Autism and Social Communication Deficits. *J. Med. Genet.* **45**:519–524. [3]
- Kéri, S., A. Juhasz, A. Rimanoczy, et al. 2005a. Habit Learning and the Genetics of the Dopamine D3 Receptor: Evidence from Patients with Schizophrenia and Healthy Controls. *Behav. Neurosci.* **119**:687–693. [4]
- Kéri, S., O. Kelemen, G. Szekeres, et al. 2000. Schizophrenics Know More Than They Can Tell: Probabilistic Classification Learning in Schizophrenia. *Psychol. Med.* **30**:149–155. [4]
- Kéri, S., A. A. Moustafa, C. E. Myers, G. Benedek, and M. A. Gluck. 2010. A-Synuclein Gene Duplication Impairs Reward Learning. *PNAS* **107**:15992–15994. [2]
- Kéri, S., O. Nagy, O. Kelemen, C. E. Myers, and M. A. Gluck. 2005b. Dissociation between Medial Temporal Lobe and Basal Ganglia Memory Systems in Schizophrenia. *Schizophr. Res.* **77**:321–328. [4]

- Keshavan, M. S., G. Berger, R. B. Zipursky, S. J. Wood, and C. Pantelis. 2005. Neurobiology of Early Psychosis. *Br. J. Psychiatry Suppl.* **48**:S8–18. [16]
- Kessler, R. C., A. Sonnega, E. Bromet, M. Hughes, and C. B. Nelson. 1995. Posttraumatic Stress Disorder in the National Comorbidity Survey. *Arch. Gen. Psychiatry* **52**:1048–1060. [10]
- Kety, S. S., D. Rosenthal, P. H. Wender, and F. Schulsinger. 1971. Mental Illness in the Biological and Adoptive Families of Adopted Schizophrenics. *Am. J. Psychiatry* **128**:302–306. [8]
- Kheirbek, M. A., K. C. Klemenhagen, A. Sahay, and R. Hen. 2012. Neurogenesis and Generalization: A New Approach to Stratify and Treat Anxiety Disorders. *Nat. Neurosci.* **15**:1613–1620. [12]
- Khin, N. A., Y. F. Chen, Y. Yang, P. Yang, and T. P. Laughren. 2011. Exploratory Analyses of Efficacy Data from Major Depressive Disorder Trials Submitted to the US Food and Drug Administration in Support of New Drug Applications. *J. Clin. Psychiatry* **72**:464–472. [10]
- Kiebel, S. J., O. David, and K. J. Friston. 2006. Dynamic Causal Modelling of Evoked Responses in EEG/MEG with Lead Field Parameterization. *NeuroImage* **30**:1273–1284. [12]
- Kieffaber, P. D., E. S. Kappenan, M. Bodkins, et al. 2006. Switch and Maintenance of Task Set in Schizophrenia. *Schizophr. Res.* **84**:345–358. [4]
- Kilb, W. 2012. Development of the Gabaergic System from Birth to Adolescence. *Neuroscientist* **18**:613–630. [16]
- Killcross, S., and E. Coutureau. 2003. Coordination of Actions and Habits in the Medial Prefrontal Cortex of Rats. *Cereb. Cortex* **13**:400–408. [15]
- Kim, I. H., M. A. Rossi, D. K. Aryal, et al. 2015. Spine Pruning Drives Antipsychotic-Sensitive Locomotion via Circuit Control of Striatal Dopamine. *Nat. Neurosci.* **18**:883–891. [16]
- Kim, J., D. C. Glahn, K. H. Nuechterlein, and T. D. Cannon. 2004. Maintenance and Manipulation of Information in Schizophrenia: Further Evidence for Impairment in the Central Executive Component of Working Memory. *Schizophr. Res.* **68**:173–187. [4]
- Kim-Cohen, J., A. Caspi, T. E. Moffitt, et al. 2003. Prior Juvenile Diagnoses in Adults with Mental Disorder: Developmental Follow-Back of a Prospective-Longitudinal Cohort. *Arch. Gen. Psychiatry* **60**:709–717. [10]
- Kimoto, S., M. M. Zaki, H. H. Bazmi, and D. A. Lewis. 2015. Altered Markers of Cortical Gamma-Aminobutyric Acid Neuronal Activity in Schizophrenia: Role of the NARP Gene. *JAMA Psychiatry* **72**:747–756. [16]
- Kinon, B. J., L. Chen, H. Ascher-Svanum, et al. 2010. Early Response to Antipsychotic Drug Therapy as a Clinical Marker of Subsequent Response in the Treatment of Schizophrenia. *Neuropsychopharmacology* **35**:581. [12]
- Kinon, B. J., B. A. Millen, L. Zhang, and D. L. McKinzie. 2015. Exploratory Analysis for a Targeted Patient Population Responsive to the Metabotropic Glutamate 2/3 Receptor Agonist Pomaglumetad Methionil in Schizophrenia. *Biol. Psychiatry* **78**:754–762. [16]
- Kirby, K. N., N. M. Petry, and W. K. Bickel. 1999. Heroin Addicts Have Higher Discount Rates for Delayed Rewards Than Non-Drug-Using Controls. *J. Exp. Psychol.* **128**:78–87. [2]
- Kirk, U., X. Gu, A. H. Harvey, P. Fonagy, and P. R. Montague. 2014. Mindfulness Training Modulates Value Signals in Ventromedial Prefrontal Cortex through Input from Insular Cortex. *NeuroImage* **100**:254–262. [12]

- Kirsch, P., S. Ronshausen, D. Mier, and B. Gallhofer. 2007. The Influence of Antipsychotic Treatment on Brain Reward System Reactivity in Schizophrenia Patients. *Pharmacopsychiatry* **40**:196–198. [4]
- Kishida, K. T., B. King-Casas, and P. R. Montague. 2010. Neuroeconomic Approaches to Mental Disorders. *Neuron* **67**:543–554. [2]
- Klein-Flugge, M. C., L. T. Hunt, D. R. Bach, R. J. Dolan, and T. E. Behrens. 2011. Dissociable Reward and Timing Signals in Human Midbrain and Ventral Striatum. *Neuron* **72**:654–664. [14]
- Klingner, C. M., K. Langbein, M. Dietzek, et al. 2014. Thalamocortical Connectivity During Resting State in Schizophrenia. *Eur. Arch. Psychiatry Clin. Neurosci.* **264**:111–119. [16]
- Knight, B. W., A. Omurtag, and L. Sirovich. 2000. The Approach of a Neuron Population Firing Rate to a New Equilibrium: An Exact Theoretical Result. *Neural Comput.* **12**: 1045–1055. [12]
- Koch, C., and G. Laurent. 1999. Complexity and the Nervous System. *Science* **284**:96–98. [5]
- Koch, K., C. Schachtzabel, G. Wagner, et al. 2009. Altered Activation in Association with Reward-Related Trial-and-Error Learning in Patients with Schizophrenia. *NeuroImage* **50**:223–232. [4]
- Kocsis, J. H., M. E. Thase, M. H. Trivedi, et al. 2007. Prevention of Recurrent Episodes of Depression with Venlafaxine ER in a 1-Year Maintenance Phase from the PREVENT Study. *J. Clin. Psychiatry* **68**:1014–1023. [15]
- Kohannim, O., X. Hua, D. P. Hibar, et al. 2010. Boosting Power for Clinical Trials Using Classifiers Based on Multiple Biomarkers. *Neurobiol. Aging* **31**:1429–1442. [14]
- Koller, D., and N. Friedman. 2009. Probabilistic Graphical Models. Cambridge, MA: MIT Press. [3]
- Konopaske, G. T., K. A. Dorph-Petersen, R. A. Sweet, et al. 2008. Effect of Chronic Antipsychotic Exposure on Astrocyte and Oligodendrocyte Numbers in Macaque Monkeys. *Biol. Psychiatry* **63**:759–765. [16]
- Konorski, J. 1949. Conditioned Reflexes and Neuron Organization. *Calif. Med.* **70**:311. [13]
- Korb, A. S., A. M. Hunter, I. A. Cook, and A. F. Leuchter. 2009. Rostral Anterior Cingulate Cortex Theta Current Density and Response to Antidepressants and Placebo in Major Depression. *Clin. Neurophysiol.* **120**:1313–1319. [15]
- Koshino, H., R. K. Kana, T. A. Keller, et al. 2008. fMRI Investigation of Working Memory for Faces in Autism: Visual Coding and Underconnectivity with Frontal Areas. *Cereb. Cortex* **18**:289–300. [3]
- Kraemer, H., A. Noda, and R. O'Hara. 2004. Categorical versus Dimensional Approaches to Diagnosis: Methodological Challenges. *J. Psychiatr. Res.* **38**:17–25. [8]
- Kraepelin, E. 1919. *Dementia Praecox and Paraphrenia* (trans. R. M. Barclay). Edinburgh: Livingston. [9]
- Kraepelin, E., and A. R. Diefendorf. 1907. *Clinical Psychiatry: A Textbook for Students and Physicians* (7th edition). London: MacMillan. [9]
- Kravitz, A. V., L. D. Tye, and A. C. Kreitzer. 2012. Distinct Roles for Direct and Indirect Pathway Striatal Neurons in Reinforcement. *Nat. Neurosci.* **15**:816–818. [2, 6]
- Kremer, B., P. Goldberg, S. E. Andrew, et al. 1994. A Worldwide Study of the Huntington's Disease Mutation: The Sensitivity and Specificity of Measuring Cag Repeats. *N. Engl. J. Med.* **330**:1401–1406. [2]
- Krueger, R. F. 1999. The Structure of Common Mental Disorders. *JAMA Psychiatry* **56**:921–926. [2]

- Krueger, R. F., and A. W. I. MacDonald. 2005. Dimensional Approaches to Understanding and Treating Psychosis. *Psychiatr. Ann.* **35**:31–34. [9]
- Krueger, R. F., and K. E. Markon. 2006. Reinterpreting Comorbidity: A Model-Based Approach to Understanding and Classifying Psychopathology. *Annu. Rev. Clin. Psych.* **2**:111–133. [5]
- Krueger, R. F., K. E. Markon, C. J. Patrick, and W. G. Iacono. 2005. Externalizing Psychopathology in Adulthood: A Dimensional-Spectrum Conceptualization and Its Implications for DSM-V. *J. Abnorm. Psychol.* **114**:537–550. [8]
- Krystal, J. H. 2015. Deconstructing N-Methyl-D-Aspartate Glutamate Receptor Contributions to Cortical Circuit Functions to Construct Better Hypotheses About the Pathophysiology of Schizophrenia. *Biol. Psychiatry* **77**:508–510. [16]
- Krystal, J. H., W. Abi-Saab, E. Perry, et al. 2005. Preliminary Evidence of Attenuation of the Disruptive Effects of the NMDA Glutamate Receptor Antagonist, Ketamine, on Working Memory by Pretreatment with the Group II Metabotropic Glutamate Receptor Agonist, LY354740, in Healthy Human Subjects. *Psychopharmacology (Berl.)* **179**:303–309. [16]
- Krystal, J. H., D. C. D’Souza, D. Mathalon, et al. 2003. NMDA Receptor Antagonist Effects, Cortical Glutamatergic Function, and Schizophrenia: Toward a Paradigm Shift in Medication Development. *Psychopharmacology (Berl.)* **169**:215–233. [16]
- Krystal, J. H., G. Sanacora, and R. S. Duman. 2013. Rapid-Acting Glutamatergic Antidepressants: The Path to Ketamine and Beyond. *Biol. Psychiatry* **73**:1133–1141. [5]
- Krystal, J. H., and M. W. State. 2014. Psychiatric Disorders: Diagnosis to Therapy. *Cell* **157**:201–214. [11, 16]
- Kumar, P., G. Waiter, T. Ahearn, et al. 2008. Abnormal Temporal Difference Reward-Learning Signals in Major Depression. *Brain* **131**:2084–2093. [3]
- Kupfer, D. J., M. B. First, and D. A. Regier. 2002. Introduction. In: *A Research Agenda for DSM-V*, ed. D. J. Kupfer et al., pp. xv–xxiii. Washington, D.C.: American Psychiatric Association. [8]
- Kurth-Nelson, Z., G. Barnes, D. Sejdinovic, R. Dolan, and P. Dayan. 2015. Temporal Structure in Associative Retrieval. *eLife* **4**: [15]
- Kurth-Nelson, Z., and A. D. Redish. 2012. Modeling Decision-Making Systems in Addiction. In: *Computational Neuroscience of Drug Addiction*, ed. B. Gutkin and S. H. Ahmed, pp. 163–188. New York: Springer. [2]
- Kuyken, W., E. Watkins, E. Holden, et al. 2010. How Does Mindfulness-Based Cognitive Therapy Work? *Behav. Res. Ther.* **48**:1105–1112. [15]
- Kwan, A. C., and Y. Dan. 2012. Dissection of Cortical Microcircuits by Single-Neuron Stimulation *in Vivo*. *Curr. Biol.* **22**:1459–1467. [3]
- LaBuda, M. C., I. I. Gottesman, and D. L. Pauls. 1993. Usefulness of Twin Studies for Exploring the Etiology of Childhood and Adolescent Psychiatric Disorders. *Am. J. Med. Genet.* **48**:47–59. [3]
- Ladd, C. O., K. V. Thrivikraman, R. L. Huot, and P. M. Plotsky. 2005. Differential Neuroendocrine Responses to Chronic Variable Stress in Adult Long Evans Rats Exposed to Handling-Maternal Separation as Neonates. *Psychoneuroendocrinology* **30**:520–533. [3]
- Lambo, M. E., and G. G. Turrigiano. 2013. Synaptic and Intrinsic Homeostatic Mechanisms Cooperate to Increase L2/3 Pyramidal Neuron Excitability During a Late Phase of Critical Period Plasticity. *J. Neurosci.* **33**:8810–8819. [16]

- Lamers, F., P. van Oppen, H. C. Comijs, et al. 2011. Comorbidity Patterns of Anxiety and Depressive Disorders in a Large Cohort Study: The Netherlands Study of Depression and Anxiety (NESDA). *J. Clin. Psychiatry* **72**:341–348. [1]
- Lane, H. Y., Y. C. Liu, C. L. Huang, et al. 2008. Sarcosine (N-Methylglycine) Treatment for Acute Schizophrenia: A Randomized, Double-Blind Study. *Biol. Psychiatry* **63**:9–12. [16]
- Langston, J. W., P. Ballard, J. W. Tetrud, and I. Irwin. 1983. Chronic Parkinsonism in Humans Due to a Product of Meperidine-Analog Synthesis. *Science* **219**:979–980. [2]
- Langston, J. W., L. S. Forno, C. S. Rebert, and I. Irwin. 1984. Selective Nigral Toxicity after Systemic Administration of 1-Methyl-4-Phenyl-1,2,5,6-Tetrahydropyridine (MPTP) in the Squirrel Monkey. *Brain Res.* **292**:390–394. [2]
- Langston, J. W., and J. Palfreman. 2013. The Case of the Frozen Addicts. Amsterdam: IOS Press. [2]
- Lapish, C. C., E. Balaguer-Ballester, J. K. Seamans, J. K. A. G. Phillips, and D. Durstewitz. 2015. Amphetamine Exerts Dose-Dependent Changes in Prefrontal Cortex Attractor Dynamics During Working Memory. *J. Neurosci.* **35**:10172–10187. [5]
- Lapish, C. C., S. Kroener, D. Durstewitz, A. Lavin, and J. K. Seamans. 2007. The Ability of the Mesocortical Dopamine System to Operate in Distinct Temporal Modes. *Psychopharmacology (Berl.)* **191**:609–625. [4]
- Laplace, P.-S. 1774. Mémoire Sur la Probabilité Des Causes Par Les Évènemens. *Mém. Acad. Roy. Sci.* **6**:621–656. [7]
- Laruelle, M., A. Abi-Dargham, R. Gil, L. Kegeles, and R. Innis. 1999. Increased Dopamine Transmission in Schizophrenia: Relationship to Illness Phases. *Biol. Psychiatry* **46**:56–72. [4]
- Laruelle, M., A. Abi-Dargham, C. H. van Dyck, et al. 1996. Single Photon Emission Computerized Tomography Imaging of Amphetamine-Induced Dopamine Release in Drug-Free Schizophrenic Subjects. *PNAS* **93**:9235–9240. [4, 16]
- Lawrie, S. M., C. Buechel, H. C. Whalley, et al. 2002. Reduced Frontotemporal Functional Connectivity in Schizophrenia Associated with Auditory Hallucinations. *Biol. Psychiatry* **51**:1008–1011. [3]
- Lawson, R. P., G. Rees, and K. J. Friston. 2014. An Aberrant Precision Account of Autism. *Front. Hum. Neurosci.* **8**:302. [7]
- Lazarus, M. S., K. Krishnan, and Z. J. Huang. 2015. Gad67 Deficiency in Parvalbumin Interneurons Produces Deficits in Inhibitory Transmission and Network Disinhibition in Mouse Prefrontal Cortex. *Cereb. Cortex* **25**:1290–1296. [16]
- Lazarus, R. S. 2006. Stress and Emotion: A New Synthesis. New York: Springer. [15]
- Ledford, H. 2014. Medical Research: If Depression Were Cancer. *Nature* **515**:182–184. [3]
- LeDoux, J. E. 1996. The Emotional Brain. New York: Simon and Schuster. [10]
- \_\_\_\_\_. 2000. Emotion Circuits in the Brain. *Annu. Rev. Neurosci.* **23**:155–184. [3]
- Lee, J., and S. Park. 2005. Working Memory Impairments in Schizophrenia: A Meta-Analysis. *J. Abnorm. Psychol.* **114**:599–611. [4]
- Lee, S. W., S. Shimojo, and J. P. O'Doherty. 2014. Neural Computations Underlying Arbitration between Model-Based and Model-Free Learning. *Neuron* **81**:687–699. [4, 10]
- Lee, Y. M., and K.-U. Lee. 2011. Time to Discontinuation among the Three Second-Generation Antidepressants in a Naturalistic Outpatient Setting of Depression. *Psychiatry Clin. Neurosci.* **65**:630–637. [15]

- Lempert, K. M., P. W. Glimcher, and E. A. Phelps. 2015. Emotional Arousal and Discount Rate in Intertemporal Choice Are Reference Dependent. *J. Exp. Psychol. Gen.* **144**:366. [12]
- Lencz, T., B. Cornblatt, and R. M. Bilder. 2001. Neurodevelopmental Models of Schizophrenia: Pathophysiologic Synthesis and Directions for Intervention Research. *Psychopharmacol. Bull.* **35**:95–125. [16]
- Lepage, M., M. Bodnar, and C. R. Bowie. 2014. Neurocognition: Clinical and Functional Outcomes in Schizophrenia. *Can. J. Psychiatry* **59**:5–12. [4]
- Lesch, K. P., D. Bengel, A. Heils, et al. 1996. Association of Anxiety-Related Traits with a Polymorphism in the Serotonin Transporter Gene Regulatory Region. *Science* **274**:1527–1531. [3]
- Lesch, K. P., S. Selch, T. J. Renner, et al. 2011. Genome-Wide Copy Number Variation Analysis in Attention-Deficit/Hyperactivity Disorder: Association with Neuropeptide Y Gene Dosage in an Extended Pedigree. *Mol. Psychiatry* **16**:491–503. [3]
- Lesh, T. A., T. A. Niendam, M. J. Minzenberg, and C. S. Carter. 2011. Cognitive Control Deficits in Schizophrenia: Mechanisms and Meaning. *Neuropsychopharmacology* **36**:316–338. [4]
- Letzkus, J. J., S. B. E. Wolff, E. M. M. Meyer, et al. 2011. A Disinhibitory Microcircuit for Associative Fear Learning in the Auditory Cortex. *Nature* **480**:331–335. [3]
- Leuchter, A. F., I. A. Cook, L. B. Marangell, et al. 2009. Comparative Effectiveness of Biomarkers and Clinical Indicators for Predicting Outcomes of SSRI Treatment in Major Depressive Disorder: Results of the BRITE-MD Study. *Psychiatry Res.* **169**:124–131. [15]
- Levine, S. Z., I. Lurie, R. Kohn, and I. Levav. 2011a. Trajectories of the Course of Schizophrenia: From Progressive Deterioration to Amelioration over Three Decades. *Schizophr. Res.* **126**:184–191. [3]
- Levine, S. Z., J. Rabinowitz, H. Ascher-Svanum, D. E. Faries, and A. H. Lawson. 2011b. Extent of Attaining and Maintaining Symptom Remission by Antipsychotic Medication in the Treatment of Chronic Schizophrenia: Evidence from the CATIE Study. *Schizophr. Res.* **133**:42–46. [1]
- Levy, D., M. Ronemus, B. Yamrom, et al. 2011. Rare *de Novo* and Transmitted Copy-Number Variation in Autistic Spectrum Disorders. *Neuron* **70**:886–897. [1, 3]
- Lewinsohn, P. M., T. E. Joiner, Jr., and P. Rohde. 2001. Evaluation of Cognitive Diathesis-Stress Models in Predicting Major Depressive Disorder in Adolescents. *J. Abnorm. Psychol.* **110**:203–215. [15]
- Lewis, D. A. 2014. Inhibitory Neurons in Human Cortical Circuits: Substrate for Cognitive Dysfunction in Schizophrenia. *Curr. Opin. Neurobiol.* **26**:22–26. [3]
- Lewis, D. A., R. Y. Cho, C. S. Carter, et al. 2008a. Subunit-Selective Modulation of GABA Type a Receptor Neurotransmission and Cognition in Schizophrenia. *Am. J. Psychiatry* **165**:1585–1593. [4]
- Lewis, D. A., A. A. Curley, J. R. Glausier, and D. W. Volk. 2012. Cortical Parvalbumin Interneurons and Cognitive Dysfunction in Schizophrenia. *Trends Neurosci.* **35**:57–67. [3]
- Lewis, D. A., T. Hashimoto, and H. M. Morris. 2008b. Cell and Receptor Type-Specific Alterations in Markers of GABA Neurotransmission in the Prefrontal Cortex of Subjects with Schizophrenia. *Neurotox. Res.* **14**:237–248. [16]
- Lewis, D. A., and P. Levitt. 2002. Schizophrenia as a Disorder of Neurodevelopment. *Annu. Rev. Neurosci.* **25**:409–432. [3]

- Leyton, M., and P. Vezina. 2014. Dopamine Ups and Downs in Vulnerability to Addictions: A Neurodevelopmental Model. *Trends Pharmacol. Sci.* **35**:268–276. [11]
- Li, C.-S. R., T. R. Kosten, and R. Sinha. 2005. Sex Differences in Brain Activation During Stress Imagery in Abstinent Cocaine Users: A Functional Magnetic Resonance Imaging Study. *Biol. Psychiatry* **57**:487–494. [3]
- Li, C.-Y. T., M.-M. Poo, and Y. Dan. 2009. Burst Spiking of a Single Cortical Neuron Modifies Global Brain State. *Science* **324**:643–646. [3]
- Li, L. M., K. Uehara, and T. Hanakawa. 2015. The Contribution of Interindividual Factors to Variability of Response in Transcranial Direct Current Stimulation Studies. *Front. Cell. Neurosci.* **9**:181. [5]
- Lichtenstein, P., B. H. Yip, C. Björk, et al. 2009. Common Genetic Determinants of Schizophrenia and Bipolar Disorder in Swedish Families: A Population-Based Study. *Lancet* **373**:234–239. [3]
- Lieberman, J. A., D. Perkins, A. Belger, et al. 2001. The Early Stages of Schizophrenia: Speculations on Pathogenesis, Pathophysiology, and Therapeutic Approaches. *Biol. Psychiatry* **50**:884–897. [3, 16]
- Lieberman, J. A., T. S. Stroup, J. P. McEvoy, et al. 2005. Effectiveness of Antipsychotic Drugs in Patients with Chronic Schizophrenia. *New Engl. J. Med.* **353**:1209–1223. [1]
- Liebowitz, M. R., F. M. Quitkin, J. W. Stewart, et al. 1988. Antidepressant Specificity in Atypical Depression. *Arch. Gen. Psychiatry* **45**:129–137. [1]
- Lieder, F., N. Goodman, and Q. J. M. Huys. 2013. Learned Helplessness and Generalization. Cognitive Science Conference. [15]
- Liljeholm, M., and J. P. O'Doherty. 2012. Contributions of the Striatum to Learning, Motivation, and Performance: An Associative Account. *Trends Cogn. Sci.* **16**:467–475. [6]
- Lim, S. L., J. P. O'Doherty, and A. Rangel. 2011. The Decision Value Computations in the vmPFC and Striatum Use a Relative Value Code That Is Guided by Visual Attention. *J. Neurosci.* **31**:13214–13223. [6]
- Lin, A. C., A. M. Bygrave, A. de Calignon, T. Lee, and G. Miesenbock. 2014. Sparse, Decorrelated Odor Coding in the Mushroom Body Enhances Learned Odor Discrimination. *Nat. Neurosci.* **17**:559–568. [16]
- Lindamer, L. A., J. B. Lohr, M. J. Harris, and D. V. Jeste. 1997. Gender, Estrogen, and Schizophrenia. *Psychopharmacol. Bull.* **33**:221–228. [16]
- Lionel, A. C., J. Crosbie, N. Barbosa, et al. 2011. Rare Copy Number Variation Discovery and Cross-Disorder Comparisons Identify Risk Genes for ADHD. *Sci. Transl. Med.* **3**:95ra75–95ra75. [3]
- Lisman, J. 2012. Excitation, Inhibition, Local Oscillations, or Large-Scale Loops: What Causes the Symptoms of Schizophrenia? *Curr. Opin. Neurobiol.* **22**:537–544. [16]
- Lisman, J. E., J. T. Coyle, R. W. Green, et al. 2008. Circuit-Based Framework for Understanding Neurotransmitter and Risk Gene Interactions in Schizophrenia. *Trends Neurosci.* **31**:234–242. [12]
- Liu, R. T., and L. B. Alloy. 2010. Stress Generation in Depression: A Systematic Review of the Empirical Literature and Recommendations for Future Study. *Clin. Psychol. Rev.* **30**:582–593. [15]
- Llinás, R. R. 2001. I of the Vortex. Cambridge, MA: MIT Press. [2]
- Lo, C. C., and X. J. Wang. 2006. Cortico-Basal Ganglia Circuit Mechanism for a Decision Threshold in 630 Reaction Time Tasks. *Nat. Neurosci.* **9**:956–963. [6]
- Lodge, D. J., and A. A. Grace. 2006. The Hippocampus Modulates Dopamine Neuron Responsivity by Regulating the Intensity of Phasic Neuron Activation. *Neuropsychopharmacology* **31**:1356–1361. [4]



- Maia, T. V., and M. Cano-Colino. 2015. The Role of Serotonin in Orbitofrontal Function and Obsessive-Compulsive Disorder. *Clin. Psychol. Sci.* **3**:460–482. [6, 15]
- Maia, T. V., and M. J. Frank. 2011. From Reinforcement Learning Models to Psychiatric and Neurological Disorders. *Nat. Neurosci.* **14**:154–162. [2, 6, 12, 15]
- Maia, T. V., and J. L. McClelland. 2012. A Neurocomputational Approach to Obsessive-Compulsive Disorder. *Trends Cogn. Sci.* **16**:14–15. [2]
- Maier, R., G. Moser, G. B. Chen, et al. 2015. Joint Analysis of Psychiatric Disorders Increases Accuracy of Risk Prediction for Schizophrenia, Bipolar Disorder, and Major Depressive Disorder. *Am. J. Hum. Genet.* **96**:283–294. [16]
- Maier, S. F., and L. R. Watkins. 2005. Stressor Controllability and Learned Helplessness: The Roles of the Dorsal Raphe Nucleus, Serotonin, and Corticotropin-Releasing Factor. *Neurosci. Biobehav. Rev.* **29**:829–841. [15]
- Malaspina, D., S. Harlap, S. Fennig, et al. 2001. Advancing Paternal Age and the Risk of Schizophrenia. *Arch. Gen. Psychiatry* **58**:361–367. [4]
- Maldonado-Aviles, J. G., A. A. Curley, T. Hashimoto, et al. 2009. Altered Markers of Tonic Inhibition in the Dorsolateral Prefrontal Cortex of Subjects with Schizophrenia. *Am. J. Psychiatry* **166**:450–459. [16]
- Malhotra, D., S. McCarthy, J. J. Michaelson, et al. 2011. High Frequencies of *de Novo* CNVs in Bipolar Disorder and Schizophrenia. *Neuron* **72**:951–963. [16]
- Mann, J. J., D. Currier, B. Stanley, et al. 2006. Can Biological Tests Assist Prediction of Suicide in Mood Disorders? *Int. J. Neuropsychopharmacology* **9**:465–474. [3]
- Manoach, D. S., A. K. Lee, M. S. Hamalainen, et al. 2013. Anomalous Use of Context During Task Preparation in Schizophrenia: A Magnetoencephalography Study. *Biol. Psychiatry* **73**:967–975. [4]
- Manoach, D. S., K. A. Lindgren, M. V. Cherkasova, et al. 2002. Schizophrenic Subjects Show Deficient Inhibition but Intact Task Switching on Saccadic Tasks. *Biol. Psychiatry* **51**:816–826. [4]
- Mantione, M., D. Nieman, M. Figuee, et al. 2015. Cognitive Effects of Deep Brain Stimulation in Patients with Obsessive-Compulsive Disorder. *J. Psychiatry Neurosci.* **40**:140210. [10]
- Markham, J. A., and J. I. Koenig. 2011. Prenatal Stress: Role in Psychotic and Depressive Diseases. *Psychopharmacology* **214**:89–106. [3]
- Markon, K. E., M. Chmielewski, and C. J. Miller. 2011. The Reliability and Validity of Discrete and Continuous Measures of Psychopathology: A Quantitative Review. *Psychol. Bull.* **137**:856–879. [9]
- Markon, K. E., R. F. Krueger, and D. Watson. 2005. Delineating the Structure of Normal and Abnormal Personality: An Integrative Hierarchical Approach. *J. Pers. Soc. Psychol.* **88**:139–157. [9]
- Markram, H. 2012. The Human Brain Project. *Sci. Am.* **306**:50–55. [5]
- Maroco, J., D. Silva, A. Rodrigues, et al. 2011. Data Mining Methods in the Prediction of Dementia: A Real-Data Comparison of the Accuracy, Sensitivity and Specificity of Linear Discriminant Analysis, Logistic Regression, Neural Networks, Support Vector Machines, Classification Trees and Random Forests. *BMC Res. Notes* **4**:299. [14]
- Marr, D. 1982. Vision. A Computational Investigation into the Human Representation and Processing of Visual Information. Cambridge, MA: MIT Press. [5, 12]
- Marreiros, A. C., S. J. Kiebel, J. Daunizeau, L. M. Harrison, and K. J. Friston. 2009. Population Dynamics under the Laplace Assumption. *NeuroImage* **44**:701–714. [12]
- Marsman, A., M. P. van den Heuvel, D. W. Klomp, et al. 2013. Glutamate in Schizophrenia: A Focused Review and Meta-Analysis of <sup>1</sup>H-MRS Studies. *Schizophr. Bull.* **39**:120–129. [4, 16]

- Mataix-Cols, D. 2014. Clinical Practice. Hoarding Disorder. *New Engl. J. Med.* **370**:2023–2030. [10]
- Mataix-Cols, D., S. Wooderson, N. Lawrence, et al. 2004. Distinct Neural Correlates of Washing, Checking, and Hoarding Symptom Dimensions in Obsessive-Compulsive Disorder. *Arch. Gen. Psychiatry* **61**:564–576. [10]
- Mathys, C., J. Daunizeau, K. J. Friston, and K. E. Stephan. 2011. A Bayesian Foundation for Individual Learning under Uncertainty. *Front. Hum. Neurosci.* **5**:39. [7]
- Mattheisen, M., J. F. Samuels, Y. Wang, et al. 2015. Genome-Wide Association Study in Obsessive-Compulsive Disorder: Results from the OCGAS. *Mol. Psychiatry* **20**:337–344. [10]
- Mayberg, H. S. 2009. Targeted Electrode-Based Modulation of Neural Circuits for Depression. *J. Clin. Invest.* **119**:717–725. [15]
- Mayberg, H. S., M. Liotti, S. K. Brannan, et al. 1999. Reciprocal Limbic-Cortical Function and Negative Mood: Converging PET Findings in Depression and Normal Sadness. *Am. J. Psychiatry* **156**:675–682. [1]
- Mayberg, H. S., A. M. Lozano, V. Voon, et al. 2005. Deep Brain Stimulation for Treatment-Resistant Depression. *Neuron* **45**:651–660. [2, 3]
- Mayer-Schönberger, V., and K. Cukier. 2013. Big Data: A Revolution That Will Transform How We Live, Work, and Think. New York: Houghton Mifflin Harcourt. [2]
- Mayr, E., and W. B. Provine, eds. 1980/1998. The Evolutionary Synthesis: Perspectives on the Unification of Biology. Cambridge, MA: Harvard Univ. Press. [13]
- McClelland, J. L., M. M. Botvinick, D. C. Noelle, et al. 2010. Letting Structure Emerge: Connectionist and Dynamical Systems Approaches to Cognition. *Trends Cogn. Sci.* **14**:348–356. [5, 12]
- McClelland, J. L., B. L. McNaughton, and R. C. O'Reilly. 1995. Why There Are Complementary Learning Systems in the Hippocampus and Neocortex: Insights from the Successes and Failures of Connectionist Models of Learning and Memory. *Psychol. Rev.* **102**:419–457. [6]
- McClelland, J. L., and T. T. Rogers. 2003. The Parallel Distributed Processing Approach to Semantic Cognition. *Nat. Rev. Neurosci.* **4**:310–322. [5, 12, 17]
- McClelland, J. L., and D. E. Rumelhart. 1986. Parallel Distributed Processing Volume 1. Explorations in the Microstructure of Cognition: Foundations. Cambridge, MA: MIT Press. [9]
- McClintock, S. M., J. Choi, Z. D. Deng, et al. 2014. Multifactorial Determinants of the Neurocognitive Effects of Electroconvulsive Therapy. *J. ECT* **30**:165–176. [5]
- McClure, S. M., G. S. Berns, and P. R. Montague. 2003a. Temporal Prediction Errors in a Passive Learning Task Activate Human Striatum. *Neuron* **38**:339–346. [13]
- McClure, S. M., N. D. Daw, and P. R. Montague. 2003b. A Computational Substrate for Incentive Salience. *Trends Neurosci.* **26**:423–428. [13]
- McClure, S. M., D. I. Laibson, G. Loewenstein, and J. D. Cohen. 2004. Separate Neural Systems Value Immediate and Delayed Monetary Rewards. *Science* **306**:503–507. [6]
- McCrone, P. 2008. Paying the Price: The Cost of Mental Health Care in England to 2026. London: King's Fund Publishing. [3]
- McCulloch, W. S., and W. Pitts. 1943. A Logical Calculus of the Ideas Immanent in Nervous Activity. *Bull. Math. Biophysics* **5**:115–133. [12]
- McDonald, W. M., W. V. McCall, and C. Epstein. 2002. Electroconvulsive Therapy: Sixty Years of Progress and a Comparison with Transcranial Magnetic Stimulation an Vagal Nerve Stimulation. In: *Neuropsychopharmacology: The Fifth Generation of Progress*, ed. K. L. Davis et al., pp. 1079–1108. Philadelphia: Lippincott Williams and Wilkins. [1]

- McEwen, B. S. 2003. Mood Disorders and Allostatic Load. *Biol. Psychiatry* **54**: [5]
- \_\_\_\_\_. 2006. Protective and Damaging Effects of Stress Mediators: Central Role of the Brain. *Dialogues Clin. Neurosci.* **8**:367–381. [3]
- \_\_\_\_\_. 2015. Biomarkers for Assessing Population and Individual Health and Disease Related to Stress and Adaptation. *Metabolism* **64**:S2–S10. [3]
- McEwen, B. S., and E. Stellar. 1993. Stress and the Individual. Mechanisms Leading to Disease. *Arch. Intern. Med.* **153**:2093–2101. [16]
- McGlashan, T. H. 1988. A Selective Review of Recent North American Long-Term Followup Studies of Schizophrenia. *Schizophr. Bull.* **14**:515–539. [3]
- McGlinchey, J. B., M. Zimmerman, D. Young, and I. Chelminski. 2006. Diagnosing Major Depressive Disorder VIII: Are Some Symptoms Better Than Others? *J. Nerv. Ment. Dis.* **194**:785–790. [15]
- McGrath, C. L., M. E. Kelley, P. E. Holtzheimer, et al. 2013. Toward a Neuroimaging Treatment Selection Biomarker for Major Depressive Disorder. *JAMA Psychiatry* **70**:821–829. [15]
- McGrath, P. J., J. W. Stewart, F. M. Quitkin, et al. 2006. Predictors of Relapse in a Prospective Study of Fluoxetine Treatment of Major Depression. *Am. J. Psychiatry* **163**:1542–1548. [15]
- McGuffin, P. 1979. Is Schizophrenia an Hla-Associated Disease? *Psychol. Med.* **9**:721–728. [3]
- McHugh, P. R. 2005. Striving for Coherence: Psychiatry's Efforts over Classification *JAMA* **293**:2526–2528. [8]
- McHugh, P. R., and P. R. Slavney. 1998. The Perspectives of Psychiatry. Baltimore: Johns Hopkins Univ. Press. [2]
- McNally, R. J. 2007. Mechanisms of Exposure Therapy: How Neuroscience Can Improve Psychological Treatments for Anxiety Disorders. *Clin. Psychol. Rev.* **27**: 750–759. [5]
- Meiran, N., J. Levine, N. Meiran, and A. Henik. 2000. Task Set Switching in Schizophrenia. *Neuropsychology* **14**:471–482. [4]
- Mellsop, G., D. Menkes, and S. El-Badri. 2007. Releasing Psychiatry from the Constraints of Categorical Diagnosis. *Australas. Psychiatry* **15**:3–5. [8]
- Meltzer, H. Y. 1992. Treatment of the Neuroleptic-Nonresponsive Schizophrenic Patient. *Schizophr. Bull.* **18**:515–542. [16]
- Menzies, L., S. R. Chamberlain, A. R. Laird, et al. 2008. Integrating Evidence from Neuroimaging and Neuropsychological Studies of Obsessive-Compulsive Disorder: The Orbitofronto-Striatal Model Revisited. *Neurosci. Biobehav. Rev.* **32**:525–549. [10]
- Menzies, P. 2012. The Causal Structure of Mechanisms. *Stud. Hist. Philos. Biol. Biomed. Sci.* **43**:796–805. [14]
- Mesholam-Gately, R. I., A. J. Giuliano, K. P. Goff, S. V. Faraone, and L. J. Seidman. 2009. Neurocognition in First-Episode Schizophrenia: A Meta-Analytic Review. *Neuropsychology* **23**:315–336. [4]
- Meyer-Lindenberg, A., R. K. Olsen, P. D. Kohn, et al. 2005. Regionally Specific Disturbance of Dorsolateral Prefrontal-Hippocampal Functional Connectivity in Schizophrenia. *Arch. Gen. Psychiatry* **62**:379–386. [3]
- Meyer-Lindenberg, A., and D. R. Weinberger. 2006. Intermediate Phenotypes and Genetic Mechanisms of Psychiatric Disorders. *Nat. Rev. Neurosci.* **7**:818–827. [5]
- Michino, M., T. Beuming, P. Donthamsetti, et al. 2015. What Can Crystal Structures of Aminergic Receptors Tell Us About Designing Subtype-Selective Ligands? *Pharmacol. Rev.* **67**:198–213. [5]

- Milad, M. R., S. C. Furtak, J. L. Greenberg, et al. 2013. Deficits in Conditioned Fear Extinction in Obsessive-Compulsive Disorder and Neurobiological Changes in the Fear Circuit. *JAMA Psychiatry* **70**:608–618. [10]
- Millan, M. J., Y. Agid, M. Brüne, et al. 2012. Cognitive Dysfunction in Psychiatric Disorders: Characteristics, Causes and the Quest for Improved Therapy. *Nat. Rev. Drug Discov.* **11**:141–168. [12]
- Millar, J. K., J. C. Wilson-Annan, S. Anderson, et al. 2000. Disruption of Two Novel Genes by a Translocation Co-Segregating with Schizophrenia. *Hum. Mol. Genet.* **9**:1415–1423. [3]
- Miller, B., E. Messias, J. Miettunen, et al. 2011. Meta-Analysis of Paternal Age and Schizophrenia Risk in Male versus Female Offspring. *Schizophr. Bull.* **37**:1039–1047. [4]
- Mineka, S., D. W. Watson, and L. A. Clark. 1998. Psychopathology: Comorbidity of Anxiety and Unipolar Mood Disorders. *Annu. Rev. Psychol.* **49**:377–412. [8]
- Miner, M. A. 1945. Cumulative Damage in Fatigue. *J. Appl. Mech.* **12**:159–164. [9]
- Minzenberg, M. J., A. J. Firl, J. H. Yoon, et al. 2010. Gamma Oscillatory Power Is Impaired During Cognitive Control Independent of Medication Status in First-Episode Schizophrenia. *Neuropsychopharmacology* **35**:2590–2599. [4]
- Minzenberg, M. J., A. R. Laird, S. Thelen, C. S. Carter, and D. C. Glahn. 2009. Meta-Analysis of 41 Functional Neuroimaging Studies of Executive Function in Schizophrenia. *Arch. Gen. Psychiatry* **66**:811–822. [4]
- Misiak, B., D. Frydecka, M. Zawadzki, M. Krefft, and A. Kiejna. 2014. Refining and Integrating Schizophrenia Pathophysiology - Relevance of the Allostatic Load Concept. *Neurosci. Biobehav. Rev.* **45**:183–201. [11]
- Mitchell, A. J., J. B. McGlinchey, D. Young, I. Chelminski, and M. Zimmerman. 2009. Accuracy of Specific Symptoms in the Diagnosis of Major Depressive Disorder in Psychiatric Out-Patients: Data from the MIDAS Project. *Psychol. Med.* **39**:1107–1116. [15]
- Mitchell, K., Z. J. Huang, and B. Moghaddam. 2011. Following the Genes: A Framework for Animal Modeling of Psychiatric Disorders. *BMC Biol.* **9**:76. [3]
- Miyamoto, S., G. E. Duncan, D. C. Goff, and J. A. Lieberman. 2002. Therapeutics of Schizophrenia. In: *Neuropsychopharmacology: The Fifth Generation of Progress*, ed. K. L. Davis et al., pp. 775–807. Philadelphia: Lippincott Williams and Wilkins. [1]
- Moghaddam, B., and B. W. Adams. 1998. Reversal of Phencyclidine Effects by a Group II Metabotropic Glutamate Receptor Agonist in Rats. *Science* **281**:1349–1352. [16]
- Moghaddam, B., B. W. Adams, A. Verma, and D. Daly. 1997. Activation of Glutamatergic Neurotransmission by Ketamine: A Novel Step in the Pathway from NMDA Receptor Blockade to Dopaminergic and Cognitive Disruptions Associated with the Prefrontal Cortex. *J. Neurosci.* **17**:2921–2927. [16]
- Monroe, S. M., E. J. Bromet, M. M. Connell, and S. C. Steiner. 1986. Social Support, Life Events, and Depressive Symptoms: A 1-Year Prospective Study. *J. Consult. Clin. Psychol.* **54**:424–431. [15]
- Monroe, S. M., and K. L. Harkness. 2011. Recurrence in Major Depression: A Conceptual Analysis. *Psychol. Rev.* **118**:655–674. [15]
- Montague, P. R., P. Dayan, S. J. Nowlan, A. Pouget, and T. J. Sejnowski. 1993. Using Aperiodic Reinforcement for Directed Self-Organization During Development. In: *Neural Information Processing Systems 5*, ed. S. J. Hanson et al., pp. 969–976. San Mateo: Morgan Kaufmann. [13]
- Montague, P. R., P. Dayan, C. Person, and T. J. Sejnowski. 1995. Bee Foraging in Uncertain Environments Using Predictive Hebbian Learning. *Nature* **377**:725–728. [5, 13]

- Montague, P. R., P. Dayan, and T. J. Sejnowski. 1996. A Framework for Mesencephalic Dopamine Systems Based on Predictive Hebbian Learning. *J. Neurosci.* **16**:1936–1947. [5, 6, 12, 13, 15]
- Montague, P. R., R. J. Dolan, K. J. Friston, and P. Dayan. 2012. Computational Psychiatry. *Trends Cogn. Sci.* **16**:72–80. [2, 4, 6, 11, 12, 15, 16]
- Montague, P. R., S. E. Hyman, and J. D. Cohen. 2004. Computational Roles for Dopamine in Behavioural Control. *Nature* **431**:760–767. [13]
- Monterosso, J. R., A. R. Aron, X. Cordova, J. Xu, and E. D. London. 2005. Deficits in Response Inhibition Associated with Chronic Methamphetamine Abuse. *Drug Alcohol Depend.* **79**:273–277. [14]
- Moons, K. G., A. P. Kengne, D. E. Grobbee, et al. 2012a. Risk Prediction Models: II. External Validation, Model Updating, and Impact Assessment. *Heart* **98**:691–698. [14]
- Moons, K. G., A. P. Kengne, M. Woodward, et al. 2012b. Risk Prediction Models: I. Development, Internal Validation, and Assessing the Incremental Value of a New (Bio)Marker. *Heart* **98**:683–690. [14]
- Moore, T. H. M., S. Zammit, A. Lingford-Hughes, et al. 2007. Cannabis Use and Risk of Psychotic or Affective Mental Health Outcomes: A Systematic Review. *Lancet* **370**:319–328. [3]
- Moradi, E., A. Pepe, C. Gaser, H. Huttunen, and J. Tohka. 2015. Machine Learning Framework for Early MRI-Based Alzheimer's Conversion Prediction in MCI Subjects. *NeuroImage* **104**:398–412. [14]
- Moran, R. J., P. Campo, M. Symmonds, et al. 2013. Free Energy, Precision and Learning: The Role of Cholinergic Neuromodulation. *J. Neurosci.* **33**:8227–8236. [12]
- Moran, R. J., M. W. Jones, A. J. Blockeel, et al. 2015. Losing Control under Ketamine: Suppressed Cortico-Hippocampal Drive Following Acute Ketamine in Rats. *Neuropsychopharmacology* **40**:268–277. [12]
- Moran, R. J., K. E. Stephan, R. J. Dolan, and K. J. Friston. 2011. Consistent Spectral Predictors for Dynamic Causal Models of Steady-State Responses. *NeuroImage* **55**:1694–1708. [12]
- Morgan, C. A., S. Wang, S. M. Southwick, et al. 2000. Plasma Neuropeptide-Y Concentrations in Humans Exposed to Military Survival Training. *Biol. Psychiatry* **47**:902–909. [3]
- Mori, T., T. Ohnishi, R. Hashimoto, et al. 2007. Progressive Changes of White Matter Integrity in Schizophrenia Revealed by Diffusion Tensor Imaging. *Psychiatry Res.* **154**:133–145. [16]
- Morris, C., and H. Lecar. 1981. Voltage Oscillations in the Barnacle Giant Muscle Fiber. *Biophys. J.* **35**:193. [12]
- Morris, H. M., T. Hashimoto, and D. A. Lewis. 2008a. Alterations in Somatostatin mRNA Expression in the Dorsolateral Prefrontal Cortex of Subjects with Schizophrenia or Schizoaffective Disorder. *Cereb. Cortex* **18**:1575–1587. [16]
- Morris, R. G. M. 1981. Spatial Localization Does Not Require the Presence of Local Cues. *Learn. Motiv.* **12**:239–260. [2]
- Morris, R. W., A. Vercammen, R. Lenroot, et al. 2012. Disambiguating Ventral Striatum fMRI-Related BOLD Signal During Reward Prediction in Schizophrenia. *Mol. Psychiatry* **17**:235, 280–239. [4, 12]
- Morris, S. E., and B. N. Cuthbert. 2012. Research Domain Criteria: Cognitive Systems, Neural Circuits, and Dimensions of Behavior. *Dialogues Clin. Neurosci.* **14**:29–37. [4, 10]

- Morris, S. E., E. A. Heerey, J. M. Gold, and C. B. Holroyd. 2008b. Learning-Related Changes in Brain Activity Following Errors and Performance Feedback in Schizophrenia. *Schizophr. Res.* **99**:274–285. [4]
- Morrison, A. P., S. L. K. Stewart, P. French, et al. 2011. Early Detection and Intervention Evaluation for People at High-Risk of Psychosis-2 (EDIE-2): Trial Rationale, Design and Baseline Characteristics. *Early Interv. Psychiatry* **5**:24–32. [3]
- Mosteller, F. 1974. Robert R. Bush, Early Career. *J Math. Psychol.* **11**:163–178. [13]
- Moustafa, A. A., and M. A. Gluck. 2011. Computational Cognitive Models of Prefrontal-Striatal-Hippocampal Interactions in Parkinson’s Disease and Schizophrenia. *Neural Netw.* **24**:575–591. [2]
- Mowrer, O. H. 1947. On the Dual Nature of Learning: A Reinterpretation of Conditioning and Problem-Solving. *Harv. Educ. Rev.* **17**:102–150. [15]
- Mukai, J., M. Tamura, K. Fénelon, et al. 2015. Molecular Substrates of Altered Axonal Growth and Brain Connectivity in a Mouse Model of Schizophrenia. *Neuron* **86**:680–695. [5]
- Mukerjee, S. 2010. The Emperor of All Maladies: A Biography of Cancer. New York: Scribner. [16]
- Mulert, C., G. Juckel, M. Brunnmeier, et al. 2007. Prediction of Treatment Response in Major Depression: Integration of Concepts. *J. Affect. Disord.* **98**:215–225. [15]
- Murphy, D. L., P. R. Moya, M. A. Fox, et al. 2013. Anxiety and Affective Disorder Comorbidity Related to Serotonin and Other Neurotransmitter Systems: Obsessive-Compulsive Disorder as an Example of Overlapping Clinical and Genetic Heterogeneity. *Phil. Trans. R. Soc. B* **368**:20120435. [10]
- Murray, G. K., P. R. Corlett, L. Clark, et al. 2008. Substantia Nigra/Ventral Tegmental Reward Prediction Error Disruption in Psychosis. *Mol. Psychiatry* **13**:267–276. [4]
- Murray, J. D., A. Anticevic, M. Gancos, et al. 2014. Linking Microcircuit Dysfunction to Cognitive Impairment: Effects of Disinhibition Associated with Schizophrenia in a Cortical Working Memory Model. *Cereb. Cortex* **24**:859–872. [16]
- Must, A., Z. Szabo, N. Bodi, et al. 2006. Sensitivity to Reward and Punishment and the Prefrontal Cortex in Major Depression. *J. Affect. Disord.* **90**:209–215. [14]
- Muzerelle, A., S. Scotto-Lomassese, J. F. Bernard, M. Soiza-Reilly, and P. Gaspar. 2016. Conditional Anterograde Tracing Reveals Distinct Targeting of Individual Serotonin Cell Groups (B5–B9) to the Forebrain and Brainstem. *Brain Struct. Funct.* **221**:535–561. [11]
- Nadel, L., and W. J. Jacobs. 1996. The Role of the Hippocampus in PTSD, Panic, and Phobia. In: The Hippocampus: Functions and Clinical Relevance, ed. N. Kato, pp. 455–463. Amsterdam: Elsevier. [2, 10]
- Nadel, L., and M. Moscovitch. 1997. Memory Consolidation, Retrograde Amnesia and the Hippocampal Complex. *Curr. Opin. Neurobiol.* **7**:217–227. [10]
- Narrow, W. E., D. E. Clarke, S. J. Kuramoto, et al. 2013. DSM-5 Field Trials in the United States and Canada, Part III: Development and Reliability Testing of a Cross-Cutting Symptom Assessment for DSM-5. *Am. J. Psychiatry* **170**:71–82. [7]
- National Institute of Mental Health. 2008. The National Institute of Mental Health Strategic Plan. NIH Publication 8-6368. Bethesda, MD: National Institute of Mental Health [8].
- Nelson, M. D., A. J. Saykin, L. A. Flashman, and H. J. Riordan. 1998. Hippocampal Volume Reduction in Schizophrenia as Assessed by Magnetic Resonance Imaging: A Meta-Analytic Study. *Arch. Gen. Psychiatry* **55**:433–440. [3]
- Nelson, S. B., and V. Valakh. 2015. Excitatory/Inhibitory Balance and Circuit Homeostasis in Autism Spectrum Disorders. *Neuron* **87**:684–698. [3]

- Neves-Pereira, M., J. K. Cheung, A. Pasdar, et al. 2005. BDNF Gene Is a Risk Factor for Schizophrenia in a Scottish Population. *Mol. Psychiatry* **10**:208–212. [3]
- Neymotin, S. A., M. T. Lazarewicz, M. Sherif, et al. 2011. Ketamine Disrupts Theta Modulation of Gamma in a Computer Model of Hippocampus. *J. Neurosci.* **31**:11733–11743. [9]
- Nicodemus, K. K., A. J. Law, E. Radulescu, et al. 2010. Biological Validation of Increased Schizophrenia Risk with NRG1, ERBB4, and AKT1 Epistasis via Functional Neuroimaging in Healthy Controls. *Arch. Gen. Psychiatry* **67**:991–1001. [3]
- Nielsen, M. O., E. Rostrup, S. Wulff, et al. 2012a. Improvement of Brain Reward Abnormalities by Antipsychotic Monotherapy in Schizophrenia. *Arch. Gen. Psychiatry* **69**:1195–1204. [4]
- Nielsen, M. O., E. Rostrup, S. Wulff, et al. 2012b. Alterations of the Brain Reward System in Antipsychotic Naïve Schizophrenia Patients. *Biol. Psychiatry* **71**:898–905. [4]
- Niv, Y., N. D. Daw, D. Joel, and P. Dayan. 2007. Tonic Dopamine: Opportunity Costs and the Control of Response Vigor. *Psychopharmacology* **191**:507–520. [4, 6, 15]
- Niv, Y., and P. R. Montague. 2008. Theoretical and Empirical Studies of Learning. In: *Neuroeconomics: Decision Making and the Brain*, ed. P. W. Glimcher et al., pp. 329–249. New York: Academic Press. [13]
- Niv, Y., and G. Schoenbaum. 2008. Dialogs on Prediction Errors. *Trends Cogn. Sci.* **12**:265–272. [13]
- Nock, M. K., and M. R. Banaji. 2007. Prediction of Suicide Ideation and Attempts among Adolescents Using a Brief Performance-Based Test. *J. Consult. Clin. Psychol.* **75**:707–715. [3]
- Nock, M. K., I. Hwang, N. Sampson, et al. 2009. Cross-National Analysis of the Associations among Mental Disorders and Suicidal Behavior: Findings from the WHO World Mental Health Surveys. *PLoS Med.* **6**:e1000123. [3]
- Nock, M. K., J. M. Park, C. T. Finn, et al. 2010. Measuring the Suicidal Mind: Implicit Cognition Predicts Suicidal Behavior. *Psychol. Sci.* **21**:511–517. [3]
- Nolen-Hoeksema, S. 1991. Responses to Depression and Their Effects on the Duration of Depressive Episodes. *J. Abnorm. Psychol.* **100**:569–582. [15]
- Nolen-Hoeksema, S., J. Larson, and C. Grayson. 1999. Explaining the Gender Difference in Depressive Symptoms. *J. Pers. Soc. Psychol.* **77**:1061–1072. [15]
- Noorani, I., and R. H. S. Carpenter. 2012. Antisaccades as Decisions: LATER Model Predicts Latency Distributions and Error Responses. *Eur. J. Neurosci.* **37**:330–338. [6]
- Nuechterlein, K. H., K. L. Subotnik, M. F. Green, et al. 2011. Neurocognitive Predictors of Work Outcome in Recent-Onset Schizophrenia. *Schizophr. Bull.* **37 Suppl 2**: S33–40. [4]
- Nugent, T. F., 3rd, D. H. Herman, A. Ordóñez, et al. 2007. Dynamic Mapping of Hippocampal Development in Childhood Onset Schizophrenia. *Schizophr. Res.* **90**: 62–70. [16]
- Oades, R. D. 1997. Stimulus Dimension Shifts in Patients with Schizophrenia, with and without Paranoid Hallucinatory Symptoms, or Obsessive Compulsive Disorder: Strategies, Blocking and Monoamine Status. *Behav. Brain Res.* **88**:115–131. [4]
- Obeso, J., and J. Guridi. 2001. Deep-Brain Stimulation of the Subthalamic Nucleus or the Pars Interna of the Globus Pallidus in Parkinson's Disease. *New Engl. J. Med.* **345**:956–962. [2]
- Odeh, M. S., R. A. Zeiss, and M. T. Huss. 2006. Cues They Use: Clinicians' Endorsement of Risk Cues in Predictions of Dangerousness. *Behav. Sci. Law* **24**:147–156. [5]

- Odgers, C. L., M. M. Moretti, and N. D. Reppucci. 2005. Examining the Science and Practice of Violence Risk Assessment with Female Adolescents. *Law Hum. Behav.* **29**:7–27. [5]
- O'Doherty, J. P., P. Dayan, K. Friston, H. Critchley, and R. J. Dolan. 2003. Temporal Difference Models and Reward-Related Learning in the Human Brain. *Neuron* **38**: 329–337. [13]
- O'Doherty, J. P., P. Dayan, J. Schultz, et al. 2004. Dissociable Roles of Ventral and Dorsal Striatum in Instrumental Conditioning. *Science* **304**:452–454. [5, 13]
- O'Doherty, J. P., A. Hampton, and H. Kim. 2007. Model-Based fMRI and Its Application to Reward Learning and Decision Making. *Ann. NY Acad. Sci.* **1104**:35–53. [12]
- Odum, A. L., and A. A. L. Baumann. 2010. Delay Discounting: State and Trait Variable. In: Impulsivity: The Behavioral and Neurological Science of Discounting, ed. G. Madden and W. Bickel, pp. 39–65. Washington, D.C.: American Psychological Association. [2]
- Odum, A. L., G. J. Madden, and W. K. Bickel. 2002. Discounting of Delayed Health Gains and Losses by Current, Never- and Ex-Smokers of Cigarettes. *Nicotine Tob. Res.* **4**:295–303. [2]
- Oglodek, E., A. Szota, M. Just, D. Mos, and A. Araszkiewicz. 2014. The Role of the Neuroendocrine and Immune Systems in the Pathogenesis of Depression. *Pharmacol. Rep.* **66**:776–781. [11]
- O'Keefe, J. 2015. Spatial Cells in the Hippocampal Formation. Nobel Lecture, Dec. 7, 2014. [https://www.nobelprize.org/nobel\\_prizes/medicine/laureates/2014/okeefe-lecture.pdf](https://www.nobelprize.org/nobel_prizes/medicine/laureates/2014/okeefe-lecture.pdf) (accessed May 5, 2016). [2]
- O'Keefe, J., and J. Dostrovsky. 1971. The Hippocampus as a Spatial Map. Preliminary Evidence from Unit Activity in the Freely Moving Rat. *Brain Res.* **34**:171–175. [2]
- O'Keefe, J., and L. Nadel. 1978. The Hippocampus as a Cognitive Map. Oxford: Clarendon Press. [2]
- Olabi, B., I. Ellison-Wright, A. M. McIntosh, et al. 2011. Are There Progressive Brain Changes in Schizophrenia? A Meta-Analysis of Structural Magnetic Resonance Imaging Studies. *Biol. Psychiatry* **70**:88–96. [4, 16]
- Olfson, M., S. C. Marcus, M. Tedeschi, and G. J. Wan. 2006. Continuity of Antidepressant Treatment for Adults with Depression in the United States. *Am. J. Psychiatry* **163**:101–108. [15]
- Olney, J. W., and N. B. Farber. 1995. Glutamate Receptor Dysfunction and Schizophrenia. *Arch. Gen. Psychiatry* **52**:998–1007. [16]
- Olsen, S. R., D. S. Bortone, H. Adesnik, and M. Scanziani. 2012. Gain Control by Layer Six in Cortical Circuits of Vision. *Nature* **483**:47–52. [3]
- Oquendo, M. A., A. Barrera, S. P. Ellis, et al. 2004. Instability of Symptoms in Recurrent Major Depression: A Prospective Study. *Am. J. Psychiatry* **161**:255–261. [5]
- O'Reilly, R. C., T. S. Braver, and J. D. Cohen. 1999. A Biologically-Based Computational Model of Working Memory. In: Models of Working Memory: Mechanisms of Active Maintenance and Executive Control, ed. A. Miyake and P. Shah, pp. 375–411. New York: Cambridge Univ. Press. [4]
- O'Reilly, R. C., and M. J. Frank. 2006. Making Working Memory Work: A Computational Model of Learning in the Prefrontal Cortex and Basal Ganglia. *Neural Comput.* **18**:283–328. [4]
- O'Reilly, R. C., and J. L. McClelland. 1994. Hippocampal Conjunctive Encoding, Storage, and Recall: Avoiding a Trade-Off. *Hippocampus* **4**:661–682. [2]

- Otto, A. R., A. Skatova, S. Madlon-Kay, and N. D. Daw. 2015. Cognitive Control Predicts Use of Model-Based Reinforcement Learning. *J. Cogn. Neurosci.* **27**:319–333. [4]
- Owen, M. J. 2014. New Approaches to Psychiatric Diagnostic Classification. *Neuron* **84**:564–571. [7]
- Pace, T. W. W., T. C. Mletzko, O. Alagbe, et al. 2006. Increased Stress-Induced Inflammatory Responses in Male Patients with Major Depression and Increased Early Life Stress. *Am. J. Psychiatry* **163**:1630–1633. [12]
- Padman, R., X. Bai, and E. M. Airolidi. 2007. A New Machine Learning Classifier for High Dimensional Healthcare Data. *Stud. Health Technol. Inform.* **129**:664–668. [14]
- Palminteri, S. M., M. Khamassi, M. Joffily, and G. Coricelli. 2015. Contextual Modulation of Value Signals in Reward and Punishment Learning. *Nat. Commun.* **6**:8096. [5]
- Pantelis, C., F. Z. Barber, T. R. Barnes, et al. 1999. Comparison of Set-Shifting Ability in Patients with Chronic Schizophrenia and Frontal Lobe Damage. *Schizophr. Res.* **37**:251–270. [4]
- Pantelis, C., D. Velakoulis, P. D. McGorry, et al. 2003. Neuroanatomical Abnormalities before and after Onset of Psychosis: A Cross-Sectional and Longitudinal MRI Comparison. *Lancet* **361**:281–288. [3]
- Papageorgiou, C., and A. Wells. 2002. Positive Beliefs About Depressive Rumination: Development and Preliminary Validation of a Self-Report Scale. *Behav. Ther.* **32**:13–26. [15]
- . 2003. An Empirical Test of a Clinical Metacognitive Model of Rumination and Depression. *Cogn. Ther. Res.* **27**:261–273. [15]
- Parker, G. 2005. Beyond Major Depression. *Psychol. Med.* **35**:467–474. [8]
- Parsons, R. G., and K. J. Ressler. 2013. Implications of Memory Modulation for Post-Traumatic Stress and Fear Disorders. *Nature* **16**:146–153. [3]
- Parsons, T. D., and A. A. Rizzo. 2008. Affective Outcomes of Virtual Reality Exposure Therapy for Anxiety and Specific Phobias: A Meta-Analysis. *J. Behav. Ther. Exp. Psychiatry* **39**:250–261. [12]
- Patil, S. T., L. Zhang, F. Martenyi, et al. 2007. Activation of mGlu2/3 Receptors as a New Approach to Treat Schizophrenia: A Randomized Phase 2 Clinical Trial. *Nat. Med.* **13**:1102–1107. [16]
- Patten, S. B., J. V. A. Williams, D. H. Lavorato, A. G. M. Bulloch, and G. MacQueen. 2012. Depressive Episode Characteristics and Subsequent Recurrence Risk. *J. Affect. Disord.* **140**:277–284. [15]
- Paulus, M. P. 2007. Decision-Making Dysfunctions in Psychiatry: Altered Homeostatic Processing? *Science* **318**:602–606. [14]
- Paulus, M. P., and J. Y. Angela. 2012. Emotion and Decision-Making: Affect-Driven Belief Systems in Anxiety and Depression. *Trends Cogn. Sci.* **16**:476–483. [12]
- Paulus, M. P., and M. B. Stein. 2006. An Insular View of Anxiety. *Biol. Psychiatry* **60**:383–387. [12]
- . 2010. Interoception in Anxiety and Depression. *Brain Struct. Funct.* **214**:451–463. [12]
- Pavlov, I. P. 1927. Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex. New York: Dover Publications. [13]
- Payne, J. D., E. D. Jackson, S. Hoscheidt, et al. 2007. Stress Administered Prior to Encoding Impairs Neutral but Enhances Emotional Long-Term Episodic Memories. *Learn. Mem.* **14**:861–868. [2]

- Pearl, J. 1988. Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference. Burlington, MA: Morgan Kaufmann. [17]
- \_\_\_\_\_. 2009a. Causal Inference in Statistics: An Overview. *Stat. Surv.* **3**:96–146. [14]
- \_\_\_\_\_. 2009b. Causality: Models, Reasoning and Inference, 2nd edition. Cambridge: Cambridge Univ. Press. [3, 14, 17]
- \_\_\_\_\_. 2010. An Introduction to Causal Inference. *Int. J. Biostat.* **6**:Article 7. [14]
- Pearson, R. M., J. Heron, K. Button, et al. 2015. Cognitive Styles and Future Depressed Mood in Early Adulthood: The Importance of Global Attributions. *J. Affect. Disord.* **171**:60–67. [15]
- Peeters, F., J. Berkhof, J. Rottenberg, and N. A. Nicolson. 2010. Ambulatory Emotional Reactivity to Negative Daily Life Events Predicts Remission from Major Depressive Disorder. *Behav. Res. Ther.* **48**:754–760. [15]
- Pekkonen, E., J. Hirvonen, I. P. Jääskeläinen, S. Kaakkola, and J. Huttunen. 2001. Auditory Sensory Memory and the Cholinergic System: Implications for Alzheimer's Disease. *NeuroImage* **14**:376–382. [12]
- Peled, A. 2009. Neuroscientific Psychiatric Diagnosis. *Med. Hypotheses* **73**:220–229. [11]
- Pencina, M. J., and R. B. D'Agostino, Sr. 2012. Thoroughly Modern Risk Prediction? *Sci. Transl. Med.* **4**:131fs110. [14]
- Pendyam, S., A. Mohan, P. W. Kalivas, and S. S. Nair. 2009. Computational Model of Extracellular Glutamate in the Nucleus Accumbens Incorporates Neuroadaptations by Chronic Cocaine. *Neuroscience* **158**:1266–1276. [12]
- Penny, W. D., K. E. Stephan, A. Mechelli, and K. J. Friston. 2004. Comparing Dynamic Causal Models. *NeuroImage* **22**:1157–1172. [10]
- Peralta, V., and M. J. Cuesta. 2000. Clinical Models of Schizophrenia: A Critical Approach to Competing Conceptions. *Psychopathology* **33**:252–258. [8]
- Peralta, V., M. J. Cuesta, C. Giraldo, A. Cardenas, and F. Gonzales. 2002. Classifying Psychotic Disorder: Issues Regarding Categorical vs. Dimensional Approaches and Time Frame to Assess Symptoms. *Eur. Arch. Psychiatry Clin. Neurosci.* **252**: 12–18. [8]
- Perlis, R. H. 2013. A Clinical Risk Stratification Tool for Predicting Treatment Resistance in Major Depressive Disorder. *Biol. Psychiatry* **74**:7–14. [14]
- Persons, J. B. 1986. The Advantages of Studying Psychological Phenomena Rather Than Psychiatric Diagnoses. *Am. Psychol.* **41**:1252–1260. [9]
- Pessiglione, M., B. Seymour, G. Flandin, R. J. Dolan, and C. D. Frith. 2006. Dopamine-Dependent Prediction Errors Underpin Reward-Seeking Behaviour in Humans. *Nature* **442**:1042–1045. [6]
- Petanjek, Z., M. Judas, G. Simic, et al. 2011. Extraordinary Neoteny of Synaptic Spines in the Human Prefrontal Cortex. *PNAS* **108**:13281–13286. [16]
- Peters, J., and C. Büchel. 2010. Episodic Future Thinking Reduces Reward Delay Discounting through an Enhancement of Prefrontal-Mediotemporal Interactions. *Neuron* **66**:138–148. [2]
- Petrides, G., M. Fink, M. M. Husain, et al. 2001. ECT Remission Rates in Psychotic versus Nonpsychotic Depressed Patients: A Report from Core. *J. ECT* **17**:244–253. [1]
- Petry, N. M. 2012. Contingency Management for Substance Abuse Treatment: A Guide for Implementing This Evidence-Based Practice. New York: Routledge. [2]
- Pettersson-Yeo, W., S. Benetti, A. F. Marquand, et al. 2013. Using Genetic, Cognitive and Multi-Modal Neuroimaging Data to Identify Ultra-High-Risk and First-Episode Psychosis at the Individual Level. *Psychol. Med.* **43**:2547–2562. [3]
- Pettorusso, M., L. De Risio, M. Di Nicola, et al. 2014. Allostasis as a Conceptual Framework Linking Bipolar Disorder and Addiction. *Front. Psychiatry* **5**:173. [11]

- Pevsner, J. 2005. Bioinformatics and Functional Genomics. Chichester: John Wiley & Sons. [2]
- Pfeffer, C. K., M. Xue, M. He, Z. J. Huang, and M. Scanbiani. 2013. Inhibition of Inhibition in Visual Cortex: The Logic of Connections between Molecularly Distinct Interneurons. *Nat. Neurosci.* **16**:1068–1076. [16]
- Pfeiffer, B. E., and D. J. Foster. 2013. Hippocampal Place-Cell Sequences Depict Future Paths to Remembered Goals. *Nature* **497**:74–79. [15]
- Phillips, J. 2013. Review of “the Conceptual Evolution of DSM-5,” by D. A. Regier Et Al, Eds. (2011). *J. Nerv. Ment. Disease* **201**:828–829. [8]
- Phillips, L. J., D. Velakoulis, C. Pantelis, et al. 2002. Non-Reduction in Hippocampal Volume Is Associated with Higher Risk of Psychosis. *Schizophr. Res.* **58**:145–158. [3]
- Pies, R. 2007. How “Objective” Are Psychiatric Diagnoses? (Guess Again). *Psychiatry (Edgmont)* **4**:18–22. [1]
- Piet, J., and E. Hougaard. 2011. The Effect of Mindfulness-Based Cognitive Therapy for Prevention of Relapse in Recurrent Major Depressive Disorder: A Systematic Review and Meta-Analysis. *Clin. Psychol. Rev.* **31**:1032–1040. [15]
- Pilkonis, P. A., S. W. Choi, S. P. Reise, et al. 2011. Item Banks for Measuring Emotional Distress from the Patient-Reported Outcomes Measurement Information System (PROMIS): Depression, Anxiety, and Anger. *Assessment* **18**:263–283. [8]
- Pine, D. S., and N. A. Fox. 2015. Childhood Antecedents and Risk for Adult Mental Disorders. *Annu. Rev. Psychol.* **66**:459–485. [10]
- Pisani, A. R., P. A. Wyman, M. Petrova, et al. 2012. Emotion Regulation Difficulties, Youth–Adult Relationships, and Suicide Attempts among High School Students in Underserved Communities. *J. Youth Adolesc.* **42**:807–820. [3]
- Pitman, R. K. 1987. A Cybernetic Model of Obsessive-Compulsive Psychopathology. *Compr. Psychiatry* **28**:334–343. [2]
- Pizzagalli, D., R. D. Pascual-Marqui, J. B. Nitschke, et al. 2001. Anterior Cingulate Activity as a Predictor of Degree of Treatment Response in Major Depression: Evidence from Brain Electrical Tomography Analysis. *Am. J. Psychiatry* **158**:405–415. [15]
- Pizzagalli, D. A., A. L. Jahn, and J. P. O’Shea. 2005. Toward an Objective Characterization of an Anhedonic Phenotype: A Signal-Detection Approach. *Biol. Psychiatry* **57**:319–327. [3]
- Plaut, D. C., and T. Shallice. 1993. Deep Dyslexia: A Case Study of Connectionist Neuropsychology. *Cogn. Neuropsychol.* **10**:377–500. [5]
- Plichta, M. M., and A. Scheres. 2014. Ventral–Striatal Responsiveness During Reward Anticipation in ADHD and Its Relation to Trait Impulsivity in the Healthy Population: A Meta-Analytic Review of the fMRI Literature. *Neurosci. Biobehav. Rev.* **38**:125–134. [12]
- Plotsky, P. M., M. J. Owens, and C. B. Nemeroff. 1998. Psychoneuroendocrinology of Depression. Hypothalamic-Pituitary-Adrenal Axis. *Psychiatr. Clin. North Am.* **21**:293–307. [1]
- Pocklington, A. J., E. Rees, J. T. Walters, et al. 2015. Novel Findings from CNVs Implicate Inhibitory and Excitatory Signaling Complexes in Schizophrenia. *Neuron* **86**:1203–1214. [16]
- Poggio, T., and E. Bizzi. 2004. Generalization in Vision and Motor Control. *Nature* **431**:768–774. [2]
- Pokorny, A. D. 1983. Prediction of Suicide in Psychiatric Patients. Report of a Prospective Study. *Arch. Gen. Psychiatry* **40**:249–257. [3]

- Pokos, V., and D. J. Castle. 2006. Prevalence of Comorbid Anxiety Disorders in Schizophrenia Spectrum Disorders: A Literature Review. *Curr. Psychiatry Rev.* **2**:285–307. [9]
- Poland, D. 1993. Cooperative Catalysis and Chemical Chaos: A Chemical Model for the Lorenz Equations. *Physica D* **65** 86–99. [11]
- Polikov, V. S., P. A. Tresco, and W. M. Reichert. 2005. Response of Brain Tissue to Chronically Implanted Neural Electrodes. *J. Neurosci. Methods* **148**:1–18. [9]
- Posternak, M. A., D. A. Solomon, A. C. Leon, et al. 2006. The Naturalistic Course of Unipolar Major Depression in the Absence of Somatic Therapy. *J. Nerv. Ment. Dis.* **194**:324–329. [15]
- Potenza, M. N., K.-i. A. Hong, C. M. Lacadie, et al. 2012. Neural Correlates of Stress-Induced and Cue-Induced Drug Craving: Influences of Sex and Cocaine Dependence. *Am. J. Psychiatry* **169**:406–414. [3]
- Prata, D., A. Mechelli, and S. Kapur. 2014. Clinically Meaningful Biomarkers for Psychosis: A Systematic and Quantitative Review. *Neurosci. Biobehav. Rev.* **45**:134–141. [14]
- Praveen, P., and H. Fröhlich. 2013. Boosting Probabilistic Graphical Model Inference by Incorporating Prior Knowledge from Multiple Sources. *PLoS One* **8**:e67410. [9]
- Preston, G. A., and D. R. Weinberger. 2005. Intermediate Phenotypes in Schizophrenia: A Selective Review. *Dialogues Clin. Neurosci.* **7**:165–179. [5]
- Preti, A., and M. Cellia. 2010. Randomized-Controlled Trials in People at Ultra High Risk of Psychosis: A Review of Treatment Effectiveness. *Schizophr. Res.* **123**: 30–36. [10]
- Qiu, A., M. Vaillant, P. Barta, J. T. Ratnanather, and M. I. Miller. 2007. Region-of-Interest-Based Analysis with Application of Cortical Thickness Variation of Left Planum Temporale in Schizophrenia and Psychotic Bipolar Disorder. *Hum. Brain Mapp.* **29**:973–985. [16]
- Quattroki, E., and K. Friston. 2014. Autism, Oxytocin and Interoception. *Neurosci. Biobehav. Rev.* **47**:410–430. [7]
- Quian Quiroga, R., and S. Panzeri. 2009. Extracting Information from Neuronal Populations: Information Theory and Decoding Approaches. *Nat. Rev. Neurosci.* **10**:173–185. [3]
- Quinn, J. J., P. K. Hitchcott, E. A. Umeda, A. P. Arnold, and J. R. Taylor. 2007. Sex Chromosome Complement Regulates Habit Formation. *Nat. Neurosci.* **10**:1398–1400. [3]
- Rae, A., and P. Lindsay. 2004. A Behaviour-Based Method for Fault Tree Generation. In: Proceedings of the 22nd International System Safety Conference, Unionville, VA: System Safety Society Publications. <http://staff.itee.uq.edu.au/pal/papers/ISSS04.pdf> (accessed March 2, 2016). [9]
- Ragland, J. D., A. R. Laird, C. Ranganath, et al. 2009. Prefrontal Activation Deficits During Episodic Memory in Schizophrenia. *Am. J. Psychiatry* **166**:863–874. [4]
- Rajkowska, G., J. J. Miguel-Hidalgo, J. Wei, et al. 1999. Morphometric Evidence for Neuronal and Glial Prefrontal Cell Pathology in Major Depression. *Biol. Psychiatry* **45**:1085–1098. [3]
- Ramon, S., B. Healy, and N. Renouf. 2007. Recovery from Mental Illness as an Emergent Concept and Practice in Australia and the UK. *Int. J. Soc. Psychiatry* **53**: 108–122. [12]
- Rangel, A., C. Camerer, and P. R. Montague. 2008. A Framework for Studying the Neurobiology of Value-Based Decision Making. *Nat. Rev. Neurosci.* **9**:545–556. [2, 17]

- Rao, R. P. N., and D. H. Ballard. 1999. Predictive Coding in the Visual Cortex: A Functional Interpretation of Some Extra-Classical Receptive-Field Effects. *Nat. Neurosci.* **2**:79–87. [7]
- Rao, S. G., G. V. Williams, and P. S. Goldman-Rakic. 2000. Destruction and Creation of Spatial Tuning by Disinhibition: GABA-a Blockade of Prefrontal Cortical Neurons Engaged by Working Memory. *J. Neurosci.* **20**:485–494. [16]
- Rapkin, A. J., and S. A. Winer. 2008. The Pharmacologic Management of Premenstrual Dysphoric Disorder. *Expert Opin. Pharmacother.* **9**:429–445. [10]
- Ratcliff, R., and M. J. Frank. 2012. Reinforcement-Based Decision Making in Cortico-striatal Circuits: Mutual Constraints by Neurocomputational and Diffusion Models. *Neural Comput.* **24**:1186–1229. [5, 6]
- Ratcliff, R., and G. McKoon. 2008. The Diffusion Decision Model: Theory and Data for Two-Choice Decision Tasks. *Neural Comput.* **20**:873–922. [6]
- Rauch, S. L., M. A. Jenike, N. M. Alpert, et al. 1994. Regional Cerebral Blood Flow Measured During Symptom Provocation in Obsessive-Compulsive Disorder Using Oxygen 15-Labeled Carbon Dioxide and Positron Emission Tomography. *Arch. Gen. Psychiatry* **51**:62–70. [10]
- Ravizza, S. M., K. C. Moua, D. Long, and C. S. Carter. 2010. The Impact of Context Processing Deficits on Task-Switching Performance in Schizophrenia. *Schizophr. Res.* **116**:274–279. [4]
- Raychaudhuri, S., R. M. Plenge, E. J. Rossin, et al. 2009. Identifying Relationships among Genomic Disease Regions: Predicting Genes at Pathogenic SNP Associations and Rare Deletions. *PLoS Genet.* **5**:e1000534. [3]
- Real, L. A. 1992. Animal Choice Behavior and the Evolution of Cognitive Architecture. *Science* **253**:980–986. [13]
- Rector, T. S., B. C. Taylor, and T. J. Wilt. 2012. Chapter 12: Systematic Review of Prognostic Tests. *J. Gen. Intern. Med.* **27**(Suppl 1):94–101. [14]
- Redish, A. D. 1999. Beyond the Cognitive Map: From Place Cells to Episodic Memory. Cambridge, MA: MIT Press. [2]
- . 2004. Addiction as a Computational Process Gone Awry. *Science* **306**:1944–1947. [12, 13, 17]
- . 2013. The Mind within the Brain: How We Make Decisions and How Those Decisions Go Wrong. Oxford: Oxford Univ. Press. [2, 9, 10]
- Redish, A. D., S. Jensen, and A. Johnson. 2008. A Unified Framework for Addiction: Vulnerabilities in the Decision Process. *Behav. Brain Sci.* **31**:415–487. [2, 10, 12, 17]
- Redish, A. D., S. Jensen, A. Johnson, and Z. Kurth-Nelson. 2007. Reconciling Reinforcement Learning Models with Behavioral Extinction and Renewal: Implications for Addiction, Relapse, and Problem Gambling. *Psychol. Rev.* **114**:784–805. [2]
- Redish, A. D., and A. Johnson. 2007. A Computational Model of Craving and Obsession. *Ann. NY Acad. Sci.* **1104**:324–339. [11]
- Redish, A. D., and D. S. Touretzky. 1997. The Role of the Hippocampus in Solving the Morris Water Maze. *Neural Comput.* **10**:73–112. [2]
- Reggia, J. A., and D. Montgomery. 1996. A Computational Model of Visual Hallucinations in Migraine. *Comp. Biol. Med.* **26**:133–141. [2]
- Regier, D. A., W. E. Narrow, D. E. Clarke, et al. 2013. DSM-5 Field Trials in the United States and Canada, Part II: Test-Retest Reliability of Selected Categorical Diagnoses. *Am. J. Psychiatry* **170**:59–70. [7]
- Regier, D. A., W. E. Narrow, E. A. Kuhl, and D. J. Kupfer, eds. 2011. The Conceptual Evolution of DSM-5. Arlington: American Psychiatric Publishing. [8]

- Regier, P. S., and A. D. Redish. 2015. Contingency Management and Deliberative Decision-Making Processes. *Front. Psychiatry* **6**:76. [2]
- Reinen, J., E. E. Smith, C. Insel, et al. 2014. Patients with Schizophrenia Are Impaired When Learning in the Context of Pursuing Rewards. *Schizophr. Res.* **152**:309–310. [4]
- Rescorla, R. A., and A. R. Wagner. 1972. A Theory of Pavlovian Conditioning: Variations in the Effectiveness of Reinforcement. New York: Appleton-Century-Crofts. [13]
- Reske, M., D. C. Delis, and M. P. Paulus. 2011. Evidence for Subtle Verbal Fluency Deficits in Occasional Stimulant Users: Quick to Play Loose with Verbal Rules. *J. Psychiatr. Res.* **45**:361–368. [14]
- Ressler, K. J., and H. S. Mayberg. 2007. Targeting Abnormal Neural Circuits in Mood and Anxiety Disorders: From the Laboratory to the Clinic. *Nat. Neurosci.* **10**:1116–1124. [1]
- Rieke, F., D. Warland, R. de Ruyter van Steveninck, and W. Bialek. 1997. Spikes: Exploring the Neural Code. Cambridge, MA: MIT Press. [3]
- Rigotti, M., O. Barak, M. R. Warden, et al. 2013. The Importance of Mixed Selectivity in Complex Cognitive Tasks. *Nature* **497**:585–590. [6]
- Ripke, S., B. M. Neale, A. Corvin, et al. 2014. Biological Insights from 108 Schizophrenia-Associated Genetic Loci. *Nature* **511**:421–427. [16]
- Robbins, T. 2002. The 5-Choice Serial Reaction Time Task: Behavioural Pharmacology and Functional Neurochemistry. *Psychopharmacology* **163**:362–380. [3]
- Robert, C. 2007. The Bayesian Choice: From Decision-Theoretic Foundations to Computational Implementation. New York: Springer. [7]
- Roberts, B. M., D. E. Holden, C. L. Shaffer, et al. 2010. Prevention of Ketamine-Induced Working Memory Impairments by AMPA Potentiators in a Nonhuman Primate Model of Cognitive Dysfunction. *Behav. Brain Res.* **212**:41–48. [16]
- Robins, E., and S. B. Guze. 1970. Establishment of Diagnostic Validity in Psychiatric Illness: Its Application to Schizophrenia. *Am. J. Psychiatry* **126**:983–987. [7, 8]
- Robinson, O. J., R. Cools, C. O. Carlisi, B. J. Sahakian, and W. C. Drevets. 2012. Ventral Striatum Response During Reward and Punishment Reversal Learning in Unmedicated Major Depressive Disorder. *Am. J. Psychiatry* **169**:152–159. [12]
- Rodrigues, S., J. Gonçalves, and J. R. Terry. 2007. Existence and Stability of Limit Cycles in a Macroscopic Neuronal Population Model. *Physica D* **233**:39–65. [12]
- Roesch, M. R., D. J. Calu, G. R. Esber, and G. Schoenbaum. 2010. All That Glitters ... Dissociating Attention and Outcome Expectancy from Prediction Errors Signals. *J. Neurophysiol.* **104**:587–595. [3]
- Rogasch, N. C., Z. J. Daskalakis, and P. B. Fitzgerald. 2014. Cortical Inhibition, Excitation, and Connectivity in Schizophrenia: A Review of Insights from Transcranial Magnetic Stimulation. *Schizophr. Bull.* **40**:685–696. [16]
- Rogers, T. T., and J. L. McClelland. 2008. Précis of Semantic Cognition: A Parallel Distributed Processing Approach. *Behav. Brain Sci.* **31**:689–714. [12]
- Rogers, T. T., J. L. McClelland, K. Patterson, M. A. Lambon-Ralph, and J. R. Hodges. 1999. A Recurrent Connectionist Model of Semantic Dementia. Poster, Cogn. Neurosci. Soc. Annual Meeting. [http://psych.wisc.edu/Rogers/posters/CNS99\\_sd-model.pdf](http://psych.wisc.edu/Rogers/posters/CNS99_sd-model.pdf) (accessed July 10, 2016). [12]
- Roiser, J. P., R. Elliott, and B. J. Sahakian. 2012. Cognitive Mechanisms of Treatment in Depression. *Neuropsychopharmacology* **37**:117–136. [15]
- Roiser, J. P., O. D. Howes, C. A. Chaddock, E. M. Joyce, and P. McGuire. 2013. Neural and Behavioral Correlates of Aberrant Salience in Individuals at Risk for Psychosis. *Schizophr. Bull.* **39**:1328–1336. [4]

- Rolls, E. T., and G. Deco. 2015. Stochastic Cortical Neurodynamics Underlying the Memory and Cognitive Changes in Aging. *Neurobiol. Learn. Mem.* **118**:150–161. [4]
- Rose, N. R. 2014. Learning from Myocarditis: Mimicry, Chaos and Black Holes. *F1000Prime Rep.* **6**:25. [11]
- Rosell, D. R., L. C. Zaluda, M. M. McClure, et al. 2015. Effects of the D1 Dopamine Receptor Agonist Dihydrexidine (DAR-0100A) on Working Memory in Schizotypal Personality Disorder. *Neuropsychopharmacology* **40**:446–453. [5]
- Rosen, A. M., T. Spellman, and J. A. Gordon. 2015. Electrophysiological Endophenotypes in Rodent Models of Schizophrenia and Psychosis. *Biol. Psychiatry* **77**:1041–1049. [1]
- Rosenthal, R. W. 1993. Suicide Attempts and Signalling Games. *Math. Social Sci.* **26**:25–33. [3]
- Rotem, A., A. Neef, N. E. Neef, et al. 2014. Solving the Orientation Specific Constraints in Transcranial Magnetic Stimulation by Rotating Fields. *PLoS One* **9**:e86794. [5]
- Rothbaum, B. O., and M. Davis. 2003. Applying Learning Principles to the Treatment of Post-Trauma Reactions. *Ann. NY Acad. Sci.* **8**:112–121. [5]
- Rothman, K. J., and S. Greenland. 2005. Causation and Causal Inference in Epidemiology. *Am. J. Public Health* **95(Suppl 1)**:144–150. [14]
- Rothschild, A. J., B. W. Dunlop, D. L. Dunner, et al. 2009. Assessing Rates and Predictors of Tachyphylaxis During the Prevention of Recurrent Episodes of Depression with Venlafaxine ER for Two Years (PREVENT) Study. *Psychopharmacol. Bull.* **42**:5–20. [15]
- Rothwell, P. E., M. V. Fuccillo, S. Maxeiner, et al. 2014. Autism-Associated Neuroligin-3 Mutations Commonly Impair Striatal Circuits to Boost Repetitive Behaviors. *Cell* **158**:198–212. [3]
- Rubinov, M., S. A. Knock, C. J. Stam, et al. 2009. Small-World Properties of Nonlinear Brain Activity in Schizophrenia. *Hum. Brain Mapp.* **30**:403–416. [12]
- Rudolph, M., and A. Destexhe. 2006. Analytical Integrate-and-Fire Neuron Models with Conductance-Based Dynamics for Event-Driven Simulation Strategies. *Neural Comput.* **18**:2146–2210. [12]
- Rujescu, D., A. Ingason, S. Cichon, et al. 2009. Disruption of the Neurexin 1 Gene Is Associated with Schizophrenia. *Hum. Mol. Genet.* **18**:988–996. [3]
- Rush, A. J., M. H. Trivedi, S. R. Wisniewski, et al. 2006a. Acute and Longer-Term Outcomes in Depressed Outpatients Requiring One or Several Treatment Steps: A Star\*D Report. *Am. J. Psychiatry* **163**:1905–1917. [1, 15]
- Rush, A. J., M. H. Trivedi, S. R. Wisniewski, et al. 2006b. Bupropion-SR, Sertraline, or Venlafaxine-XR after Failure of SSRIs for Depression. *N. Engl. J. Med.* **354**:1231–1242. [10]
- Rutter, M., J. Kim-Cohen, and B. Maughan. 2006. Continuities and Discontinuities in Psychopathology between Childhood and Adult Life. *J. Child Psychol. Psychiatry* **47**:276–295. [10, 17]
- Salamone, J. D., and M. Correa. 2012. The Mysterious Motivational Functions of Mesolimbic Dopamine. *Neuron* **76**:470–485. [4]
- Salamone, J. D., M. Correa, A. M. Farrar, E. J. Nunes, and M. Pardo. 2009. Dopamine, Behavioral Economics, and Effort. *Front. Behav. Neurosci.* **3**:13. [4]
- Salamone, J. D., M. Correa, E. J. Nunes, P. A. Randall, and M. Pardo. 2012. The Behavioral Pharmacology of Effort-Related Choice Behavior: Dopamine, Adenosine and Beyond. *J. Exp. Anal. Behav.* **97**:125–146. [4]
- Salisbury, D. F., N. Kuroki, K. Kasai, M. E. Shenton, and R. W. McCarley. 2007. Progressive and Interrelated Functional and Structural Evidence of Post-Onset Brain Reduction in Schizophrenia. *Arch. Gen. Psychiatry* **64**:521–529. [16]

- Salo, R., T. E. Nordahl, K. Possin, et al. 2002. Preliminary Evidence of Reduced Cognitive Inhibition in Methamphetamine-Dependent Individuals. *Psychiatry Res.* **111**:65–74. [14]
- Samson, R. D., M. J. Frank, and J. M. Fellous. 2010. Computational Models of Reinforcement Learning: The Role of Dopamine as a Reward Signal. *Cogn. Neurodyn.* **4**:91–105. [4]
- Samuel, A. L. 1959. Some Studies in Machine Learning Using the Game of Checkers. *IBM J. Res. Dev.* **3**:210–229. [13]
- Sanchez-Morla, E. M., A. Barabash, V. Martinez-Vizcaino, et al. 2009. Comparative Study of Neurocognitive Function in Euthymic Bipolar Patients and Stabilized Schizophrenic Patients. *Psychiatry Res.* **169**:220–228. [16]
- Sanislow, C. A., D. S. Pine, K. J. Quinn, et al. 2010. Developing Constructs for Psychopathology Research: Research Domain Criteria. *J. Abnorm. Psychol.* **119**:631–639. [8]
- Sapolsky, R. M. 2000. Glucocorticoids and Hippocampal Atrophy in Neuropsychiatric Disorders. *Arch. Gen. Psychiatry* **57**:925–935. [3]
- Saxena, S., A. L. Brody, K. M. Maidment, and L. R. Baxter, Jr. 2007. Paroxetine Treatment of Compulsive Hoarding. *J. Psychiatr. Res.* **41**:481–487. [10]
- Schadt, E. E., M. D. Linderman, J. Sorenson, L. Lee, and G. P. Nolan. 2010. Computational Solutions to Large-Scale Data Management and Analysis. *Nat. Rev. Genet.* **11**:647–657. [2]
- Schatzberg, A. F., and C. B. Nemeroff. 1995. The American Psychiatric Press Textbook of Psychopharmacology. Washington, D.C.: American Psychiatric Association. [2]
- Schizophrenia Working Group of the Psychiatric Genomics Consortium. 2014. Biological Insights from 108 Schizophrenia-Associated Genetic Loci. *Nature* **511**:421–427. [1, 10]
- Schlagenhauf, F., Q. J. Huys, L. Deserno, et al. 2014. Striatal Dysfunction During Reversal Learning in Unmedicated Schizophrenia Patients. *NeuroImage* **89**:171–180. [4]
- Schlagenhauf, F., G. Juckel, M. Koslowski, et al. 2008. Reward System Activation in Schizophrenic Patients Switched from Typical Neuroleptics to Olanzapine. *Psychopharmacology (Berl.)* **196**:673–684. [4]
- Schlagenhauf, F., P. Sterzer, K. Schmack, et al. 2009. Reward Feedback Alterations in Unmedicated Schizophrenia Patients: Relevance for Delusions. *Biol. Psychiatry* **65**:1032–1039. [4]
- Schmidt, A., R. Bachmann, M. Komter, et al. 2012. Mismatch Negativity Encoding of Prediction Errors Predicts S-Ketamine-Induced Cognitive Impairments. *Neuropsychopharmacology* **37**:865–875. [12]
- Schneider, M., M. Debbane, A. S. Bassett, et al. 2014. Psychiatric Disorders from Childhood to Adulthood in 22q11.2 Deletion Syndrome: Results from the International Consortium on Brain and Behavior in 22q11.2 Deletion Syndrome. *Am. J. Psychiatry* **171**:627–639. [1]
- Schobel, S. A., N. H. Chaudhury, U. A. Khan, et al. 2013. Imaging Patients with Psychosis and a Mouse Model Establishes a Spreading Pattern of Hippocampal Dysfunction and Implicates Glutamate as a Driver. *Neuron* **78**:81–93. [16]
- Schroll, H., C. Beste, and F. H. Hamker. 2015. Combined Lesions of Direct and Indirect Basal Ganglia Pathways but Not Changes in Dopamine Levels Explain Learning Deficits in Patients with Huntington's Disease. *Eur. J. Neurosci.* **41**:1227–1244. [2]
- Schulkin, J. 2010. Social Allostasis: Anticipatory Regulation of the Internal Milieu. *Front. Evol. Neurosci.* **2**:111. [12]

- Schüll, N. D. 2012. Addiction by Design: Machine Gambling in Las Vegas. Princeton: Princeton Univ. Press. [2]
- Schultz, W. 2007. Multiple Dopamine Functions at Different Time Courses. *Annu. Rev. Neurosci.* **30**:259–288. [3, 4]
- . 2013. Updating Dopamine Reward Signals. *Curr. Opin. Neurobiol.* **23**:229–238. [6]
- Schultz, W., P. Apicella, and T. Ljungberg. 1993. Responses of Monkey Dopamine Neurons to Reward and Conditioned Stimuli During Successive Steps of Learning a Delayed Response Task. *J. Neurosci.* **13**:900–913. [13]
- Schultz, W., P. Dayan, and P. R. Montague. 1997. A Neural Substrate of Prediction and Reward. *Science* **275**:1593–1599. [5, 6, 12, 13, 14]
- Schultz, W., and A. Dickinson. 2000. Neuronal Coding of Prediction Errors. *Annu. Rev. Neurosci.* **23**:473–500. [14]
- Schwarz, E., and S. Bahn. 2008. The Utility of Biomarker Discovery Approaches for the Detection of Disease Mechanisms in Psychiatric Disorders. *Br. J. Pharmacol.* **153(Suppl 1)**:S133–136. [1]
- Scott, I. A., and P. B. Greenberg. 2010. Cautionary Tales in the Interpretation of Studies of Tools for Predicting Risk and Prognosis. *Intern. Med. J.* **40**:803–812. [14]
- Seamans, J. K., N. Gorelova, D. Durstewitz, and C. R. Yang. 2001. Bidirectional Dopamine Modulation of Gabaergic Inhibition in Prefrontal Cortical Pyramidal Neurons. *J. Neurosci.* **21**:3628–3638. [4]
- Seamans, J. K., and C. R. Yang. 2004. The Principal Features and Mechanisms of Dopamine Modulation in the Prefrontal Cortex. *Prog. Neurobiol.* **74**:1–58. [2, 4, 5]
- Sebat, J., B. Lakshmi, D. Malhotra, et al. 2007. Strong Association of *de Novo* Copy Number Mutations with Autism. *Science* **316**:445–449. [1, 3]
- Sebat, J., D. L. Levy, and S. E. McCarthy. 2009. Rare Structural Variants in Schizophrenia: One Disorder, Multiple Mutations; One Mutation, Multiple Disorders. *Trends Genet.* **25**:528–535. [16]
- Segal, Z. V., P. Bieling, T. Young, et al. 2010. Antidepressant Monotherapy Vs Sequential Pharmacotherapy and Mindfulness-Based Cognitive Therapy, or Placebo, for Relapse Prophylaxis in Recurrent Depression. *Arch. Gen. Psychiatry* **67**:1256–1264. [15]
- Segal, Z. V., M. Gemar, and S. Williams. 1999. Differential Cognitive Response to a Mood Challenge Following Successful Cognitive Therapy or Pharmacotherapy for Unipolar Depression. *J. Abnorm. Psychol.* **108**:3–10. [15]
- Segal, Z. V., S. Kennedy, M. Gemar, et al. 2006. Cognitive Reactivity to Sad Mood Provocation and the Prediction of Depressive Relapse. *Arch. Gen. Psychiatry* **63**:749–755. [15]
- Seidman, L. J., A. J. Giuliano, E. C. Meyer, et al. 2010. Neuropsychology of the Prodrome to Psychosis in the NAPLS Consortium: Relationship to Family History and Conversion to Psychosis. *Arch. Gen. Psychiatry* **67**:578–588. [3, 10]
- Sejnowski, T. J., C. Koch, and P. S. Churchland. 1988. Computational Neuroscience. *Science* **241**:1299–1306. [16]
- Selemon, L. D., and G. Rajkowska. 2003. Cellular Pathology in the Dorsolateral Prefrontal Cortex Distinguishes Schizophrenia from Bipolar Disorder. *Curr. Mol. Med.* **3**:427–436. [16]
- Semple, D. M., A. M. McIntosh, and S. M. Lawrie. 2005. Cannabis as a Risk Factor for Psychosis: Systematic Review. *J. Psychopharm.* **19**:187–194. [3]

- Senço, N. M., Y. Huang, G. D'Urso, et al. 2015. Transcranial Direct Current Stimulation in Obsessive-Compulsive Disorder: Emerging Clinical Evidence and Considerations for Optimal Montage of Electrodes. *Expert Rev. Med. Devices* **12**:381–391. [5]
- Serre, T., A. Oliva, and T. Poggio. 2007. A Feedforward Architecture Accounts for Rapid Categorization. *PNAS* **104**:6424–6429. [2]
- Servan-Schreiber, D., C. S. Carter, R. M. Bruno, and J. D. Cohen. 1998. Dopamine and the Mechanisms of Cognition: Part II. D-Amphetamine Effects in Human Subjects Performing a Selective Attention Task. *Biol. Psychiatry* **43**:723–729. [12]
- Seth, A. K., K. Suzuki, and H. D. Critchley. 2011. An Interoceptive Predictive Coding Model of Conscious Presence. *Front. Psychol.* **2**:395. [12]
- Seu, E., S. M. Groman, A. P. Arnold, and J. D. Jentsch. 2014. Sex Chromosome Complement Influences Operant Responding for a Palatable Food in Mice. *Genes Brain Behav.* **13**:527–534. [3]
- Shay, J. 1994. Achilles in Vietnam: Combat Trauma and the Undoing of Character. New York: Scribner. [10]
- Sheffield, J. M., J. M. Gold, M. E. Strauss, et al. 2014. Common and Specific Cognitive Deficits in Schizophrenia: Relationships to Function. *Cogn. Affect. Behav. Neurosci.* **14**:161–174. [4]
- Sheline, Y. I., D. M. Barch, J. L. Price, et al. 2009. The Default Mode Network and Self-Referential Processes in Depression. *PNAS* **106**:1942–1947. [15]
- Shelton, M. A., J. T. Newman, H. Gu, et al. 2015. Loss of Microtubule-Associated Protein 2 Immunoreactivity Linked to Dendritic Spine Loss in Schizophrenia. *Biol. Psychiatry* **78**:359–360. [16]
- Shenoy, P., R. P. N. Rao, and A. Yu. 2010. A Rational Decision Making Framework for Inhibitory Control. *Adv. Neural Inf. Process Syst.* **23**:1–9. [14]
- Shenoy, P., and A. J. Yu. 2011. Rational Decision-Making in Inhibitory Control. *Front. Hum. Neurosci.* **5**:48. [3, 14]
- Shewhart, W. A. 1938. Application of Statistical Methods to Manufacturing Problems. *J. Franklin Inst.* **226**:163–186. [9]
- Shi, C., X. Yu, E. F. Cheung, D. H. Shum, and R. C. Chan. 2014. Revisiting the Therapeutic Effect of rTMS on Negative Symptoms in Schizophrenia: A Meta-Analysis. *Psychiatry Res.* **215**:505–513. [16]
- Shipp, S., R. A. Adams, and K. J. Friston. 2013. Reflections on Agranular Architecture: Predictive Coding in the Motor Cortex. *Trends Neurosci.* **36**:706–716. [7]
- Shohamy, D., C. E. Myers, K. D. Geghamian, J. Sage, and M. A. Gluck. 2006. L-dopa Impairs Learning, but Not Generalization, in Parkinson's Disease. *Neuropsychologia* **44**:774–784. [2]
- Shors, T. J. 2004. Learning During Stressful Times. *Learn. Mem.* **11**:137–144. [10]
- Shotbolt, P., P. R. Stokes, S. F. Owens, et al. 2011. Striatal Dopamine Synthesis Capacity in Twins Discordant for Schizophrenia. *Psychol. Med.* **41**:2331–2338. [4]
- Shulman, J. M., P. L. De Jager, and M. B. Feany. 2011. Parkinson's Disease: Genetics and Pathogenesis. *Annu. Rev. Pathol.* **6**:193–222. [2]
- Siegle, G. J., W. K. Thompson, A. Collier, et al. 2012. Toward Clinically Useful Neuroimaging in Depression Treatment: Prognostic Utility of Subgenual Cingulate Activity for Determining Depression Outcome in Cognitive Therapy across Studies, Scanners, and Patient Characteristics. *Arch. Gen. Psychiatry* **69**:913–924. [15]
- Siekmeier, P. J., M. E. Hasselmo, M. W. Howard, and J. T. Coyle. 2007. Modeling of Context-Dependent Retrieval in Hippocampal Region CA1: Implications for Cognitive Function in Schizophrenia. *Schizophr. Res.* **89**:177–190. [12]

- Sigurdsson, T., K. L. Stark, M. Karayiorgou, J. A. Gogos, and J. A. Gordon. 2010. Impaired Hippocampal–Prefrontal Synchrony in a Genetic Mouse Model of Schizophrenia. *Nature* **464**:763–767. [5]
- Silverstein, S. M., B. Moghaddam, and T. Wykes, eds. 2013. Schizophrenia: Evolution and Synthesis. Strüngmann Forum Reports 13, vol. J. Lupp, series ed. Cambridge, MA: MIT Press. [2]
- Simmons, A., S. C. Matthews, M. B. Stein, and M. P. Paulus. 2004. Anticipation of Emotionally Aversive Visual Stimuli Activates Right Insula. *Neuroreport* **15**:2261–2265. [12]
- Simon, J. J., A. Biller, S. Walther, et al. 2009. Neural Correlates of Reward Processing in Schizophrenia: Relationship to Apathy and Depression. *Schizophr. Res.* **118**:154–161. [4]
- Singer, T. 2008. Understanding Others: Brain Mechanisms of Theory of Mind and Empathy. In: Neuroeconomics: Decision Making and the Brain, ed. P. W. Glimcher et al., pp. 251–268. London: Academic Press/Elsevier. [2]
- Singh, S. P., and V. Singh. 2011. Meta-Analysis of the Efficacy of Adjunctive NMDA Receptor Modulators in Chronic Schizophrenia. *CNS Drugs* **25**:859–885. [16]
- Sinyor, M., A. Schaffer, and A. Levitt. 2010. The Sequenced Treatment Alternatives to Relieve Depression (Star\*D) Trial: A Review. *Can. J. Psychiatry* **55**:126–135. [1]
- Slifstein, M., E. van de Giessen, J. Van Snellenberg, et al. 2015. Deficits in Prefrontal Cortical and Extrastriatal Dopamine Release in Schizophrenia: A Positron Emission Tomographic Functional Magnetic Resonance Imaging Study. *JAMA Psychiatry* **72**:316–324. [16]
- Smieskova, R., P. Fusar-Poli, P. Allen, et al. 2010. Neuroimaging Predictors of Transition to Psychosis: A Systematic Review and Meta-Analysis. *Neurosci. Biobehav. Rev.* **34**:1207–1222. [3, 10]
- Smith, E. E., T. S. Eich, D. Cebenoyan, and C. Malapani. 2011. Intact and Impaired Cognitive-Control Processes in Schizophrenia. *Schizophr. Res.* **126**:132–137. [4]
- Smith, M. A., J. Brandt, and R. Shadmehr. 2000. Motor disorder in Huntington's Disease Begins as a Dysfunction in Error Feedback Control. *Nature* **403**:544–549. [2]
- Smith, M. E. 2005. Bilateral Hippocampal Volume Reduction in Adults with Post-Traumatic Stress Disorder: A Meta-Analysis of Structural MRI Studies. *Hippocampus* **15**:798–807. [1]
- Smittenaar, P. 2015. Action Control in Uncertain Environments. Ph.D. Thesis, University College London. <http://discovery.ucl.ac.uk/id/eprint/1467263> (accessed July 7, 2016). [6]
- Smoller, J. W., and M. T. Tsuang. 1998. Panic and Phobic Anxiety: Defining Phenotypes for Genetic Studies. *Am. J. Psychiatry* **155**:1152–1162. [8]
- Sobin, C., and H. A. Sackeim. 1997. Psychomotor Symptoms of Depression. *Am. J. Psychiatry* **154**:4–17. [14]
- Sohal, V. S., F. Zhang, O. Yizhar, and K. Deisseroth. 2009. Parvalbumin Neurons and Gamma Rhythms Enhance Cortical Circuit Performance. *Nature* **459**:698–702. [4]
- Soliman, F., C. E. Glatt, K. G. Bath, et al. 2010. A Genetic Variant BDNF Polymorphism Alters Extinction Learning in Both Mouse and Human. *Science* **327**:863–866. [3]
- Soltesz, I., and K. Staley, eds. 2008. Computational Neuroscience in Epilepsy. London: Academic Press/Elsevier. [2]
- Somlai, Z., A. A. Moustafa, S. Keri, C. E. Myers, and M. A. Gluck. 2011. General Functioning Predicts Reward and Punishment Learning in Schizophrenia. *Schizophr. Res.* **127**:131–136. [4]

- Soubrie, P. 1986. Reconciling the Role of Central Serotonin Neurons in Human and Animal Behaviour. *Behav. Brain Sci.* **9**:319–364. [15]
- Spellman, T., and J. Gordon. 2015. Synchrony in Schizophrenia: A Window into Circuit-Level Pathophysiology. *Curr. Opin. Neurobiol.* **30**:17–23. [1]
- Spencer, K. M. 2011. Baseline Gamma Power During Auditory Steady-State Stimulation in Schizophrenia. *Front. Hum. Neurosci.* **5**:190. [16]
- Spiga, F., L. R. Harrison, S. A. Wood, et al. 2008. Effect of the Glucocorticoid Receptor Antagonist Org 34850 on Fast and Delayed Feedback of Corticosterone Release. *J. Endocrinol.* **196**:323–330. [12]
- Spitzer, R. L., J. Endicott, and E. Robins. 1975. Research Diagnostic Criteria (RDC), New York: Biometrics Research, New York State Psychiatric Institute. <http://garfield.library.upenn.edu/classics1989/A1989U310000002.pdf> (accessed Aug. 12, 2016). [9]
- Squire, L. R. 2004. Memory Systems of the Brain: A Brief History and Current Perspective. *Neurobiol. Learn. Mem.* **82**:171–177. [10]
- Stanislow, C. A., D. S. Pine, K. J. Quinn, et al. 2010. Developing Constructs for Psychopathology Research: Research Domain Criteria. *J. Abnorm. Psychol.* **119**:631–639. [9]
- Stark, K. L., B. Xu, A. Bagchi, et al. 2008. Altered Brain MicroRNA Biogenesis Contributes to Phenotypic Deficits in a 22q11-Deletion Mouse Model. *Nat. Genet.* **40**:751–760. [5]
- Stauffer, V. L., B. A. Millen, S. Andersen, et al. 2013. Pomaglumetad Methionil: No Significant Difference as an Adjunctive Treatment for Patients with Prominent Negative Symptoms of Schizophrenia Compared to Placebo. *Schizophr. Res.* **150**:434–441. [16]
- St Clair, D., D. Blackwood, W. Muir, et al. 1990. Association within a Family of a Balanced Autosomal Translocation with Major Mental Illness. *Lancet* **336**:13–16. [3]
- Stefansson, H., R. A. Ophoff, S. Steinberg, et al. 2009. Common Variants Conferring Risk of Schizophrenia. *Nature* **460**:744–747. [3]
- Stephan, K. E., T. Baldeweg, and K. J. Friston. 2006. Synaptic Plasticity and Dysconnection in Schizophrenia. *Biol. Psychiatry* **59**:929–939. [12]
- Stephan, K. E., K. J. Friston, and C. D. Frith. 2009a. Dysconnection in Schizophrenia: From Abnormal Synaptic Plasticity to Failures of Self-Monitoring. *Schizophr. Bull.* **35**:509–527. [12]
- Stephan, K. E., S. Iglesias, J. Heinzle, and A. O. Diaconescu. 2015. Translational Perspectives for Computational Neuroimaging. *Neuron* **87**:716–732. [12]
- Stephan, K. E., and C. Mathys. 2014. Computational Approaches to Psychiatry. *Curr. Opin. Neurobiol.* **25**:85–92. [6, 11, 12]
- Stephan, K. E., W. D. Penny, J. Daunizeau, R. J. Moran, and K. J. Friston. 2009b. Bayesian Model Selection for Group Studies. *NeuroImage* **46**:1004–1017. [11]
- Sterling, P. 2014. Homeostasis vs. Allostasis: Implications for Brain Function and Mental Disorders. *JAMA Psychiatry* **71**:1192–1193. [12]
- Stewart, S. E., D. Yu, J. M. Scharf, et al. 2013. Genome-Wide Association Study of Obsessive-Compulsive Disorder. *Mol. Psychiatry* **18**:788–798. [10]
- Stilo, S. A., and R. M. Murray. 2010. The Epidemiology of Schizophrenia: Replacing Dogma with Knowledge. *Dialogues Clin. Neurosci.* **12**:305–315. [4]
- Stokes, C. C., C. M. Teeter, and J. S. Isaacson. 2014. Single Dendrite-Targeting Interneurons Generate Branch-Specific Inhibition. *Front. Neural Circuits* **8**:139. [16]

- Stone, J. M., F. Day, H. Tsagarakis, et al. 2009. Glutamate Dysfunction in People with Prodromal Symptoms of Psychosis: Relationship to Gray Matter Volume. *Biol. Psychiatry* **66**:533–539. [16]
- Stone, J. M., O. D. Howes, A. Egerton, et al. 2010. Altered Relationship between Hippocampal Glutamate Levels and Striatal Dopamine Function in Subjects at Ultra High Risk of Psychosis. *Biol. Psychiatry* **68**:599–602. [4]
- Strauss, G. P., M. J. Frank, J. A. Waltz, et al. 2011. Deficits in Positive Reinforcement Learning and Uncertainty-Driven Exploration Are Associated with Distinct Aspects of Negative Symptoms in Schizophrenia. *Biol. Psychiatry* **69**:424–431. [3, 6]
- Strobl, C., J. Malley, and G. Tutz. 2009. An Introduction to Recursive Partitioning: Rationale, Application, and Characteristics of Classification and Regression Trees, Bagging, and Random Forests. *Psychol. Methods* **14**:323–348. [14]
- Sturgill, J. F., and J. S. Isaacson. 2015. Somatostatin Cells Regulate Sensory Response Fidelity via Subtractive Inhibition in Olfactory Cortex. *Nat. Neurosci.* **18**:531–535. [16]
- Stutzmann, G. E., B. S. McEwen, and J. E. LeDoux. 1998. Serotonin Modulation of Sensory Inputs to the Lateral Amygdala: Dependency on Corticosterone. *J. Neurosci.* **18**:9529–9538. [12]
- Substance Abuse and Mental Health Services Administration. 2014. Results from the 2013 National Survey on Drug Use and Health: Mental Health Findings. NSDUH Series H-49, HHS Publ. No. (SMA) 14-4887. Rockville, MD: Substance Abuse and Mental Health Services Administration. [3]
- Sui, J., T. Adali, Q. Yu, J. Chen, and V. D. Calhoun. 2012. A Review of Multivariate Methods for Multimodal Fusion of Brain Imaging Data. *J. Neurosci. Methods* **204**: 68–81. [5]
- Sui, J., G. Pearlson, A. Caprihan, et al. 2011. Discriminating Schizophrenia and Bipolar Disorder by Fusing fMRI and DTI in a Multimodal CCA+ Joint ICA Model. *NeuroImage* **57**:839–855. [16]
- Sullivan, P. F., K. S. Kendler, and M. C. Neale. 2003. Schizophrenia as a Complex Trait: Evidence from a Meta-Analysis of Twin Studies. *Arch. Gen. Psychiatry* **60**:1187–1192. [3]
- Sun, C., M.-C. Cheng, R. Qin, et al. 2011. Identification and Functional Characterization of Rare Mutations of the Neuroligin-2 Gene (NLGN2) Associated with Schizophrenia. *Hum. Mol. Genet.* **20**:3042–3051. [3]
- Sussmann, J. E., G. Lymer, J. McKirdy, et al. 2009. White Matter Abnormalities in Bipolar Disorder and Schizophrenia Detected Using Diffusion Tensor Magnetic Resonance Imaging. *Bipolar Disorders* **11**:11–18. [3]
- Sutton, R. S. 1988. Learning to Predict by the Methods of Temporal Difference. *Mach. Learn.* **3**:9–44. [13]
- Sutton, R. S., and A. G. Barto. 1981. Toward a Modern Theory of Adaptive Networks: Expectation and Prediction. *Psychol. Rev.* **88**:135–170. [13]
- \_\_\_\_\_. 1987. A Temporal-Difference Model of Classical Conditioning. Proc. 9th Annual Conf. of the Cognitive Science Society. Hillsdale, NJ: Lawrence Erlbaum Associates. [13]
- \_\_\_\_\_. 1998. Reinforcement Learning. Cambridge, MA: MIT Press. [5, 12, 13, 15]
- Swedo, S. E., M. B. Schapiro, C. L. Grady, et al. 1989. Cerebral Glucose Metabolism in Childhood-Onset Obsessive-Compulsive Disorder. *Arch. Gen. Psychiatry* **46**:518–523. [10]

- Szymanski, S., J. A. Lieberman, J. M. Alvir, et al. 1995. Gender Differences in Onset of Illness, Treatment Response, Course, and Biologic Indexes in First-Episode Schizophrenic Patients. *Am. J. Psychiatry* **152**:698–703. [16]
- Tabibnia, G., J. R. Monterosso, K. Baicy, et al. 2011. Different Forms of Self-Control Share a Neurocognitive Substrate. *J. Neurosci.* **31**:4805–4810. [14]
- Tanaka, S. 2006. Dopaminergic Control of Working Memory and Its Relevance to Schizophrenia: A Circuit Dynamics Perspective. *Neuroscience* **139**:153–171. [2]
- Tandon, R., M. S. Keshavan, and H. A. Nasrallah. 2008. Schizophrenia, “Just the Facts” What We Know in 2008. 2. Epidemiology and Etiology. *Schizophr. Res.* **102**:1–18. [4]
- Tang, S. W., and D. Helmeste. 2008. Paroxetine. *Expert Opin. Pharmacother.* **9**:787–794. [8]
- Tarur Padinjareveettil, A. M., J. Rogers, C. Loo, and D. Martin. 2015. Transcranial Direct Current Stimulation to Enhance Cognitive Remediation in Schizophrenia. *Brain Stimul.* **8**:307–309. [16]
- Tatard-Leitman, V. M., C. R. Jutzeler, J. Suh, et al. 2015. Pyramidal Cell Selective Ablation of N-Methyl-D-Aspartate Receptor 1 Causes Increase in Cellular and Network Excitability. *Biol. Psychiatry* **77**:556–568. [16]
- Taylor, S. F., and I. F. Tso. 2015. GABA Abnormalities in Schizophrenia: A Methodological Review of *in Vivo* Studies. *Schizophr. Res.* **167**:84–90. [4]
- Teasdale, J. D. 1988. Cognitive Vulnerability to Persistent Depression. *Cogn. Emot.* **2**: 247–274. [15]
- Teasdale, J. D., R. G. Moore, H. Hayhurst, et al. 2002. Metacognitive Awareness and Prevention of Relapse in Depression: Empirical Evidence. *J. Consult. Clin. Psychol.* **70**:275–287. [15]
- Tebbenkamp, A. T., A. J. Willsey, M. W. State, and N. Sestan. 2014. The Developmental Transcriptome of the Human Brain: Implications for Neurodevelopmental Disorders. *Curr. Opin. Neurol.* **27**:149–156. [16]
- Thaker, G. K., D. E. Ross, R. W. Buchanan, H. M. Adami, and D. R. Medoff. 1999. Smooth Pursuit Eye Movements to Extra-Retinal Motion Signals: Deficits in Patients with Schizophrenia. *Psychiatry Res.* **88**:209–219. [7]
- Thase, M. E. 2013. The Multifactorial Presentation of Depression in Acute Care. *J. Clin. Psychiatry* **74**:3–8. [5]
- Thiagarajan, T. C., M. A. Lebedev, M. A. Nicolelis, and D. Plenz. 2010. Coherence Potentials: Loss-Less, All-or-None Network Events in the Cortex. *PLoS Biol.* **8**: e1000278. [3]
- Thomas, A. J., S. Davis, C. Morris, et al. 2014. Increase in Interleukin-1 $\beta$  in Late-Life Depression. *Am. J. Psychiatry* **162**:175–177. [12]
- Thompson, A., B. Nelson, and A. Yung. 2011. Predictive Validity of Clinical Variables in the “at Risk” for Psychosis Population: International Comparison with Results from the North American Prodrome Longitudinal Study. *Schizophr. Res.* **126**:51–57. [10]
- Thompson, P. M., C. Vidal, J. N. Giedd, et al. 2001. Mapping Adolescent Brain Change Reveals Dynamic Wave of Accelerated Gray Matter Loss in Very Early-Onset Schizophrenia. *PNAS* **98**:11650–11655. [16]
- Tien, A. Y., and W. W. Eaton. 1992. Psychopathologic Precursors and Sociodemographic Risk Factors for the Schizophrenia Syndrome. *Arch. Gen. Psychiatry* **49**:37–46. [9]
- Timms, A. E., M. O. Dorschner, J. Wechsler, et al. 2013. Support for the N-Methyl-D-Aspartate Receptor Hypofunction Hypothesis of Schizophrenia from Exome Sequencing in Multiplex Families. *JAMA Psychiatry* **70**:582–590. [16]
- Tobler, P. N., C. D. Fiorillo, and W. Schultz. 2005. Adaptive Coding of Reward Value by Dopamine Neurons. *Science* **307**:1642–1645. [13]

- Tocchetto, A., G. A. Salum, C. Blaya, et al. 2011. Evidence of Association between Val66Met Polymorphism at BDNF Gene and Anxiety Disorders in a Community Sample of Children and Adolescents. *Neurosci. Lett.* **502**:197–200. [3]
- Todd, M., Y. Niv, and J. D. Cohen. 2009. Learning to Use Working Memory in Partially Observable Environments through Dopaminergic Reinforcement. In: Advances in Neural Information Processing Systems 21, ed. D. Koller et al., pp. 1689–1696. Cambridge, MA: MIT Press. [6]
- Todorov, E., and M. I. Jordan. 2002. Optimal Feedback Control as a Theory of Motor Coordination. *Nat. Neurosci.* **5**:1226–1235. [14]
- Tononi, G. 2004. An Information Integration Theory of Consciousness. *BMC Neurosci.* **5**:42. [3]
- Tougaard, J. 2002. Signal Detection Theory, Detectability and Stochastic Resonance Effects. *Biol. Cybern.* **87**:79–90. [2]
- Tozzi, F., L. M. Thornton, K. L. Klump, et al. 2005. Symptom Fluctuation in Eating Disorders: Correlates of Diagnostic Crossover. *Am. J. Psychiatry* **162**:732–740. [3]
- Treadway, M. T., J. W. Buckholtz, R. L. Cowan, et al. 2012. Dopaminergic Mechanisms of Individual Differences in Human Effort-Based Decision-Making. *J. Neurosci.* **32**:6170–6176. [4]
- Treadway, M. T., J. W. Buckholtz, A. N. Schwartzman, W. E. Lambert, and D. H. Zald. 2009. Worth the “EEfRT”? The Effort Expenditure for Rewards Task as an Objective Measure of Motivation and Anhedonia. *PLoS One* **4**:e6598. [4]
- Treadway, M. T., J. S. Peterman, D. H. Zald, and S. Park. 2015. Impaired Effort Allocation in Patients with Schizophrenia. *Schizophr. Res.* **161**:382–385. [4]
- Treadway, M. T., and D. H. Zald. 2011. Reconsidering Anhedonia in Depression: Lessons from Translational Neuroscience. *Neurosci. Biobehav. Rev.* **35**:537–555. [14]
- Trifilieff, P., B. Feng, E. Urizar, et al. 2013. Increasing Dopamine D2 Receptor Expression in the Adult Nucleus Accumbens Enhances Motivation. *Mol. Psychiatry* **18**: 1025–1033. [4]
- Tu, P. C., Y. C. Lee, Y. S. Chen, et al. 2015. Network-Specific Cortico-Thalamic Dysconnection in Schizophrenia Revealed by Intrinsic Functional Connectivity Analyses. *Schizophr. Res.* **166**:137–143. [16]
- Tundo, A., J. R. Calabrese, L. Proietti, and R. de Fillippis. 2015. Variation in Response to Short-Term Antidepressant Treatment between Patients with Continuous and Non-Continuous Cycling Bipolar Disorders. *J. Affect. Disord.* **174**:126–130. [10]
- Tuominen, H. J., J. Tiihonen, and K. Wahlbeck. 2005. Glutamatergic Drugs for Schizophrenia: A Systematic Review and Meta-Analysis. *Schizophr. Res.* **72**:225–234. [16]
- . 2006. Glutamatergic Drugs for Schizophrenia. *Cochrane Database Syst. Rev.* Cd003730. [16]
- Turner, D. C., L. Clark, E. Pomarol-Clotet, et al. 2004. Modafinil Improves Cognition and Attentional Set Shifting in Patients with Chronic Schizophrenia. *Neuropsychopharmacology* **29**:1363–1373. [4]
- Turrigiano, G., L. F. Abbott, and E. Marder. 1994. Activity-Dependent Changes in the Intrinsic Properties of Cultured Neurons. *Science* **264**:974–977. [16]
- Tye, K. M., and K. Deisseroth. 2012. Optogenetic Investigation of Neural Circuits Underlying Brain Disease in Animal Models. *Nat. Rev. Neurosci.* **13**:251–266. [2]
- Tye, K. M., J. J. Mirzabekov, M. R. Warden, et al. 2013. Dopamine Neurons Modulate Neural Encoding and Expression of Depression-Related Behaviour. *Nature* **493**:537–541. [1]

- Tye, K. M., R. Prakash, S. Y. Kim, et al. 2011. Amygdala Circuitry Mediating Reversible and Bidirectional Control of Anxiety. *Nature* **471**:358–362. [1]
- Tyson, P. J., K. R. Laws, K. H. Roberts, and A. M. Mortimer. 2004. Stability of Set-Shifting and Planning Abilities in Patients with Schizophrenia. *Psychiatry Res.* **129**:229–239. [4]
- Ullman, S., and T. Poggio. 2010. Vision: A Computational Investigation into the Human Representation and Processing of Visual Information. Cambridge MA: MIT Press. [12]
- Umbrecht, D., and S. Krilješ. 2005. Mismatch Negativity in Schizophrenia: A Meta-Analysis. *Schizophr. Res.* **76**:1–23. [12]
- Umbrecht, D., L. Schmid, R. Koller, et al. 2000. Ketamine-Induced Deficits in Auditory and Visual Context-Dependent Processing in Healthy Volunteers: Implications for Models of Cognitive Deficits in Schizophrenia. *Arch. Gen. Psychiatry* **57**:1139–1147. [12]
- Urban, N. B. L., L. S. Kegeles, M. Slifstein, et al. 2010. Sex Differences in Striatal Dopamine Release in Young Adults after Oral Alcohol Challenge: A Positron Emission Tomography Imaging Study with [<sup>11</sup>C]Raclopride. *Biol. Psychiatry* **68**: 689–696. [3]
- USA Suicide. 2013. USA Suicide: 2013 Official Final Data. <http://www.suicidology.org/Portals/14/docs/Resources/FactSheets/2013datapgsv3.pdf> (accessed Feb. 29, 2016). [3]
- Van den Bergh, B. R. H., and A. Marcoen. 2004. High Antenatal Maternal Anxiety Is Related to ADHD Symptoms, Externalizing Problems, and Anxiety in 8- and 9-Year-Olds. *Child Dev.* **75**:1085–1097. [3]
- van der Gaag, M., D. H. Nieman, J. Rietdijk, et al. 2012. Cognitive Behavioral Therapy for Subjects at Ultrahigh Risk for Developing Psychosis: A Randomized Controlled Clinical Trial. *Schizophr. Bull.* **38**:1180–1188. [3]
- van der Gaag, M., F. Smit, A. Bechdolf, et al. 2013. Preventing a First Episode of Psychosis: Meta-Analysis of Randomized Controlled Prevention Trials of 12 Month and Longer-Term Follow-Ups. *Schizophr. Res.* **149**:56–62. [10, 16]
- van der Meer, F. J., E. Velthorst, C. J. Meijer, M. W. Machielsen, and L. de Haan. 2012a. Cannabis Use in Patients at Clinical High Risk of Psychosis: Impact on Prodromal Symptoms and Transition to Psychosis. *Curr. Pharm. Des.* **18**:5036–5044. [16]
- van der Meer, M. A. A., A. Johnson, N. C. Schmitzer-Torbert, and A. D. Redish. 2010. Triple Dissociation of Information Processing in Dorsal Striatum, Ventral Striatum, and Hippocampus on a Learned Spatial Decision Task. *Neuron* **67**:25–32. [2, 6]
- van der Meer, M. A. A., Z. Kurth-Nelson, and A. D. Redish. 2012b. Information Processing in Decision-Making Systems. *Neuroscientist* **18**:342–359. [2]
- Van Os, J., C. Gilvarry, R. Bale, et al. 1999. A Comparison of the Utility of Dimensional and Categorical Representations of Psychosis. *Psychol. Med.* **29**:595–606. [9, 10]
- Van Os, J., B. P. Rutten, and R. Poulton. 2008. Gene-Environment Interactions in Schizophrenia: Review of Epidemiological Findings and Future Directions. *Schizophr. Bull.* **34**:1066–1082. [4]
- Vassos, E., C. B. Pedersen, R. M. Murray, D. A. Collier, and C. M. Lewis. 2012. Meta-Analysis of the Association of Urbanicity with Schizophrenia. *Schizophr. Bull.* **38**:1118–1123. [4]
- Vaswani, M., F. K. Linda, and S. Ramesh. 2003. Role of Selective Serotonin Reuptake Inhibitors in Psychiatric Disorders: A Comprehensive Review. *Prog. Neuropsychopharmacol. Biol. Psychiatry* **27**:85–102. [8]

- Velakoulis, D., S. J. Wood, M. T. H. Wong, et al. 2006. Hippocampal and Amygdala Volumes According to Psychosis Stage and Diagnosis: A Magnetic Resonance Imaging Study of Chronic Schizophrenia, First-Episode Psychosis, and Ultra-High-Risk Individuals. *Arch. Gen. Psychiatry* **63**:139–149. [3]
- Verhagen, M., A. van der Meij, P. A. M. van Deurzen, et al. 2010. Meta-Analysis of the BDNF Val66Met Polymorphism in Major Depressive Disorder: Effects of Gender and Ethnicity. *Mol. Psychiatry* **15**:260–271. [3]
- Viceconti, M., P. Hunter, and R. Hose. 2015. Big Data, Big Knowledge: Big Data for Personalized Healthcare. *IEEE J. Biomed. Health Inform.* **19**:1209–1215. [11]
- Vidal, C. N., J. L. Rapoport, K. M. Hayashi, et al. 2006. Dynamically Spreading Frontal and Cingulate Deficits Mapped in Adolescents with Schizophrenia. *Arch. Gen. Psychiatry* **63**:25–34. [16]
- Videbech, P., and B. Ravnkilde. 2004. Hippocampal Volume and Depression: A Meta-Analysis of MRI Studies. *Am. J. Psychiatry* **161**:1957–1966. [1]
- Viguera, A. C., R. J. Baldessarini, and J. Friedberg. 1998. Discontinuing Antidepressant Treatment in Major Depression. *Harv. Rev. Psychiatry* **5**:293–306. [15]
- Vijayraghavan, S., M. Wang, S. G. Birnbaum, G. V. Williams, and A. F. Arnsten. 2007. Inverted-U Dopamine D1 Receptor Actions on Prefrontal Neurons Engaged in Working Memory. *Nat. Neurosci.* **10**:376–384. [4]
- Vita, A., and L. de Peri. 2007. Hippocampal and Amygdala Volume Reductions in First-Episode Schizophrenia. *Br. J. Psychiatry* **190**:271. [4]
- Vita, A., L. de Peri, G. Deste, and E. Sacchetti. 2012. Progressive Loss of Cortical Gray Matter in Schizophrenia: A Meta-Analysis and Meta-Regression of Longitudinal MRI Studies. *Transl. Psychiatry* **2**:e190. [4]
- Vittengl, J. R., L. A. Clark, T. W. Dunn, and R. B. Jarrett. 2007. Reducing Relapse and Recurrence in Unipolar Depression: A Comparative Meta-Analysis of Cognitive-Behavioral Therapy's Effects. *J. Consult. Clin. Psychol.* **75**:475. [15]
- Volk, D. W., and D. A. Lewis. 2013. Prenatal Ontogeny as a Susceptibility Period for Cortical GABA Neuron Disturbances in Schizophrenia. *Neuroscience* **248**:154–164. [16]
- . 2014. Early Developmental Disturbances of Cortical Inhibitory Neurons: Contribution to Cognitive Deficits in Schizophrenia. *Schizophr. Bull.* **40**:952–957. [3, 16]
- . 2015. The Role of Endocannabinoid Signaling in Cortical Inhibitory Neuron Dysfunction in Schizophrenia. *Biol. Psychiatry* [16]
- Volk, D. W., B. I. Siegel, C. D. Verrico, and D. A. Lewis. 2013. Endocannabinoid Metabolism in the Prefrontal Cortex in Schizophrenia. *Schizophr. Res.* **147**:53–57. [16]
- Voon, V., K. Derbyshire, C. Rück, et al. 2015. Disorders of Compulsivity: A Common Bias Towards Learning Habits. *Mol. Psychiatry* **20**:345–352. [6, 9]
- Voon, V., A. R. Mehta, and M. Hallett. 2011. Impulse Control Disorders in Parkinson's Disease: Recent Advances. *Curr. Opin. Neurol.* **24**:324. [12]
- Vossel, S., M. Bauer, C. Mathys, et al. 2014. Cholinergic Stimulation Enhances Bayesian Belief Updating in the Deployment of Spatial Attention. *J. Neurosci.* **34**:15735–15742. [7]
- Wagenaar, W. A. 1988. Paradoxes of Gambling Behavior. Hillsdale: Erlbaum. [2]
- Wagstaff, A. J., S. M. Cheer, A. J. Matheson, D. Ormrod, and K. L. Goa. 2002. Spotlight on Paroxetine in Psychiatric Disorders in Adults. *CNS Drugs* **16**:425–434. [10]
- Wakefield, J. C. 1992a. The Concept of Mental Disorder: on the Boundary between Biological Facts and Social Values. *Am. Psychol.* **47**:373. [2, 10]

- \_\_\_\_\_. 1992b. Disorder as Harmful Dysfunction: A Conceptual Critique of DSM-III-R's Definition of Mental Disorder. *Psychol. Rev.* **99**:232–247. [10]
- \_\_\_\_\_. 2007. The Concept of Mental Disorder: Diagnostic Implications of the Harmful Dysfunction Analysis. *World Psychiatry* **6**:149. [2, 10]
- Walsh, T., J. M. McClellan, S. E. McCarthy, et al. 2008. Rare Structural Variants Disrupt Multiple Genes in Neurodevelopmental Pathways in Schizophrenia. *Science* **320**:539–543. [3, 16]
- Walter, H., H. Kammerer, K. Frasch, M. Spitzer, and B. Abler. 2009. Altered Reward Functions in Patients on Atypical Antipsychotic Medication in Line with the revised Dopamine Hypothesis of Schizophrenia. *Psychopharmacology (Berl.)* **206**:121–132. [4]
- Waltz, J. A., M. J. Frank, B. M. Robinson, and J. M. Gold. 2007. Selective Reinforcement Learning Deficits in Schizophrenia Support Predictions from Computational Models of Striatal-Cortical Dysfunction. *Biol. Psychiatry* **62**:756–764. [4]
- Waltz, J. A., and J. M. Gold. 2007. Probabilistic Reversal Learning Impairments in Schizophrenia: Further Evidence of Orbitofrontal Dysfunction. *Schizophr. Res.* **93**:296–303. [4]
- Waltz, J. A., J. B. Schweitzer, J. M. Gold, et al. 2009. Patients with Schizophrenia Have a Reduced Neural Response to Both Unpredictable and Predictable Primary Reinforcers. *Neuropsychopharmacology* **34**:1567–1577. [4]
- Waltz, J. A., J. B. Schweitzer, T. J. Ross, et al. 2010. Abnormal Responses to Monetary Outcomes in Cortex, but Not in the Basal Ganglia, in Schizophrenia. *Neuropsychopharmacology* **35**:2427–2439. [4]
- Wang, K., H. Zhang, D. Ma, et al. 2009. Common Genetic Variants on 5p14.1 Associate with Autism Spectrum Disorders. *Nature* **459**:528–533. [3]
- Wang, M., S. Vijayraghavan, and P. S. Goldman-Rakic. 2004. Selective D2 Receptor Actions on the Functional Circuitry of Working Memory. *Science* **303**:853–856. [4]
- Wang, M., Y. Yang, C. J. Wang, et al. 2013. NMDA Receptors Subserve Persistent Neuronal Firing During Working Memory in Dorsolateral Prefrontal Cortex. *Neuron* **77**:736–749. [16]
- Wang, X. J. 1999. Synaptic Basis of Cortical Persistent Activity: The Importance of NMDA Receptors to Working Memory. *J. Neurosci.* **19**:9587–9603. [4]
- \_\_\_\_\_. 2001. Synaptic Reverberation Underlying Mnemonic Persistent Activity. *Trends Neurosci.* **24**:455–463. [6]
- \_\_\_\_\_. 2012. Neural Dynamics and Circuit Mechanisms of Decision-Making. *Curr. Opin. Neurobiol.* **22**:1039–1046. [6]
- Wang, X. J., and J. H. Krystal. 2014. Computational Psychiatry. *Neuron* **84**:638–654. [6, 11, 16]
- Ward, K. E., L. Friedman, A. Wise, and S. C. Schulz. 1996. Meta-Analysis of Brain and Cranial Size in Schizophrenia. *Schizophr. Res.* **22**:197–213. [3]
- Watson, D. 2005. Rethinking the Mood and Anxiety Disorders: A Quantitative Hierarchical Model for DSM-V. *J. Abnorm. Psychol.* **114**:522–536. [8]
- Weickert, T. W., T. E. Goldberg, J. H. Callicott, et al. 2009. Neural Correlates of Probabilistic Category Learning in Patients with Schizophrenia. *J. Neurosci.* **29**:1244–1254. [4]
- Weickert, T. W., A. Terrazas, L. B. Bigelow, et al. 2002. Habit and Skill Learning in Schizophrenia: Evidence of Normal Striatal Processing with Abnormal Cortical Input. *Learn. Mem.* **9**:430–442. [4]

- Weidenfeld, J., M. E. Newman, A. Itzik, and S. Feldman. 2005. Adrenocortical Axis Responses to Adrenergic and Glutamate Stimulation Are Regulated by the Amygdala. *Neuroreport* **16**:1245–1249. [12]
- Weiler, J. A., C. Bellebaum, M. Brune, G. Juckel, and I. Daum. 2009. Impairment of Probabilistic Reward-Based Learning in Schizophrenia. *Neuropsychology* **23**:571–580. [4]
- Weinberger, D. R. 1987. Implications of Normal Brain Development for the Pathogenesis of Schizophrenia. *Arch. Gen. Psychiatry* **44**:660–669. [3, 16]
- Weinberger, D. R., and K. F. Berman. 1996. Prefrontal Function in Schizophrenia: Confounds and Controversies. *Phil. Trans. R. Soc. B* **351**:1495–1503. [3]
- Wells, A., P. Fisher, S. Myers, et al. 2012. Metacognitive Therapy in Treatment-Resistant Depression: A Platform Trial. *Behav. Res. Ther.* **50**:367–373. [15]
- Wells, T. T., E. M. Clerkin, A. J. Ellis, and C. G. Beevers. 2014. Effect of Antidepressant Medication Use on Emotional Information Processing in Major Depression. *Am. J. Psychiatry* **171**:195–200. [15]
- Whelan, R., R. Watts, C. A. Orr, et al. 2014. Neuropsychosocial Profiles of Current and Future Adolescent Alcohol Misusers. *Nature* **512**:185–189. [3, 14]
- Whiteford, H. A., L. Degenhardt, J. Rehm, et al. 2013. Global Burden of Disease Attributable to Mental and Substance Use Disorders: Findings from the Global Burden of Disease Study 2010. *Lancet* **382**:1575–1586. [15]
- Whitton, A. E., M. T. Treadway, and D. A. Pizzagalli. 2015. Reward Processing Dysfunction in Major Depression, Bipolar Disorder and Schizophrenia. *Curr. Opin. Psychiatry* **28**:7–12. [3, 12]
- WHO. 2012. Measuring Health and Disability: Manual for WHO Disability Assessment Schedule (WHODAS 2.0). Geneva: World Health Organization. [8]
- Wichers, M., I. Myint-Germeys, N. Jacobs, et al. 2007. Genetic Risk of Depression and Stress-Induced Negative Affect in Daily Life. *Br. J. Psychiatry* **191**:218–223. [15]
- Widiger, T. A., and D. B. Samuel. 2005. Diagnostic Categories or Dimensions: A Question for the Diagnostic and Statistical Manual of Mental Disorders, 5th edition. *J. Abnorm. Psychol.* **114**:494–504. [8]
- Wiecki, T. V., J. Poland, and M. J. Frank. 2015. Model-Based Cognitive Neuroscience Approaches to Computational Psychiatry: Clustering and Classification. *Clin. Psychol. Sci.* **3**:378–399. [3, 5, 6, 12, 15, 16]
- Wieland, S., S. Schindler, C. Huber, et al. 2015. Phasic Dopamine Modifies Sensory-Driven Output of Striatal Neurons through Synaptic Plasticity. *J. Neurosci.* **35**:9946–9956. [11]
- Wilkinson, S. T., R. Radhakrishnan, and D. C. D’Souza. 2014. Impact of Cannabis Use on the Development of Psychotic Disorders. *Curr. Addict. Rep.* **1**:115–128. [16]
- Williams, H. J., N. Craddock, G. Russo, et al. 2011. Most Genome-Wide Significant Susceptibility Loci for Schizophrenia and Bipolar Disorder Reported to Date Cross-Traditional Diagnostic Boundaries. *Hum. Mol. Genet.* **20**:387–391. [1]
- Wilson, R. C., A. Geana, J. M. White, E. A. Ludvig, and J. D. Cohen. 2014. Humans Use Directed and Random Exploration to Solve the Explore-Exploit Dilemma. *J. Exp. Psychol. Gen.* **143**:2074–2081. [6]
- Winterer, G., and D. R. Weinberger. 2004. Genes, Dopamine and Cortical Signal-to-Noise Ratio in Schizophrenia. *Trends Neurosci.* **27**:683–690. [12]
- Wittenborn, J. R., J. D. Holzberg, and B. Simon. 1953. Symptom Correlates for Descriptive Diagnosis. *Genet. Psychol. Monogr.* **47**:237–302. [8]

- Wobrock, T., B. Guse, J. Cordes, et al. 2015. Left Prefrontal High-Frequency Repetitive Transcranial Magnetic Stimulation for the Treatment of Schizophrenia with Predominant Negative Symptoms: A Sham-Controlled, Randomized Multicenter Trial. *Biol. Psychiatry* **77**:979–988. [16]
- Wolf, D. H., T. D. Satterthwaite, J. J. Kantrowitz, et al. 2014. Amotivation in Schizophrenia: Integrated Assessment with Behavioral, Clinical, and Imaging Measures. *Schizophr. Bull.* **40**:1328–1337. [4]
- Wolkowitz, O. M. 1993. Rational Polypharmacy in Schizophrenia. *Ann. Clin. Psychiatry* **5**:79–90. [16]
- Wolwer, W., A. Lowe, J. Brinkmeyer, et al. 2014. Repetitive Transcranial Magnetic Stimulation (rTMS) Improves Facial Affect Recognition in Schizophrenia. *Brain Stimul.* **7**:559–563. [16]
- Wong, K. F., and X. J. Wang. 2006. A Recurrent Network Mechanism of Time Integration in Perceptual Decisions. *J. Neurosci.* **26**:1314–1328. [16]
- Woodruff, A. R., L. M. McGarry, T. P. Vogels, et al. 2011. State-Dependent Function of Neocortical Chandelier Cells. *J. Neurosci.* **31**:17872–17886. [4]
- Woods, B. T., D. Yurgelun-Todd, F. M. Benes, et al. 1990. Progressive Ventricular Enlargement in Schizophrenia: Comparison to Bipolar Affective Disorder and Correlation with Clinical Course. *Biol. Psychiatry* **27**:341–352. [16]
- Woods, S. W., B. C. Walsh, K. A. Hawkins, et al. 2013. Glycine Treatment of the Risk Syndrome for Psychosis: Report of Two Pilot Studies. *Eur. Neuropsychopharmacology* **23**:931–940. [16]
- Woodward, N. D., H. Karbasforoushan, and S. Heckers. 2012. Thalamocortical Dysconnectivity in Schizophrenia. *Am. J. Psychiatry* **169**:1092–1099. [16]
- Woolley, C. S., and B. S. McEwen. 1994. Estradiol Regulates Hippocampal Dendritic Spine Density via an N-Methyl-D-Aspartate Receptor-Dependent Mechanism. *J. Neurosci.* **14**:7680–7687. [16]
- Wright, A. G., R. F. Krueger, M. J. Hobbs, et al. 2013. The Structure of Psychopathology: Toward an Expanded Quantitative Empirical Model. *J. Abnorm. Psychol.* **122**:281–294. [5]
- Wright, A. G., K. M. Thomas, C. J. Hopwood, et al. 2012. The Hierarchical Structure of DSM-5 Pathological Personality Traits. *J. Abnorm. Psychol.* **121**:951–957. [5]
- Wright, I. C., S. Rabe-Hesketh, P. W. Woodruff, et al. 2000. Meta-Analysis of Regional Brain Volumes in Schizophrenia. *Am. J. Psychiatry* **157**:16–25. [3]
- Wu, K., G. L. Hanna, D. R. Rosenberg, and P. D. Arnold. 2012. The Role of Glutamate Signaling in the Pathogenesis and Treatment of Obsessive-Compulsive Disorder. *Pharmacol. Biochem. Behav.* **100**:726–735. [10]
- Wunderlich, K., P. Dayan, and R. J. Dolan. 2012a. Mapping Value Based Planning and Extensively Trained Choice in the Human Brain. *Nat. Neurosci.* **15**:786–791. [10]
- Wunderlich, K., P. Smittenaar, and R. J. Dolan. 2012b. Dopamine Enhances Model-Based over Model-Free Choice Behavior. *Neuron* **75**:418–424. [12]
- Wylie, G. R., E. A. Clark, P. D. Butler, and D. C. Javitt. 2010. Schizophrenia Patients Show Task Switching Deficits Consistent with N-Methyl-D-Aspartate System Dysfunction but Not Global Executive Deficits: Implications for Pathophysiology of Executive Dysfunction in Schizophrenia. *Schizophr. Bull.* **36**:585–594. [4]
- Xu, B., J. L. Roos, S. Levy, et al. 2008. Strong Association of *de Novo* Copy Number Mutations with Sporadic Schizophrenia. *Nat. Genet.* **40**:880–885. [3]
- Yamins, D. L. K., H. Kong, C. F. Cadieu, et al. 2014. Performance-Optimized Hierarchical Models Predict Neural Responses in Higher Visual Cortex. *PNAS* **111**:8619–8624. [5]

- Yang, G. J., J. D. Murray, G. Repovs, et al. 2014. Altered Global Brain Signal in Schizophrenia. *PNAS* **111**:7438–7443. [16]
- Yasumoto, S., E. Tanaka, G. Hattori, H. Maeda, and H. Higashi. 2002. Direct and Indirect Actions of Dopamine on the Membrane Potential in Medium Spiny Neurons of the Mouse Neostriatum. *J. Neurophysiol.* **87**:1234–1243. [4]
- Yilmaz, A., F. Simsek, and A. S. Gonul. 2012. Reduced Reward-Related Probability Learning in Schizophrenia Patients. *Neuropsychiatr: Dis. Treat.* **8**:27–34. [4]
- Yizhar, O. 2012. Optogenetic Insights into Social Behavior Function. *Biol. Psychiatry* **71**:1075–1080. [1]
- Young, P. C. 2002. Advances in Real-Time Flood Forecasting. *Phil. Trans. R. Soc. A* **360**: 1433–1450. [11]
- Yousefi, S., A. Wein, K. C. Kowalski, A. G. Richardson, and L. Srinivasan. 2015. Smoothness as a Failure Mode of Bayesian Mixture Models in Brain-Machine Interfaces. *IEEE Trans. Neural Syst. Rehabil. Eng.* **23**:128–137. [9]
- Yu, A. J., and J. D. Cohen. 2009. Sequential Effects: Superstition or Rational Behavior. *Adv. Neural Inform. Processing Syst.* **21**:1873–1880. [14]
- Yu, A. J., and P. Dayan. 2005. Uncertainty, Neuromodulation, and Attention. *Neuron* **46**:681–692. [15]
- Zemel, R. S., P. Dayan, and A. Pouget. 1998. Probabilistic Interpretation of Population Codes. *Neural Comput.* **10**:403–430. [5]
- Zhang, F., L. Qiu, L. Yuan, et al. 2014. Evidence for Progressive Brain Abnormalities in Early Schizophrenia: A Cross-Sectional Structural and Functional Connectivity Study. *Schizophr. Res.* **159**:31–35. [16]
- Zhu, X., A. C. Need, S. Petrovski, and D. B. Goldstein. 2014. One Gene, Many Neuro-psychiatric Disorders: Lessons from Mendelian Diseases. *Nature* **17**:773–781. [3]
- Zwaigenbaum, L., S. Bryson, C. Lord, et al. 2009. Clinical Assessment and Management of Toddlers with Suspected Autism Spectrum Disorder: Insights from Studies of High-Risk Infants. *Pediatrics* **123**:1383–1391. [3]