

References

- Abel T, Nguyen PV, Barad M, Deuel TA, Kandel ER, Bourtchouladze R** (1997). Genetic demonstration of a role for PKA in the late phase of LTP and in hippocampus-based long-term memory. *Cell* **88**: 615-626.
- Abrous DN, Adriani W, Montaron MF, Aurousseau C, Rougon G, Le Moal M, Piazza PV** (2002). Nicotine self-administration impairs hippocampal plasticity. *Journal of Neuroscience* **22**: 3656-3662.
- Adams CD** (1982). Variations in the sensitivity of instrumental responding to reinforcer devaluation. *Quarterly Journal of Experimental Psychology, Section B - Comparative and Physiological Psychology* **34**: 77-98.
- Adriani W, Laviola G** (2003). Elevated levels of impulsivity and reduced place conditioning with d-amphetamine: two behavioral features of adolescence in mice. *Behavioral Neuroscience* **117**: 695-703.
- Aggleton JP**, Ed. (2000). *The amygdala: a functional analysis*. Second edition. New York: Oxford University Press.
- Aggleton JP, Brown MW** (1999). Episodic memory, amnesia, and the hippocampal-anterior thalamic axis. *Behavioral and Brain Sciences* **22**: 425-444; discussion 444-489.
- Ainslie G** (1974). Impulse control in pigeons. *Journal of the Experimental Analysis of Behavior* **21**: 485-489.
- Ainslie G** (1975). Specious reward: a behavioral theory of impulsiveness and impulse control. *Psychological Bulletin* **82**: 463-496.
- Ainslie G** (1992). *Picoeconomics: the strategic interaction of successive motivational states within the person*. Cambridge University Press, Cambridge, UK.
- Ainslie G** (2001). *Breakdown of Will*. Cambridge University Press, Cambridge, UK.
- Ainslie G, Herrnstein RJ** (1981). Preference reversal and delayed reinforcement. *Animal Learning and Behavior* **9**: 476-482.
- Ainslie G, Monterosso J** (2003). Hyperbolic discounting as a factor in addiction: a critical analysis. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 35-61, 67-69. Elsevier, Oxford.
- Aitken MRF, Cardinal RN** (in preparation, due 2006). *Statistics for the behavioural sciences student*. Lawrence Erlbaum Associates, Mahwah, NJ.
- Alderson HL, Parkinson JA, Robbins TW, Everitt BJ** (2001). The effects of excitotoxic lesions of the nucleus accumbens core or shell regions on intravenous heroin self-administration in rats. *Psychopharmacology* **153**: 455-463.
- Alexander GE, Crutcher MD** (1990). Functional architecture of basal ganglia circuits: neural substrates of parallel processing. *Trends in Neurosciences* **13**: 266-271.
- Alexander GE, DeLong MR, Strick PL** (1986). Parallel organization of functionally segregated circuits linking basal ganglia and cortex. *Annual Review of Neuroscience* **9**: 357-381.
- Allison J** (1979). Demand economics and experimental psychology. *Behavioral Science* **24**: 403-415.
- Altman J, Everitt BJ, Glautier S, Markou A, Nutt D, Oretti R, Phillips GD, Robbins TW** (1996). The biological, social and clinical bases of drug addiction: commentary and debate. *Psychopharmacology* **125**: 285-345.
- Amaral DG, Witter MP** (1995). Hippocampal formation. In *The Rat Nervous System*, Second edition (Paxinos G, ed.), pp. 443-493. Academic Press, London.
- Amiez C, Joseph JP, Procyk E** (2005a). Anterior cingulate error-related activity is modulated by predicted reward. *European Journal of Neuroscience* **21**: 3447-3452.
- Amiez C, Joseph JP, Procyk E** (2005b). Reward encoding in the monkey anterior cingulate cortex [Advance Access ahead of print; doi:10.1093/cercor/bjh046]. *Cerebral Cortex*.
- Anagnostaras SG, Gale GD, Fanselow MS** (2001). Hippocampus and contextual fear conditioning: recent controversies and advances. *Hippocampus* **11**: 8-17.
- Anagnostaras SG, Maren S, Fanselow MS** (1999). Temporally graded retrograde amnesia of contextual fear after hippocampal damage in rats: within-subjects examination. *Journal of Neuroscience* **19**: 1106-1114.
- Anand BK, Brobeck JR** (1951). Hypothalamic control of food intake. *Yale Journal of Biology and Medicine* **24**: 123-140.
- Andersen P, Bliss TV, Lomo T, Olsen LI, Skrede KK** (1969). Lamellar organization of hippocampal excitatory pathways. *Acta Physiologica Scandinavica* **76**: 4A-5A.
- Andersen P, Bliss TV, Skrede KK** (1971). Unit analysis of hippocampal population spikes. *Experimental Brain Research* **13**: 208-221.
- Andersen SL, Teicher MH** (2000). Sex differences in dopamine receptors and their relevance to ADHD. *Neuroscience and Biobehavioral Reviews* **24**: 137-141.
- Anderson IM, Richell RA, Bradshaw CM** (2003). The effect of acute tryptophan depletion on probabilistic choice. *Journal of Psychopharmacology* **17**: 3-7.

- APA** (1994). *Diagnostic and Statistical Manual of Mental Disorders, version IV (DSM-IV)*. American Psychiatric Association, Washington DC.
- APA** (2000). *Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision (DSM-IV-TR)*. American Psychiatric Association, Washington DC.
- Apter A, Plutchik R, van Praag HM** (1993). Anxiety, impulsivity and depressed mood in relation to suicidal and violent behavior. *Acta Psychiatrica Scandinavica* **87**: 1-5.
- Arana FS, Parkinson JA, Hinton E, Holland AJ, Owen AM, Roberts AC** (2003). Dissociable contributions of the human amygdala and orbitofrontal cortex to incentive motivation and goal selection. *Journal of Neuroscience* **23**: 9632-9638.
- Aristotle** (350 BC / 1925). *Nicomachean Ethics [translated by W.D. Ross]*. Clarendon Press, Oxford.
- Arnauld A, Nicole P** (1662). *La logique, ou l'art de penser [Logic, or the Art of Thinking; the Port-Royal Logic]*. Charles Savreux, Paris.
- Aron AR, Shohamy D, Clark J, Myers C, Gluck MA, Poldrack RA** (2004). Human midbrain sensitivity to cognitive feedback and uncertainty during classification learning. *Journal of Neurophysiology* **92**: 1144-1152.
- Åsberg M** (1997). Neurotransmitters and suicidal behavior. The evidence from cerebrospinal fluid studies. *Annals of the New York Academy of Sciences* **836**: 158-181.
- Åsberg M, Träskman L, Thorén P** (1976). 5-HIAA in the cerebrospinal fluid: a biochemical suicide predictor. *Archives of General Psychiatry* **33**: 1193-1197.
- Aston-Jones G, Shipley MT, Grzanna R** (1995). The locus coeruleus, A5 and A7 noradrenergic cell groups. In *The Rat Nervous System* (Paxinos G, ed.), pp. 183-213. Academic Press, London.
- Bäckman J, Alling C, Alsén M, Regnell G, Träskman-Bendz L** (2000). Changes of cerebrospinal fluid monoamine metabolites during long-term antidepressant treatment. *European Neuropsychopharmacology* **10**: 341-349.
- Baker DA, Fuchs RA, Specio SE, Khroyan TV, Neisewander JL** (1998). Effects of intraaccumbens administration of SCH-23390 on cocaine-induced locomotion and conditioned place preference. *Synapse* **30**: 181-193.
- Baldwin AE, Sadeghian K, Holahan MR, Kelley AE** (2002a). Appetitive instrumental learning is impaired by inhibition of cAMP-dependent protein kinase within the nucleus accumbens. *Neurobiology of Learning and Memory* **77**: 44-62.
- Baldwin AE, Sadeghian K, Kelley AE** (2002b). Appetitive instrumental learning requires coincident activation of NMDA and dopamine D1 receptors within the medial prefrontal cortex. *Journal of Neuroscience* **22**: 1063-1071.
- Balleine B** (1992). Instrumental performance following a shift in primary motivation depends on incentive learning. *Journal of Experimental Psychology: Animal Behavior Processes* **18**: 236-250.
- Balleine B, Dickinson A** (1991). Instrumental performance following reinforcer devaluation depends upon incentive learning. *Quarterly Journal of Experimental Psychology, Section B - Comparative and Physiological Psychology* **43**: 279-296.
- Balleine B, Killcross S** (1994). Effects of ibotenic acid lesions of the nucleus accumbens on instrumental action. *Behavioural Brain Research* **65**: 181-193.
- Balleine BW, Dickinson A** (1998). Goal-directed instrumental action: contingency and incentive learning and their cortical substrates. *Neuropharmacology* **37**: 407-419.
- Balleine BW, Dickinson A** (2000). The effect of lesions of the insular cortex on instrumental conditioning: evidence for a role in incentive memory. *Journal of Neuroscience* **20**: 8954-8964.
- Balleine BW, Killcross AS, Dickinson A** (2003). The effect of lesions of the basolateral amygdala on instrumental conditioning. *Journal of Neuroscience* **23**: 666-675.
- Bannerman DM, Good MA, Butcher SP, Ramsay M, Morris RG** (1995). Distinct components of spatial learning revealed by prior training and NMDA receptor blockade. *Nature* **378**: 182-186.
- Bannerman DM, Yee BK, Lemaire M, Jarrard L, Iversen SD, Rawlins JN, Good MA** (2001). Contextual fear conditioning is disrupted by lesions of the subcortical, but not entorhinal, connections to the hippocampus. *Experimental Brain Research* **141**: 304-311.
- Barto AG** (1995). Adaptive critics and the basal ganglia. In *Models of Information Processing in the Basal Ganglia* (Houk JC, Davis JL, Beiser DG, eds.), pp. 215-232. MIT Press, Cambridge, Massachusetts.
- Bassareo V, Di Chiara G** (1999). Differential responsiveness of dopamine transmission to food-stimuli in nucleus accumbens shell/core compartments. *Neuroscience* **89**: 637-641.
- Bassareo V, DiChiara G** (1999). Differential responsiveness of dopamine transmission to food-stimuli in nucleus accumbens shell/core compartments. *Neuroscience* **89**: 637-641.
- Basso AM, Kelley AE** (1999). Feeding induced by GABA(A) receptor stimulation within the nucleus accumbens shell: Regional mapping and characterization of macronutrient and taste preference. *Behavioral Neuroscience* **113**: 324-336.

- Baum WM** (1974). On two types of deviation from the matching law: Bias and undermatching. *Journal of the Experimental Analysis of Behavior* **22**: 231-242.
- Baum WM** (1979). Matching, undermatching, and overmatching in studies of choice. *Journal of the Experimental Analysis of Behavior* **32**: 269-281.
- Baunez C, Humby T, Eagle DM, Ryan LJ, Dunnett SB, Robbins TW** (2001). Effects of STN lesions on simple vs choice reaction time tasks in the rat: preserved motor readiness, but impaired response selection. *European Journal of Neuroscience* **13**: 1609-1616.
- Baunez C, Robbins TW** (1997). Bilateral lesions of the subthalamic nucleus induce multiple deficits in an attentional task in rats. *European Journal of Neuroscience* **9**: 2086-2099.
- Baxter MG, Murray EA** (2001a). Effects of hippocampal lesions on delayed nonmatching-to-sample in monkeys: a reply to Zola and Squire (2001). *Hippocampus* **11**: 201-203.
- Baxter MG, Murray EA** (2001b). Opposite relationship of hippocampal and rhinal cortex damage to delayed nonmatching-to-sample deficits in monkeys. *Hippocampus* **11**: 61-71.
- Bechara A, Damasio AR, Damasio H, Anderson SW** (1994). Insensitivity to future consequences following damage to human prefrontal cortex. *Cognition* **50**: 7-15.
- Bechara A, Damasio H, Damasio AR, Lee GP** (1999). Different contributions of the human amygdala and ventromedial prefrontal cortex to decision-making. *Journal of Neuroscience* **19**: 5473-5481.
- Bechara A, Damasio H, Tranel D, Damasio AR** (1997). Deciding advantageously before knowing the advantageous strategy. *Science* **275**: 1293-1295.
- Bechara A, Tranel D, Damasio H, Damasio AR** (1996). Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex. *Cerebral Cortex* **6**: 215-225.
- Becker GS, Becker GM** (1998). *The economics of life: From baseball to affirmative action to immigration. How real world issues affect our everyday life*. McGraw-Hill, New York.
- Becker GS, Murphy KM** (1988). A theory of rational addiction. *Journal of Political Economy* **96**: 675-700.
- Becker SW, Brownson FO** (1964). What price ambiguity? Or the role of ambiguity in decision making. *Journal of Political Economy* **72**: 62-73.
- Beggs JM, Brown TH, Byrne JH, Crow T, LeDoux JE, LeBar K, Thompson RF** (1999). Learning and memory: basic mechanisms. In *Fundamental Neuroscience* (Zigmond MJ, Bloom FE, Landis SC, Roberts JL, Squire LR, eds.), pp. 1411-1454. Academic Press, London.
- Belke TW** (1998). Qualitatively different reinforcers and parameters of Herrnstein's (1970) response-strength equation. *Animal Learning & Behavior* **26**: 235-242.
- Berendse HW, Galisdegraaf Y, Groenewegen HJ** (1992). Topographical organization and relationship with ventral striatal compartments of prefrontal corticostriatal projections in the rat. *Journal of Comparative Neurology* **316**: 314-347.
- Berendse HW, Groenewegen HJ** (1991). The connections of the medial part of the subthalamic nucleus in the rat: Evidence for a parallel organization. In *The Basal Ganglia III* (Bernardi G, Carpenter MB, DiChiara G, Morelli M, Stanzione P, eds.), pp. 89-98. Plenum, New York.
- Berridge KC** (1991). Modulation of taste affect by hunger, caloric satiety, and sensory-specific satiety in the rat. *Appetite* **16**: 103-120.
- Berridge KC** (2000). Measuring hedonic impact in animals and infants: microstructure of affective taste reactivity patterns. *Neuroscience and Biobehavioral Reviews* **24**: 173-198.
- Berridge KC, Robinson TE** (1998). What is the role of dopamine in reward: hedonic impact, reward learning, or incentive salience? *Brain Research Reviews* **28**: 309-369.
- Beylin AV, Gandhi CC, Wood GE, Talk AC, Matzel LD, Shors TJ** (2001). The role of the hippocampus in trace conditioning: temporal discontinuity or task difficulty? *Neurobiology of Learning and Memory* **76**: 447-461.
- BHF** (2004). Give Up Before You Clog Up [British Heart Foundation anti-smoking advertising campaign], UK.
- Bickel WK, DeGrandpre RJ, Higgins ST** (1995a). The behavioral economics of concurrent drug reinforcers: a review and reanalysis of drug self-administration research. *Psychopharmacology* **118**: 250-259.
- Bickel WK, DeGrandPre RJ, Higgins ST, Hughes JR, Badger G** (1995b). Effects of simulated employment and recreation on drug taking: a behavioral economic analysis. *Experimental and Clinical Psychopharmacology* **3**: 467-476.
- Bickel WK, Johnson MW** (2003). Junk time: pathological behavior as the interaction of evolutionary and cultural forces. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 249-271, 276-278. Elsevier, Oxford.
- Bickel WK, Odum AL, Madden GJ** (1999). Impulsivity and cigarette smoking: delay discounting in current, never, and ex-smokers. *Psychopharmacology* **146**: 447-454.
- Biggio G, Fadda F, Fanni P, Tagliamonte A, Gessa G** (1974). Rapid depletion of serum tryptophan, brain tryptophan, serotonin and 5-hydroxyindoleacetic acid by a tryptophan-free diet. *Life Sciences* **14**: 1321-1329.

- Bizot J, Le Bihan C, Puech AJ, Hamon M, Thiébot M** (1999). Serotonin and tolerance to delay of reward in rats. *Psychopharmacology* **146**: 400-412.
- Bjork JM, Knutson B, Fong GW, Caggiano DM, Bennett SM, Hommer DW** (2004). Incentive-elicited brain activation in adolescents: similarities and differences from young adults. *Journal of Neuroscience* **24**: 1793-1802.
- Blaha CD, Yang CR, Floresco SB, Barr AM, Phillips AG** (1997). Stimulation of the ventral subiculum of the hippocampus evokes glutamate receptor-mediated changes in dopamine efflux in the rat nucleus accumbens. *European Journal of Neuroscience* **9**: 902-911.
- Bliss TVP, Lømo T** (1973). Long-lasting potentiation of synaptic transmission in the dentate area of the anaesthetized rabbit following stimulation of the perforant path. *Journal of Physiology* **232**: 331-356.
- Blows WT** (2000). The neurobiology of antidepressants. *Journal of Neuroscience Nursing* **32**: 177-180.
- Boughner RL, Thomas BL, Papini MR** (2004). Effects of nonreinforced preexposure to the context on autoshaping in rats: methodological implications for demonstrations of latent inhibition. *International Journal of Comparative Psychology* **17**: 168-184.
- Box GEP** (1954). Some theorems on quadratic forms applied in the study of analysis of variance problems: I. Effect of inequality of variance in the one-way classification. *Annals of Mathematical Statistics* **25**: 290-302.
- Bozarth MA, Wise RA** (1981). Intracranial self-administration of morphine into the ventral tegmental area in rats. *Life Sciences* **28**: 551-555.
- Bozarth MA, Wise RA** (1984). Anatomically distinct opiate receptor fields mediate reward and physical dependence. *Science* **224**: 516-517.
- Bradley C** (1937). The behavior of children receiving Benzedrine. *American Journal of Psychiatry* **94**: 577-585.
- Bradshaw CM, Szabadi E** (1992). Choice between delayed reinforcers in a discrete-trials schedule - the effect of deprivation level. *Quarterly Journal of Experimental Psychology, Section B - Comparative and Physiological Psychology* **44B**: 1-16.
- Breiter HC, Aharon I, Kahneman D, Dale A, Shizgal P** (2001). Functional imaging of neural responses to expectancy and experience of monetary gains and losses. *Neuron* **30**: 619-639.
- Broca P** (1878). Anatomie comparée des circonvolutions cérébrales. Le grand lobe limbique et la scissure limbique dans la série des mammifères. *Revue Anthropologique (Paris)* **1**: 456-498.
- Brog JS, Salyapongse A, Deutch AY, Zahm DS** (1993). The patterns of afferent innervation of the core and shell in the "accumbens" part of the rat ventral striatum: immunohistochemical detection of retrogradely transported fluoro-gold. *Journal of Comparative Neurology* **338**: 255-278.
- Brown GL, Linnoila M** (1990). CSF serotonin metabolite (5HIAA) studies in depression, impulsivity and violence. *Journal of Clinical Psychiatry* **51 (supplement 4)**: 31-41.
- Brown PL, Jenkins HM** (1968). Auto-shaping of the pigeon's keypeck. *Journal of the Experimental Analysis of Behavior* **11**: 1-8.
- Brown VJ, Bowman EM** (1995). Discriminative cues indicating reward magnitude continue to determine reaction time of rats following lesions of the nucleus accumbens. *European Journal of Neuroscience* **7**: 2479-2485.
- Bucci DJ, Phillips RG, Burwell RD** (2000). Contributions of postrhinal and perirhinal cortex to contextual information processing. *Behavioral Neuroscience* **114**: 882-894.
- Buhusi CV, Meck WH** (2005). What makes us tick? Functional and neural mechanisms of interval timing. *Nature Reviews Neuroscience* **6**: 755-765.
- Burk JA, Mair RG** (2001). Effects of dorsal and ventral striatal lesions on delayed matching trained with retractable levers. *Behavioural Brain Research* **122**: 67-78.
- Burwell RD, Saddoris MP, Bucci DJ, Wiig KA** (2004). Corticohippocampal contributions to spatial and contextual learning. *Journal of Neuroscience* **24**: 3826-3836.
- Bush G, Frazier JA, Rauch SL, Seidman LJ, Whalen PJ, Jenike MA, Rosen BR, Biederman J** (1999). Anterior cingulate cortex dysfunction in attention-deficit/hyperactivity disorder revealed by fMRI and the Counting Stroop. *Biological Psychiatry* **45**: 1542-1552.
- Bush G, Luu P, Posner MI** (2000). Cognitive and emotional influences in anterior cingulate cortex. *Trends in Cognitive Sciences* **4**: 215-222.
- Bussey TJ, Everitt BJ, Robbins TW** (1997a). Dissociable effects of cingulate and medial frontal cortex lesions on stimulus-reward learning using a novel Pavlovian autoshaping procedure for the rat: implications for the neurobiology of emotion. *Behavioral Neuroscience* **111**: 908-919.
- Bussey TJ, Muir JL, Everitt BJ, Robbins TW** (1997b). Triple dissociation of anterior cingulate, posterior cingulate, and medial frontal cortices on visual discrimination tasks using a touchscreen testing procedure for the rat. *Behavioral Neuroscience* **111**: 920-936.
- Cabanac M** (1992). Pleasure: the common currency. *Journal of Theoretical Biology* **155**: 173-200.
- Cador M, Bjijou Y, Stinus L** (1995). Evidence of a complete independence of the neurobiological substrates for the induction and expression of behavioral sensitization to amphetamine. *Neuroscience* **65**: 385-395.

- Cador M, Taylor JR, Robbins TW** (1991). Potentiation of the effects of reward-related stimuli by dopaminergic-dependent mechanisms in the nucleus accumbens. *Psychopharmacology* **104**: 377-385.
- Caine SB, Koob GF** (1994). Effects of mesolimbic dopamine depletion on responding maintained by cocaine and food. *Journal of the Experimental Analysis of Behavior* **61**: 213-221.
- Cameron AC, Windmeijer FAG** (1997). An R-squared measure of goodness of fit for some common nonlinear regression models. *Journal of Econometrics* **77**: 329-342.
- Campbell KA, Milgram NW** (1985). Mechanisms underlying the plasticity of hippocampal stimulation-induced reward. *Behavioral Neuroscience* **99**: 209-219.
- Campbell KA, Milgram NW, Christoff JK** (1978). Plasticity in the reinforcing consequences of hippocampal stimulation. *Brain Research* **159**: 458-462.
- Cardinal RN** (2000). Whisker (version 1), Cambridge, UK.
- Cardinal RN** (2001). Neuropsychology of reinforcement processes in the rat [www.pobox.com/~rudolf/publications/2001/PhD]. Unpublished PhD thesis, University of Cambridge.
- Cardinal RN** (2002a). ImpulsiveChoice, computer software [www.whiskercontrol.com].
- Cardinal RN** (2002b). SimpleSchedules, computer software [www.whiskercontrol.com].
- Cardinal RN, Aitken MRF** (2001). Whisker (version 2) [www.whiskercontrol.com]. Cambridge University Technical Services Ltd, Cambridge, UK.
- Cardinal RN, Aitken MRF** (2006). *ANOVA for the behavioural sciences researcher*. Lawrence Erlbaum Associates, Mahwah, New Jersey.
- Cardinal RN, Cheung THC** (2005). Nucleus accumbens core lesions retard instrumental learning and performance with delayed reinforcement in the rat. *BMC Neuroscience* **6**: 9.
- Cardinal RN, Everitt BJ** (2004). Neural and psychological mechanisms underlying appetitive learning: links to drug addiction. *Current Opinion in Neurobiology* **14**: 156-162.
- Cardinal RN, Howes NJ** (2005). Effects of lesions of the nucleus accumbens core on choice between small certain rewards and large uncertain rewards in rats. *BMC Neuroscience* **6**: 37.
- Cardinal RN, Parkinson JA, Djafari Marbini H, Toner AJ, Bussey TJ, Robbins TW, Everitt BJ** (2003a). Role of the anterior cingulate cortex in the control over behaviour by Pavlovian conditioned stimuli in rats. *Behavioral Neuroscience* **117**: 566-587.
- Cardinal RN, Parkinson JA, Hall J, Everitt BJ** (2002a). Emotion and motivation: the role of the amygdala, ventral striatum, and prefrontal cortex. *Neuroscience and Biobehavioral Reviews* **26**: 321-352.
- Cardinal RN, Parkinson JA, Lachenal G, Halkerston KM, Rudarakanchana N, Hall J, Morrison CH, Howes SR, Robbins TW, Everitt BJ** (2002b). Effects of selective excitotoxic lesions of the nucleus accumbens core, anterior cingulate cortex, and central nucleus of the amygdala on autoshring performance in rats. *Behavioral Neuroscience* **116**: 553-567.
- Cardinal RN, Pennicott DR, Sugathapala CL, Robbins TW, Everitt BJ** (2001). Impulsive choice induced in rats by lesions of the nucleus accumbens core. *Science* **292**: 2499-2501.
- Cardinal RN, Robbins TW, Everitt BJ** (2000). The effects of d-amphetamine, chlordiazepoxide, alpha-flupenthixol and behavioural manipulations on choice of signalled and unsignalled delayed reinforcement in rats. *Psychopharmacology* **152**: 362-375.
- Cardinal RN, Robbins TW, Everitt BJ** (2003b). Choosing delayed rewards: perspectives from learning theory, neurochemistry, and neuroanatomy. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 183-213, 217-218. Elsevier, Oxford.
- Cardinal RN, Winstanley CA, Robbins TW, Everitt BJ** (2004). Limbic corticostriatal systems and delayed reinforcement. *Annals of the New York Academy of Sciences* **1021**: 33-50.
- Carelli RM, Wightman RM** (2004). Functional microcircuitry in the accumbens underlying drug addiction: insights from real-time signaling during behavior. *Current Opinion in Neurobiology* **14**: 763-768.
- Carey MP, Diewald LM, Esposito FJ, Pellicano MP, Carnevale UAG, Sergeant JA, Papa M, Sadile AG** (1998). Differential distribution, affinity and plasticity of dopamine D-1 and D-2 receptors in the target sites of the mesolimbic system in an animal model of ADHD. *Behavioural Brain Research* **94**: 173-185.
- Carlson NR** (1991). *Physiology of Behaviour*. Fourth edition. Allyn & Bacon, London.
- Carpenter LL, Anderson GM, Pelton GH, Gudin JA, Kirwin PD, Price LH, Heninger GR, McDougle CJ** (1998). Tryptophan depletion during continuous CSF sampling in healthy human subjects. *Neuropsychopharmacology* **19**: 26-35.
- Caspi A, Sugden K, Moffitt TE, Taylor A, Craig IW, Harrington H, McClay J, Mill J, Martin J, Braithwaite A, Poulton R** (2003). Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science* **301**: 386-389.
- Castaneda R, Lifshutz H, Galanter M, Franco H** (1994). Empirical assessment of the self-medication hypothesis among dually diagnosed inpatients. *Comprehensive Psychiatry* **35**: 180-184.

- Castellanos FX, Giedd JN, Marsh WL, Hamburger SD, Vaituzis AC, Dickstein DP, Sarfatti SE, Vauss YC, Snell JW, Lange N, Kayser D, Krain AL, Ritchie GF, Rajapakse JC, Rapoport JL** (1996). Quantitative brain magnetic resonance imaging in attention-deficit hyperactivity disorder. *Archives of General Psychiatry* **53**: 607-616.
- Castren E** (2004). Neurotrophic effects of antidepressant drugs. *Current Opinion in Pharmacology* **4**: 58-64.
- Catania AC** (1970). Reinforcement schedules and psychophysical judgment: A study of some temporal properties of behavior. In *The theory of reinforcement schedules* (Schoenfeld WN, ed.), pp. 1-42. Appleton-Century-Crofts, New York.
- Cervo L, Carnovali F, Stark JA, Mennini T** (2003). Cocaine-seeking behavior in response to drug-associated stimuli in rats: involvement of D3 and D2 dopamine receptors. *Neuropsychopharmacology* **28**: 1150-1159.
- Chaloupka FJ, Emery S, Liang L** (2003). Evolving models of addictive behaviour: from neoclassical to behavioral economics. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 71-89. Elsevier, Oxford.
- Chaloupka FJ, Grossman M, Saffer H** (2002). The effects of price on alcohol consumption and alcohol-related problems. *Alcohol Res Health* **26**: 22-34.
- Chambers RA, Self DW** (2002). Motivational responses to natural and drug rewards in rats with neonatal ventral hippocampal lesions: an animal model of dual diagnosis schizophrenia. *Neuropsychopharmacology* **27**: 889-905.
- Charrier D, Thiébot MH** (1996). Effects of psychotropic drugs on rat responding in an operant paradigm involving choice between delayed reinforcers. *Pharmacology, Biochemistry and Behavior* **54**: 149-157.
- Chase VM, Hertwig R, Gigerenzer G** (1998). Visions of rationality. *Trends in Cognitive Sciences* **2**: 206-214.
- Chen C, Kim JJ, Thompson RF, Tonegawa S** (1996). Hippocampal lesions impair contextual fear conditioning in two strains of mice. *Behavioral Neuroscience* **110**: 1177-1180.
- Cheung TH, Cardinal RN** (2005). Hippocampal lesions facilitate instrumental learning with delayed reinforcement but induce impulsive choice in rats. *BMC Neuroscience* **6**: 36.
- Childress AR, Mozley PD, McElgin W, Fitzgerald J, Reivich M, O'Brien CP** (1999). Limbic activation during cue-induced cocaine craving. *American Journal of Psychiatry* **156**: 11-18.
- Choi DW** (1988). Glutamate neurotoxicity and diseases of the nervous system. *Neuron* **1**: 623-634.
- Choi DW** (1995). Calcium: still centre-stage in hypoxic-ischemic neuronal death. *Trends in Neurosciences* **18**: 58-60.
- Christakou A, Robbins TW, Everitt BJ** (2004). Prefrontal cortical-ventral striatal interactions involved in affective modulation of attentional performance: implications for corticostriatal circuit function. *Journal of Neuroscience* **24**: 773-780.
- Christian KM, Thompson RF** (2003). Neural substrates of eyeblink conditioning: acquisition and retention. *Learning & Memory* **10**: 427-455.
- Clark AE** (2003). The economics of drug legalization. CNRS and DELTA, France.
- Clark L, Manes F, Antoun N, Sahakian BJ, Robbins TW** (2003). The contributions of lesion laterality and lesion volume to decision-making impairment following frontal lobe damage. *Neuropsychologia* **41**: 1474-1483.
- Clark L, Roiser JP, Cools R, Rubinstein DC, Sahakian BJ, Robbins TW** (2005). Stop signal response inhibition is not modulated by tryptophan depletion or the serotonin transporter polymorphism in healthy volunteers: implications for the 5-HT theory of impulsivity. *Psychopharmacology* **182**: 570-578.
- Clark RE, Manns JR, Squire LR** (2001a). Trace and delay eyeblink conditioning: contrasting phenomena of declarative and nondeclarative memory. *Psychological Science* **12**: 304-308.
- Clark RE, West AN, Zola SM, Squire LR** (2001b). Rats with lesions of the hippocampus are impaired on the delayed nonmatching-to-sample task. *Hippocampus* **11**: 176-186.
- Clemens JA, Bennett DR, Fuller RW** (1980). The effect of a tryptophan-free diet on prolactin and corticosterone release by serotonergic stimuli. *Hormone and Metabolic Research* **12**: 35-38.
- Coccaro EF, Siever LJ** (1995). The neuropsychopharmacology of personality disorders. In *Psychopharmacology: The Fourth Generation of Progress* (Bloom FE, Kupfer DJ, eds.), Vol. 1567-1579. American College of Neuropsychopharmacology / Raven Press [<http://www.acnp.org/content-32.html>], New York.
- Coffey SF, Gudleski GD, Saladin ME, Brady KT** (2003). Impulsivity and rapid discounting of delayed hypothetical rewards in cocaine-dependent individuals. *Experimental and Clinical Psychopharmacology* **11**: 18-25.
- Cole BJ, Robbins TW** (1989). Effects of 6-hydroxydopamine lesions of the nucleus accumbens septi on performance of a 5-choice serial reaction time task in rats: implications for theories of selective attention and arousal. *Behavioural Brain Research* **33**: 165-179.
- Coleman-Mesches K, Salinas JA, McGaugh JL** (1996). Unilateral amygdala inactivation after training attenuates memory for reduced reward. *Behavioural Brain Research* **77**: 175-180.
- Collier TJ, Routtenberg A** (1984). Electrical self-stimulation of dentate gyrus granule cells. *Behavioral and Neural Biology* **42**: 85-90.

- Colwill RC, Rescorla RA** (1986). Associative structures in instrumental learning. In *The Psychology of Learning and Motivation* (Bower GH, ed.), Vol. 20, pp. 55-104. Academic Press, Orlando, Florida.
- Colwill RM, Rescorla RA** (1990). Evidence for the hierarchical structure of instrumental learning. *Animal Learning & Behavior* **18**: 71-82.
- Cools R, Blackwell A, Clark L, Menzies L, Cox S, Robbins TW** (2005). Tryptophan depletion disrupts the motivational guidance of goal-directed behavior as a function of trait impulsivity. *Neuropsychopharmacology* **30**: 1362-1373.
- Cooper SJ, Kelly CB, King DJ** (1992). 5-Hydroxyindoleacetic acid in cerebrospinal fluid and prediction of suicidal behaviour in schizophrenia. *Lancet* **340**: 940-941.
- Corbit LH, Balleine BW** (2000). The role of the hippocampus in instrumental conditioning. *Journal of Neuroscience* **20**: 4233-4239.
- Corbit LH, Balleine BW** (2003). The role of prelimbic cortex in instrumental conditioning. *Behavioural Brain Research* **146**: 145-157.
- Corbit LH, Muir JL, Balleine BW** (2001). The role of the nucleus accumbens in instrumental conditioning: evidence of a functional dissociation between accumbens core and shell. *Journal of Neuroscience* **21**: 3251-3260.
- Corbit LH, Ostlund SB, Balleine BW** (2002). Sensitivity to instrumental contingency degradation is mediated by the entorhinal cortex and its efferents via the dorsal hippocampus. *Journal of Neuroscience* **22**: 10976-10984.
- Corkin S** (2002). What's new with the amnesic patient H.M.? *Nature Reviews Neuroscience* **3**: 153-160.
- Corkin S, Amaral DG, Gonzalez RG, Johnson KA, Hyman BT** (1997). H. M.'s medial temporal lobe lesion: findings from magnetic resonance imaging. *Journal of Neuroscience* **17**: 3964-3979.
- Corodimas KP, LeDoux JE** (1995). Disruptive effects of posttraining perirhinal cortex lesions on conditioned fear: contributions of contextual cues. *Behavioral Neuroscience* **109**: 613-619.
- Corruble E, Benyamina A, Bayle F, Falissard B, Hardy P** (2003). Understanding impulsivity in severe depression? A psychometrical contribution. *Progress in Neuro-Psychopharmacology and Biological Psychiatry* **27**: 829-833.
- Cousins MS, Atherton A, Turner L, Salamone JD** (1996). Nucleus accumbens dopamine depletions alter relative response allocation in a T-maze cost/benefit task. *Behavioural Brain Research* **74**: 189-197.
- Coutureau E, Dix SL, Killcross AS** (2000). Involvement of the medial prefrontal cortex-basolateral amygdala pathway in fear-related behaviour in rats. *European Journal of Neuroscience* **12 (supplement 11)**: 156.
- Crean J, Richards JB, de Wit H** (2002). Effect of tryptophan depletion on impulsive behavior in men with or without a family history of alcoholism. *Behavioural Brain Research* **136**: 349-357.
- Cremniter D, Jamain S, Kollenbach K, Alvarez JC, Lecribier Y, Gilton A, Jullien P, Lesieur P, Bonnet F, Spreux-Varoquaux O** (1999). CSF 5-HIAA levels are lower in impulsive as compared to nonimpulsive violent suicide attempters and control subjects. *Biological Psychiatry* **45**: 1572-1579.
- Cromwell HC, Schultz W** (2003). Effects of expectations for different reward magnitudes on neuronal activity in primate striatum. *Journal of Neurophysiology* **89**: 2823-2838.
- Cunningham MG, Bhattacharyya S, Benes FM** (2002). Amygdalo-cortical sprouting continues into early adulthood: implications for the development of normal and abnormal function during adolescence. *Journal of Comparative Neurology* **453**: 116-130.
- Dafters R, Anderson G** (1982). Conditioned tolerance to the tachycardia effect of ethanol in humans. *Psychopharmacology* **78**: 365-367.
- Dahl RE** (2004). Adolescent brain development: a period of vulnerabilities and opportunities. Keynote address. *Annals of the New York Academy of Sciences* **1021**: 1-22.
- Dalley JW, Theobald DE, Eagle DM, Passetti F, Robbins TW** (2002). Deficits in impulse control associated with tonically-elevated serotonergic function in rat prefrontal cortex. *Neuropsychopharmacology* **26**: 716-728.
- Daruna JH, Barnes PA** (1993). A neurodevelopmental view of impulsivity. In *The impulsive client: theory, research and treatment* (McCown WG, Johnson JL, Shure MB, eds.). American Psychological Association, Washington, DC.
- Datla KP, Ahier RG, Young AM, Gray JA, Joseph MH** (2002). Conditioned appetitive stimulus increases extracellular dopamine in the nucleus accumbens of the rat. *European Journal of Neuroscience* **16**: 1987-1993.
- Davids E, Zhang K, Tarazi FI, Baldessarini RJ** (2003). Animal models of attention-deficit hyperactivity disorder. *Brain Research Reviews* **42**: 1-21.
- Davis HP, Squire LR** (1984). Protein synthesis and memory: a review. *Psychological Bulletin* **96**: 518-559.
- Davis M** (2000). The role of the amygdala in conditioned and unconditioned fear and anxiety. In *The amygdala: a functional analysis*, Second edition (Aggleton JP, ed.), pp. 213-287. Oxford University Press, New York.
- Davison M, McCarthy D** (1988). *The matching law: a research review*. Erlbaum, Hillsdale, NJ.

- Daw ND, Niv Y, Dayan P** (2005). Actions, policies, values, and the basal ganglia. In *Recent Breakthroughs in Basal Ganglia Research* (Bezard E, ed.). Nova Science Publishers, New York.
- Daw ND, Touretzky DS** (2002). Long-term reward prediction in TD models of the dopamine system. *Neural Computation* **14**: 2567-2583.
- Day M, Langston R, Morris RG** (2003). Glutamate-receptor-mediated encoding and retrieval of paired-associate learning. *Nature* **424**: 205-209.
- de Borchgrave R, Rawlins JN, Dickinson A, Balleine BW** (2002). Effects of cytotoxic nucleus accumbens lesions on instrumental conditioning in rats. *Experimental Brain Research* **144**: 50-68.
- de la Fuente-Fernandez R, Phillips AG, Zamburlini M, Sossi V, Calne DB, Ruth TJ, Stoessl AJ** (2002). Dopamine release in human ventral striatum and expectation of reward. *Behavioural Brain Research* **136**: 359-363.
- de Villiers AS, Russell VA, Sagvolden T, Searson A, Jaffer A, Taljaard JJ** (1995). Alpha 2-adrenoceptor mediated inhibition of [³H]dopamine release from nucleus accumbens slices and monoamine levels in a rat model for attention-deficit hyperactivity disorder. *Neurochemical Research* **20**: 427-433.
- de Villiers PA, Herrnstein RJ** (1976). Toward a law of response strength. *Psychological Bulletin* **83**: 1131-1153.
- de Wit H, Enggasser JL, Richards JB** (2002). Acute administration of d-amphetamine decreases impulsivity in healthy volunteers. *Neuropsychopharmacology* **27**: 813-825.
- de Wit H, Uhlenhuth EH, Johanson CE** (1986). Individual differences in the reinforcing and subjective effects of amphetamine and diazepam. *Drug and Alcohol Dependence* **16**: 341-360.
- Deakin J, Aitken M, Robbins T, Sahakian BJ** (2004). Risk taking during decision-making in normal volunteers changes with age. *Journal of the International Neuropsychological Society* **10**: 590-598.
- Debiec J, LeDoux JE, Nader K** (2002). Cellular and systems reconsolidation in the hippocampus. *Neuron* **36**: 527-538.
- DeGrandpre RJ, Bickel WK** (1995). Human drug self-administration in a medium of exchange. *Experimental and Clinical Psychopharmacology* **3**: 349-357.
- Delamater AR** (2004). Experimental extinction in Pavlovian conditioning: behavioural and neuroscience perspectives. *Quarterly Journal of Experimental Psychology. B, Comparative and Physiological Psychology* **57**: 97-132.
- Delay J, Brion S** (1969). *Le syndrome de Korsakoff*. Masson, Paris.
- Delgado PL, Charney DS, Price LH, Aghajanian GK, Landis H, Heninger GR** (1990). Serotonin function and the mechanism of antidepressant action. Reversal of antidepressant-induced remission by rapid depletion of plasma tryptophan. *Archives of General Psychiatry* **47**: 411-418.
- Delgado PL, Charney DS, Price LH, Landis H, Heninger GR** (1989). Neuroendocrine and behavioral effects of dietary tryptophan restriction in healthy subjects. *Life Sciences* **45**: 2323-2332.
- DeLong MR, Georgopoulos AP** (1981). Motor functions of the basal ganglia. In *Handbook of Physiology, Section 1, The Nervous System, Vol. 2, Part 2* (Brookhart JM, Moutcastle VB, Brooks VB, eds.), pp. 1017-1061. American Physiological Society, Bethesda, Maryland.
- Desmedt A, Marighetto A, Garcia R, Jaffard R** (2003). The effects of ibotenic hippocampal lesions on discriminative fear conditioning to context in mice: impairment or facilitation depending on the associative value of a phasic explicit cue. *European Journal of Neuroscience* **17**: 1953-1963.
- Devinsky O, Morrell MJ, Vogt BA** (1995). Contributions of anterior cingulate cortex to behaviour. *Brain* **118**: 279-306.
- Dhaenen H** (2001). Imaging the serotonergic system in depression. *European Archives of Psychiatry and Clinical Neuroscience* **251 Suppl 2**: II76-80.
- Di Chiara G** (1998). A motivational learning hypothesis of the role of mesolimbic dopamine in compulsive drug use. *Journal of Psychopharmacology* **12**: 54-67.
- Di Chiara G** (2002). Nucleus accumbens shell and core dopamine: differential role in behavior and addiction. *Behavioural Brain Research* **137**: 75-114.
- Di Ciano P, Everitt BJ** (2001). Dissociable effects of antagonism of NMDA and AMPA/KA receptors in the nucleus accumbens core and shell on cocaine-seeking behavior. *Neuropsychopharmacology* **25**: 341-360.
- Di Ciano P, Underwood RJ, Hagan JJ, Everitt BJ** (2003). Attenuation of cue-controlled cocaine-seeking by a selective D3 dopamine receptor antagonist SB-277011-A. *Neuropsychopharmacology* **28**: 329-338.
- Diaz-Granados JL, Greene PL, Amsel A** (1994). Selective activity enhancement and persistence in weanling rats after hippocampal X-irradiation in infancy: possible relevance for ADHD. *Behavioral and Neural Biology* **61**: 251-259.
- Dickinson A** (1980). *Contemporary Animal Learning Theory*. Cambridge University Press, Cambridge.
- Dickinson A** (1994). Instrumental conditioning. In *Animal Learning and Cognition* (Mackintosh NJ, ed.), pp. 45-79. Academic Press, San Diego.

- Dickinson A, Balleine B** (1994). Motivational control of goal-directed action. *Animal Learning & Behavior* **22**: 1-18.
- Dickinson A, Charnock DJ** (1985). Contingency effects with maintained instrumental reinforcement. *Quarterly Journal of Experimental Psychology Section B-Comparative and Physiological Psychology* **37**: 397-416.
- Dickinson A, Smith J, Mirennowicz J** (2000). Dissociation of Pavlovian and instrumental incentive learning under dopamine antagonists. *Behavioral Neuroscience* **114**: 468-483.
- Dickinson A, Watt A, Griffiths WJH** (1992). Free-operant acquisition with delayed reinforcement. *Quarterly Journal of Experimental Psychology, Section B - Comparative and Physiological Psychology* **45**: 241-258.
- Dickinson A, Wood N, Smith JW** (2002). Alcohol seeking by rats: action or habit? *Quarterly Journal of Experimental Psychology. B, Comparative and Physiological Psychology* **55**: 331-348.
- Dietrich A, Allen JD** (1998). Functional dissociation of the prefrontal cortex and the hippocampus in timing behavior. *Behavioral Neuroscience* **112**: 1043-1047.
- Dietrich A, Allen JD, Bunnell BN** (1997). Is the hippocampus involved in temporal discrimination and the memory of short intervals? *International Journal of Neuroscience* **90**: 255-269.
- Draper HJ** (1909). Ulysses and the Sirens.
- Dudek SM, Bear MF** (1992). Homosynaptic long-term depression in area CA1 of the hippocampus and the effects of NMDA receptor blockade. *Proceedings of the National Academy of Sciences of the United States of America* **89**: 4363-4367.
- Due DL, Huettel SA, Hall WG, Rubin DC** (2002). Activation in mesolimbic and visuospatial neural circuits elicited by smoking cues: evidence from functional magnetic resonance imaging. *American Journal of Psychiatry* **159**: 954-960.
- Duman RS** (2004). Depression: a case of neuronal life and death? *Biological Psychiatry* **56**: 140-145.
- Duncan CP** (1949). The retroactive effect of electroconvulsive shock. *Journal of Comparative and Physiological Psychology* **42**: 32-44.
- Dunnett SB** (1990). Role of prefrontal cortex and striatal output systems in short-term memory deficits associated with ageing, basal forebrain lesions, and cholinergic-rich grafts. *Canadian Journal of Psychology* **44**: 210-232.
- Dusek JA, Eichenbaum H** (1997). The hippocampus and memory for orderly stimulus relations. *Proceedings of the National Academy of Sciences of the United States of America* **94**: 7109-7114.
- Eagle DM, Robbins TW** (2003). Lesions of the medial prefrontal cortex or nucleus accumbens core do not impair inhibitory control in rats performing a stop-signal reaction time task. *Behavioural Brain Research* **146**: 131-144.
- Eichenbaum H, Dudchenko P, Wood E, Shapiro M, Tanila H** (1999). The hippocampus, memory, and place cells: is it spatial memory or a memory space? *Neuron* **23**: 209-226.
- Eisch AJ, Harburg GC** (2006). Opiates, psychostimulants, and adult hippocampal neurogenesis: Insights for addiction and stem cell biology. *Hippocampus* **16**: 271-286.
- Elliott R, Newman JL, Longe OA, Deakin JF** (2003). Differential response patterns in the striatum and orbitofrontal cortex to financial reward in humans: a parametric functional magnetic resonance imaging study. *Journal of Neuroscience* **23**: 303-307.
- Ellison GD** (1964). Differential salivary conditioning to traces. *Journal of Comparative and Physiological Psychology* **57**: 373-380.
- Ellsberg D** (1961). Risk, ambiguity, and the Savage axioms. *Quarterly Journal of Economics* **75**: 643-649.
- Ergorul C, Eichenbaum H** (2006). Essential role of the hippocampal formation in rapid learning of higher-order sequential associations. *Journal of Neuroscience* **26**: 4111-4117.
- Ernst M, Cohen RM, Liebenauer LL, Jons PH, Zametkin AJ** (1997). Cerebral glucose metabolism in adolescent girls with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* **36**: 1399-1406.
- Ernst M, Kimes AS, London ED, Matochik JA, Eldreth D, Tata S, Contoreggi C, Leff M, Bolla K** (2003). Neural substrates of decision making in adults with attention deficit hyperactivity disorder. *American Journal of Psychiatry* **160**: 1061-1070.
- Ernst M, Nelson EE, McClure EB, Monk CS, Munson S, Eshel N, Zarahn E, Leibenluft E, Zametkin A, Towbin K, Blair J, Charney D, Pine DS** (2004). Choice selection and reward anticipation: an fMRI study. *Neuropsychologia* **42**: 1585-1597.
- Ernst M, Zametkin AJ, Matochik JA, Jons PH, Cohen RM** (1998). DOPA decarboxylase activity in attention deficit hyperactivity disorder adults. A [fluorine-18]fluorodopa positron emission tomographic study. *Journal of Neuroscience* **18**: 5901-5907.
- Ersche KD, Roiser JP, Clark L, London M, Robbins TW, Sahakian BJ** (2005). Punishment induces risky decision-making in methadone-maintained opiate users but not in heroin users or healthy volunteers. *Neuropsychopharmacology* **30**: 2115-2124.

- Erwin RJ, Ferguson ED** (1979). The effect of food and water deprivation and satiation on recognition. *American Journal of Psychology* **92**: 611-626.
- Estes WK** (1948). Discriminative conditioning. II. Effects of a Pavlovian conditioned stimulus upon a subsequently established operant response. *Journal of Experimental Psychology* **38**: 173-177.
- Ettenberg A, Pettit HO, Bloom FE, Koob GF** (1982). Heroin and cocaine intravenous self-administration in rats: mediation by separate neural systems. *Psychopharmacology* **78**: 204-209.
- Evenden JL** (1998). Serotonergic and steroid influences on impulsive behaviour in rats. *Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* **764**.
- Evenden JL** (1999a). Impulsivity: a discussion of clinical and experimental findings. *Journal of Psychopharmacology* **13**: 180-192.
- Evenden JL** (1999b). Varieties of impulsivity. *Psychopharmacology* **146**: 348-361.
- Evenden JL, Meyerson B** (1999). The behavior of spontaneously hypertensive and Wistar Kyoto rats under a paced fixed consecutive number schedule of reinforcement. *Pharmacology, Biochemistry and Behavior* **63**: 71-82.
- Evenden JL, Ryan CN** (1996). The pharmacology of impulsive behaviour in rats: the effects of drugs on response choice with varying delays of reinforcement. *Psychopharmacology* **128**: 161-170.
- Evenden JL, Ryan CN** (1999). The pharmacology of impulsive behaviour in rats VI: the effects of ethanol and selective serotonergic drugs on response choice with varying delays of reinforcement. *Psychopharmacology* **146**: 413-421.
- Everitt BJ, Cardinal RN, Hall J, Parkinson JA, Robbins TW** (2000). Differential involvement of amygdala subsystems in appetitive conditioning and drug addiction. In *The amygdala: a functional analysis*, Second edition (Aggleton JP, ed.), pp. 353-390. Oxford University Press, New York.
- Everitt BJ, Dickinson A, Robbins TW** (2001). The neuropsychological basis of addictive behaviour. *Brain Research Reviews* **36**: 129-138.
- Everitt BJ, Morris KA, O'Brien A, Robbins TW** (1991). The basolateral amygdala-ventral striatal system and conditioned place preference: further evidence of limbic-striatal interactions underlying reward-related processes. *Neuroscience* **42**: 1-18.
- Everitt BJ, Parkinson JA, Olmstead MC, Arroyo M, Robledo P, Robbins TW** (1999). Associative processes in addiction and reward: the role of amygdala-ventral striatal subsystems. *Annals of the New York Academy of Sciences* **877**: 412-438.
- Everitt BJ, Robbins TW** (2000). Second-order schedules of drug reinforcement in rats and monkeys: measurement of reinforcing efficacy and drug-seeking behaviour. *Psychopharmacology* **153**: 17-30.
- Everitt BJ, Wolf ME** (2002). Psychomotor stimulant addiction: a neural systems perspective. *Journal of Neuroscience* **22**: 3312-3320.
- Eysenck SGB** (1993). The I7: development of a measure of impulsivity and its relationship to the superfactors of personality. In *The impulsive client: theory, research and treatment* (McCown WG, Johnson JL, Shure MB, eds.). American Psychological Association, Washington DC.
- Eysenck SGB, Eysenck HJ** (1977). The place of impulsiveness in a dimensional system of personality description. *British Journal of Social and Clinical Psychology* **16**: 57-68.
- Fallon JH, Loughlin SE** (1995). Substantia nigra. In *The Rat Nervous System* (Paxinos G, ed.), pp. 215-237. Academic Press, London.
- Feldman RS, Meyer JS, Quenzer LF** (1997). *Principles of neuropsychopharmacology*. Sinauer, Sunderland, Massachusetts.
- Fellows LK, Farah MJ** (2005). Different underlying impairments in decision-making following ventromedial and dorsolateral frontal lobe damage in humans. *Cerebral Cortex* **15**: 58-63.
- Ferguson ED** (2000). *Motivation: a biosocial and cognitive integration of motivation and emotion*. Oxford University Press, Oxford.
- Fibiger HC, LePiane FG, Jakubovic A, Phillips AG** (1987). The role of dopamine in intracranial self-stimulation of the ventral tegmental area. *Journal of Neuroscience* **7**: 3888-3896.
- Fibiger HC, Phillips AG** (1988). Mesocorticolimbic dopamine systems and reward. *Annals of the New York Academy of Sciences* **537**: 206-215.
- Filipek PA, Semrud-Clikeman M, Steingard RJ, Renshaw PF, Kennedy DN, Biederman J** (1997). Volumetric MRI analysis comparing subjects having attention-deficit hyperactivity disorder with normal controls. *Neurology* **48**: 589-601.
- Fiorillo CD, Tobler PN, Schultz W** (2003). Discrete coding of reward probability and uncertainty by dopamine neurons. *Science* **299**: 1898-1902.
- Fiorillo CD, Tobler PN, Schultz W** (2005). Evidence that the delay-period activity of dopamine neurons corresponds to reward uncertainty rather than backpropagating TD errors. *Behavioral and Brain Functions* **1**: 7.

- Fiorino DF, Coury A, Fibiger HC, Phillips AG** (1993). Electrical stimulation of reward sites in the ventral tegmental area increases dopamine transmission in the nucleus accumbens of the rat. *Behavioural Brain Research* **55**: 131-141.
- Fischman MW** (1989). Relationship between self-reported drug effects and their reinforcing effects: studies with stimulant drugs. *NIDA Research Monograph* **92**: 211-230.
- Flexner JB, Flexner LB, Stellar E** (1963). Memory in mice is affected by intracerebral puromycin. *Science* **141**: 57-58.
- Flexner LB, Flexner JB, Roberts RB** (1967). Memory in mice analyzed with antibiotics. Antibiotics are useful to study stages of memory and to indicate molecular events which sustain memory. *Science* **155**: 1377-1383.
- Floresco SB, Blaha CD, Yang CR, Phillips AG** (2001a). Modulation of hippocampal and amygdalar-evoked activity of nucleus accumbens neurons by dopamine: cellular mechanisms of input selection. *Journal of Neuroscience* **21**: 2851-2860.
- Floresco SB, Ghods-Sharifi S** (2006). Amygdala-prefrontal cortical circuitry regulates effort-based decision making [Advance Access ahead of print; doi:10.1093/cercor/bhj143]. *Cerebral Cortex*.
- Floresco SB, Todd CL, Grace AA** (2001b). Glutamatergic afferents from the hippocampus to the nucleus accumbens regulate activity of ventral tegmental area dopamine neurons. *Journal of Neuroscience* **21**: 4915-4922.
- Floresco SB, Yang CR, Phillips AG, Blaha CD** (1998). Basolateral amygdala stimulation evokes glutamate receptor-dependent dopamine efflux in the nucleus accumbens of the anaesthetized rat. *European Journal of Neuroscience* **10**: 1241-1251.
- Fone KC, Nutt DJ** (2005). Stimulants: use and abuse in the treatment of attention deficit hyperactivity disorder. *Current Opinion in Pharmacology* **5**: 87-93.
- Fortin NJ, Agster KL, Eichenbaum HB** (2002). Critical role of the hippocampus in memory for sequences of events. *Nature Neuroscience* **5**: 458-462.
- Fortin NJ, Wright SP, Eichenbaum H** (2004). Recollection-like memory retrieval in rats is dependent on the hippocampus. *Nature* **431**: 188-191.
- Friedman DD** (1990). *Price Theory: An Intermediate Text* [http://www.daviddfriedman.com/Academic/Price_Theory/PThy_ToC.html]. South-Western Publishing Company, Cincinnati, Ohio.
- Fuchs RA, Evans KA, Ledford CC, Parker MP, Case JM, Mehta RH, See RE** (2005). The role of the dorsomedial prefrontal cortex, basolateral amygdala, and dorsal hippocampus in contextual reinstatement of cocaine seeking in rats. *Neuropsychopharmacology* **30**: 296-309.
- Gaffan D** (1992). Amnesia for complex naturalistic scenes and for objects following fornix transection in the rhesus monkey. *European Journal of Neuroscience* **4**: 381-388.
- Gaffan D, Harrison S** (1989). Place memory and scene memory: effects of fornix transection in the monkey. *Experimental Brain Research* **74**: 202-212.
- Gallistel CR** (1994). Space and time. In *Animal Learning and Cognition* (Mackintosh NJ, ed.), pp. 221-253. Academic Press, San Diego.
- Gao G, Wang X, He S, Li W, Wang Q, Liang Q, Zhao Y, Hou F, Chen L, Li A** (2003). Clinical study for alleviating opiate drug psychological dependence by a method of ablating the nucleus accumbens with stereotactic surgery. *Stereotactic and Functional Neurosurgery* **81**: 96-104.
- Garavan H, Pankiewicz J, Bloom A, Cho JK, Sperry L, Ross TJ, Salmeron BJ, Risinger R, Kelley D, Stein EA** (2000). Cue-induced cocaine craving: Neuroanatomical specificity for drug users and drug stimuli. *American Journal of Psychiatry* **157**: 1789-1798.
- Garcia J** (1989). Food for Tolman: Cognition and cathexis in concert. In *Aversion, avoidance and anxiety* (Archer T, Nilsson L-G, eds.), pp. 45-85. Erlbaum, Hillsdale, New Jersey.
- Garcia R, Vouimba RM, Baudry M, Thompson RF** (1999). The amygdala modulates prefrontal cortex activity relative to conditioned fear. *Nature* **402**: 294-296.
- Gawin FH** (1991). Cocaine addiction: psychology and neurophysiology. *Science* **251**: 1580-1586.
- George S, Rogers RD, Duka T** (2005). The acute effect of alcohol on decision making in social drinkers. *Psychopharmacology* **182**: 160-169.
- Gerfen CR** (1992a). The neostriatal mosaic: multiple levels of compartmental organization. *Trends in Neurosciences* **15**: 133-139.
- Gerfen CR** (1992b). The neostriatal mosaic: multiple levels of compartmental organization in the basal ganglia. *Annual Review of Neuroscience* **15**: 285-320.
- Gibbon J, Malapani C, Dale CL, Gallistel C** (1997). Toward a neurobiology of temporal cognition: advances and challenges. *Current Opinion in Neurobiology* **7**: 170-184.
- Giedd JN** (2004). Structural magnetic resonance imaging of the adolescent brain. *Annals of the New York Academy of Sciences* **1021**: 77-85.

- Giertler C, Bohn I, Hauber W** (2003). The rat nucleus accumbens is involved in guiding of instrumental responses by stimuli predicting reward magnitude. *European Journal of Neuroscience* **18**: 1993-1996.
- Giertler C, Bohn I, Hauber W** (2004). Transient inactivation of the rat nucleus accumbens does not impair guidance of instrumental behaviour by stimuli predicting reward magnitude. *Behavioural Pharmacology* **15**: 55-63.
- Giertler C, Bohn I, Hauber W** (2005). Involvement of NMDA and AMPA/KA receptors in the nucleus accumbens core in instrumental learning guided by reward-predictive cues. *European Journal of Neuroscience* **21**: 1689-1702.
- Gilbert PE, Kesner RP** (2002). The amygdala but not the hippocampus is involved in pattern separation based on reward value. *Neurobiology of Learning and Memory* **77**: 338-353.
- Gjelsvik O** (2003). Reason and addiction. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 219-238, 245-247. Elsevier, Oxford.
- Goldberg SR, Schuster CR** (1967). Conditioned suppression by a stimulus associated with nalorphine in morphine-dependent monkeys. *Journal of the Experimental Analysis of Behavior* **10**: 235-242.
- Good M** (2002). Spatial memory and hippocampal function: where are we now? *Psicológica* **23**: 109-138.
- Good M, Honey RC** (1991). Conditioning and contextual retrieval in hippocampal rats. *Behavioral Neuroscience* **105**: 499-509.
- Good M, Honey RC** (1997). Dissociable effects of selective lesions to hippocampal subsystems on exploratory behavior, contextual learning, and spatial learning. *Behavioral Neuroscience* **111**: 487-493.
- Gottfried JA, Dolan RJ** (2004). Human orbitofrontal cortex mediates extinction learning while accessing conditioned representations of value. *Nature Neuroscience* **7**: 1144-1152.
- Gottfried JA, O'Doherty J, Dolan RJ** (2003). Encoding predictive reward value in human amygdala and orbitofrontal cortex. *Science* **301**: 1104-1107.
- Gould E, Gross CG** (2002). Neurogenesis in adult mammals: some progress and problems. *Journal of Neuroscience* **22**: 619-623.
- Grace RC** (1996). Choice between fixed and variable delays to reinforcement in the adjusting-delay procedure and concurrent chains. *Journal of Experimental Psychology: Animal Behavior Processes* **22**: 362-383.
- Green L, Fisher EB** (2000). Economic substitutability: some implications for health behavior. In *Reframing health behavior change with behavioral economics* (Bickel WK, Vuchinich RE, eds.), pp. 115-144. Erlbaum, Mahwah, NJ.
- Green L, Fisher EB, Perlow S, Sherman L** (1981). Preference reversal and self control: choice as a function of reward amount and delay. *Behaviour Analysis Letters* **1**: 43-51.
- Green L, Myerson J** (1996). Exponential versus hyperbolic discounting of delayed outcomes: Risk and waiting time. *American Zoologist* **36**: 496-505.
- Green L, Myerson J** (2004). A discounting framework for choice with delayed and probabilistic rewards. *Psychological Bulletin* **130**: 769-792.
- Green L, Myerson J, Ostaszewski P** (1999). Amount of reward has opposite effects on the discounting of delayed and probabilistic outcomes. *Journal of Experimental Psychology. Learning, Memory, and Cognition* **25**: 418-427.
- Grice GR** (1948). The relation of secondary reinforcement to delayed reward in visual discrimination learning. *Journal of Experimental Psychology* **38**: 1-16.
- Griffiths DP, Dickinson A, Clayton NS** (1999). Episodic memory: what can animals remember about their past? *Trends in Cognitive Sciences* **3**: 74-80.
- Grindley GC** (1932). The formation of a simple habit in guinea pigs. *British Journal of Psychology* **23**: 127-147.
- Grossberg S** (1982). *Studies of Mind and Brain: Neural Principles of Learning, Perception, Development, Cognition, and Motor Control*. Reidel, Boston.
- Grove EA, Domesick VB, Nauta WJ** (1986). Light microscopic evidence of striatal input to intrapallidal neurons of cholinergic cell group Ch4 in the rat: a study employing the anterograde tracer Phaseolus vulgaris leucoagglutinin (PHA-L). *Brain Research* **367**: 379-384.
- Gruber J, Mullainathan S** (2002). Do cigarette taxes make smokers happier? [Working Paper 8872]. National Bureau of Economic Research.
- Gruber J, Sen A, Stabile M** (2002). Estimating price elasticities when there is smuggling: the sensitivity of smoking to price in Canada [Working Paper 8962]. National Bureau of Economic Research.
- Guthrie ER** (1935). *The psychology of learning*. Harper, New York.
- Hall G** (1994). Pavlovian conditioning: laws of association. In *Animal Learning and Cognition* (Mackintosh NJ, ed.), pp. 15-43. Academic Press, San Diego.
- Hall J, Parkinson JA, Connor TM, Dickinson A, Everitt BJ** (2001). Involvement of the central nucleus of the amygdala and nucleus accumbens core in mediating Pavlovian influences on instrumental behaviour. *European Journal of Neuroscience* **13**: 1984-1992.

- Halliday G, Harding A, Paxinos G** (1995). Serotonin and tachykinin systems. In *The Rat Nervous System* (Paxinos G, ed.), pp. 929-974. Academic Press, London.
- Hamani C, Saint-Cyr JA, Fraser J, Kaplitt M, Lozano AM** (2004). The subthalamic nucleus in the context of movement disorders. *Brain* **127**: 4-20.
- Hansard** (17 July 2002). The United Kingdom Parliament.
- Harker GS** (1956). Delay of reward and performance of an instrumental response. *Journal of Experimental Psychology* **51**: 303-310.
- Harmer CJ, Phillips GD** (1999). Enhanced dopamine efflux in the amygdala by a predictive, but not a non-predictive, stimulus: Facilitation by prior repeated D-amphetamine. *Neuroscience* **90**: 119-130.
- Hata T, Okaichi H** (1998). [Effects of fimbria-fornix lesion on the temporal discrimination revealed by peak interval procedure in rats]. *Shinrigaku Kenkyu (Japanese Journal of Psychology)* **69**: 304-309.
- Hauber W, Bohn I, Giertler C** (2000). NMDA, but not dopamine D(2), receptors in the rat nucleus accumbens are involved in guidance of instrumental behavior by stimuli predicting reward magnitude. *Journal of Neuroscience* **20**: 6282-6288.
- Haykin S** (1999). *Neural Networks: A Comprehensive Foundation*. Prentice-Hall, Upper Saddle River, New Jersey.
- Heather N** (1998). A conceptual framework for explaining drug addiction. *Journal of Psychopharmacology* **12**: 3-7.
- Heckerman DE, Horvitz EJ, Nathwani BN** (1992). Toward normative expert systems: Part I. The Pathfinder project. *Methods of Information in Medicine* **31**: 90-105.
- Heimer L, Zahm DS, Alheid GF** (1995). Basal ganglia. In *The Rat Nervous System* (Paxinos G, ed.), pp. 579-628. Academic Press, London.
- Heldt SA, Coover GD, Falls WA** (2002). Posttraining but not pretraining lesions of the hippocampus interfere with feature-negative discrimination of fear-potentiated startle. *Hippocampus* **12**: 774-786.
- Hellemans KG, Nobrega JN, Olmstead MC** (2005). Early environmental experience alters baseline and ethanol-induced cognitive impulsivity: relationship to forebrain 5-HT1A receptor binding. *Behavioural Brain Research* **159**: 207-220.
- Hernandez PJ, Sadeghian K, Kelley AE** (2002). Early consolidation of instrumental learning requires protein synthesis in the nucleus accumbens. *Nature Neuroscience* **5**: 1327-1331.
- Herrnstein RJ** (1961). Relative and absolute strength of responses as a function of frequency of reinforcement. *Journal of the Experimental Analysis of Behavior* **4**: 267-272.
- Herrnstein RJ** (1970). On the law of effect. *Journal of the Experimental Analysis of Behavior* **13**: 243-266.
- Herrnstein RJ, Prelec D** (1992). A theory of addiction. In *Choice Over Time* (Loewenstein G, Elster J, eds.), pp. 331-361. Russell Sage Press, New York.
- Hetherington AW, Ranson SW** (1939). Experimental hypothalamohypophyseal obesity in the rat. *Proceedings of the Society for Experimental Biology and Medicine* **41**: 465-466.
- Heyman GM** (1996). Resolving the contradictions of addiction. *Behavioral and Brain Sciences* **19**: 561-610.
- Heyman GM** (2000). An economic approach to animal models of alcoholism. *Alcohol Res Health* **24**: 132-139.
- Heyman GM** (2003). Consumption dependent changes in reward value: a framework for understanding addiction. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 95-121. Elsevier, Oxford.
- Heyman GM, Gendel K, Goodman J** (1999). Inelastic demand for alcohol in rats. *Psychopharmacology* **144**: 213-219.
- Higgins ST, Alessi SM, Dantona RL** (2002). Voucher-based incentives. A substance abuse treatment innovation. *Addictive Behaviors* **27**: 887-910.
- Hikosaka K, Watanabe M** (2000). Delay activity of orbital and lateral prefrontal neurons of the monkey varying with different rewards. *Cerebral Cortex* **10**: 263-271.
- Hill RT** (1970). Facilitation of conditioned reinforcement as a mechanism of psychomotor stimulation. In *International Symposium on Amphetamines and Related Compounds* (Costa E, Garattini S, eds.), pp. 781-795. Raven Press, New York.
- Hirsh R** (1974). The hippocampus and contextual retrieval of information from memory: a theory. *Behavioral Biology* **12**: 421-444.
- Ho MY, Mobini S, Chiang TJ, Bradshaw CM, Szabadi E** (1999). Theory and method in the quantitative analysis of "impulsive choice" behaviour: implications for psychopharmacology. *Psychopharmacology* **146**: 362-372.
- Holland PC, Bouton ME** (1999). Hippocampus and context in classical conditioning. *Current Opinion in Neurobiology* **9**: 195-202.
- Holland PC, Gallagher M** (2004). Amygdala-frontal interactions and reward expectancy. *Current Opinion in Neurobiology* **14**: 148-155.
- Holland PC, Gallagher M** (2006). Different roles for amygdala central nucleus and substantia innominata in the surprise-induced enhancement of learning. *Journal of Neuroscience* **26**: 3791-3797.

- Holland PC, Lamoureux JA, Han JS, Gallagher M** (1999). Hippocampal lesions interfere with Pavlovian negative occasion setting. *Hippocampus* **9**: 143-157.
- Holt DD, Green L, Myerson J** (2003). Is discounting impulsive? Evidence from temporal and probability discounting in gambling and non-gambling college students. *Behavioural Processes* **64**: 355-367.
- Holyoak KJ, Spellman BA** (1993). Thinking. *Annual Review of Psychology* **44**: 265-315.
- Homer** (~800 BC / 1996). *Odyssey [translated by R. Fagles]*. The Bath Press, Bath.
- Honey RC, Good M** (1993). Selective hippocampal lesions abolish the contextual specificity of latent inhibition and conditioning. *Behavioral Neuroscience* **107**: 23-33.
- Horvitz JC** (2000). Mesolimbocortical and nigrostriatal dopamine responses to salient non-reward events. *Neuroscience* **96**: 651-656.
- Houk JC, Adams JL, Barto AG** (1995). A model of how the basal ganglia generate and use neural signals that predict reinforcement. In *Models of information processing in the basal ganglia* (Houk JC, Davis JL, Beiser DG, eds.), pp. 249-270. MIT Press, Cambridge, Massachusetts / London.
- Howell DC** (1997). *Statistical Methods for Psychology*. Fourth edition. Wadsworth, Belmont, CA.
- Hsu M, Bhatt M, Adolphs R, Tranel D, Camerer CF** (2005). Neural systems responding to degrees of uncertainty in human decision-making. *Science* **310**: 1680-1683.
- Hughes J, Stead L, Lancaster T** (2004). Antidepressants for smoking cessation. *Cochrane Database Syst Rev*: CD000031.
- Hull CL** (1932). The goal gradient hypothesis and maze learning. *Psychological Review* **39**: 25-43.
- Hull CL** (1943). *Principles of behavior*. Appleton-Century-Crofts, New York.
- Hume D** (1739-1740). *A Treatise of Human Nature* [http://www.gutenberg.org/etext/4705], London.
- Hursh SR** (1978). The economics of daily consumption controlling food- and water-reinforced responding. *Journal of the Experimental Analysis of Behavior* **29**: 475-491.
- Hutcheson DM, Everitt BJ, Robbins TW, Dickinson A** (2001a). The role of withdrawal in heroin addiction: enhances reward or promotes avoidance? *Nature Neuroscience* **4**: 943-947.
- Hutcheson DM, Parkinson JA, Robbins TW, Everitt BJ** (2001b). The effects of nucleus accumbens core and shell lesions on intravenous heroin self-administration and the acquisition of drug-seeking behaviour under a second-order schedule of heroin reinforcement. *Psychopharmacology* **153**: 464-472.
- Hutcheson F** (1725). *Inquiry concerning Moral Good and Evil*, London.
- Huynh H, Feldt LS** (1970). Conditions under which mean square ratios in repeated measures designs have exact *F*-distributions. *Journal of the American Statistical Association* **65**: 1582-1589.
- Šidák Z** (1967). Rectangular confidence regions for the means of multivariate normal distributions. *Journal of the American Statistical Association* **62**: 826-831.
- Ikemoto S, Panksepp J** (1999). The role of nucleus accumbens dopamine in motivated behavior: a unifying interpretation with special reference to reward-seeking. *Brain Research Reviews* **31**: 6-41.
- Iordanova MD, McNally GP, Westbrook RF** (2006). Opioid receptors in the nucleus accumbens regulate attentional learning in the blocking paradigm. *Journal of Neuroscience* **26**: 4036-4045.
- Ito M** (1985). Choice and amount of reinforcement in rats. *Learning & Motivation* **16**: 95-108.
- Ito R, Dalley JW, Howes SR, Robbins TW, Everitt BJ** (2000). Dissociation in conditioned dopamine release in the nucleus accumbens core and shell in response to cocaine cues and during cocaine-seeking behavior in rats. *Journal of Neuroscience* **20**: 7489-7495.
- Ito R, Dalley JW, Robbins TW, Everitt BJ** (2002). Dopamine release in the dorsal striatum during cocaine-seeking behavior under the control of a drug-associated cue. *Journal of Neuroscience* **22**: 6247-6253.
- Ito R, Everitt BJ, Robbins TW** (2005). The hippocampus and appetitive Pavlovian conditioning: effects of excitotoxic hippocampal lesions on conditioned locomotor activity and autoshaping. *Hippocampus* **15**: 713-721.
- Ivkovich D, Paczkowski CM, Stanton ME** (2000). Ontogeny of delay versus trace eyeblink conditioning in the rat. *Developmental Psychobiology* **36**: 148-160.
- Izawa E, Aoki N, Matsushima T** (2005). Neural correlates of the proximity and quantity of anticipated food rewards in the ventral striatum of domestic chicks. *European Journal of Neuroscience* **22**: 1502-1512.
- Izawa E, Zachar G, Yanagihara S, Matsushima T** (2003). Localized lesion of caudal part of lobus parolfactorius caused impulsive choice in the domestic chick: evolutionarily conserved function of ventral striatum. *Journal of Neuroscience* **23**: 1894-1902.
- Izquierdo A, Murray EA** (2005). Opposing effects of amygdala and orbital prefrontal cortex lesions on the extinction of instrumental responding in macaque monkeys. *European Journal of Neuroscience* **22**: 2341-2346.
- Jaffard R, Meunier M** (1993). Role of the hippocampal formation in learning and memory. *Hippocampus* **3 Spec No**: 203-217.
- Jarrard LE** (1993). On the role of the hippocampus in learning and memory in the rat. *Behavioral and Neural Biology* **60**: 9-26.

- Jarrard LE, Meldrum BS** (1993). Selective excitotoxic pathology in the rat hippocampus. *Neuropathology and Applied Neurobiology* **19**: 381-389.
- Jiménez-Castellanos J, Graybiel AM** (1989). Evidence that histochemically distinct zones of the primate substantia nigra pars compacta are related to patterned distributions of nigrostriatal projection neurons and striatonigral fibres. *Experimental Brain Research* **74**: 227-238.
- Johansen EB, Aase H, Meyer A, Sagvolden T** (2002). Attention-deficit/hyperactivity disorder (ADHD) behaviour explained by dysfunctioning reinforcement and extinction processes. *Behavioural Brain Research* **130**: 37-45.
- Johnson BA, Roache JD, Ait-Daoud N, Zanca NA, Velazquez M** (2002). Ondansetron reduces the craving of biologically predisposed alcoholics. *Psychopharmacology* **160**: 408-413.
- Jongen-Relo AL, Kaufmann S, Feldon J** (2003). A differential involvement of the shell and core subterritories of the nucleus accumbens of rats in memory processes. *Behavioral Neuroscience* **117**: 150-168.
- Joseph MH, Datla K, Young AM** (2003). The interpretation of the measurement of nucleus accumbens dopamine by in vivo dialysis: the kick, the craving or the cognition? *Neuroscience and Biobehavioral Reviews* **27**: 527-541.
- Judge ME, Quartermain D** (1982). Characteristics of retrograde amnesia following reactivation of memory in mice. *Physiology and Behavior* **28**: 585-590.
- Kacelnik A** (1997a). Normative and descriptive models of decision making: time discounting and risk sensitivity. In *Characterizing human psychological adaptations (Ciba Foundation Symposium 208)*, pp. 51-70. Wiley, Chichester.
- Kacelnik A** (1997b). Normative and descriptive models of decision making: time discounting and risk sensitivity. *CIBA Foundation Symposium* **208**: 51-67; discussion 67-70.
- Kahneman D, Slovic P, Tversky A**, Eds. (1982). *Judgement Under Uncertainty: Heuristics and Biases*. New York: Cambridge University Press.
- Kalivas PW, Pierce RC, Cornish J, Sorg BA** (1998). A role for sensitization in craving and relapse in cocaine addiction. *Journal of Psychopharmacology* **12**: 49-53.
- Kamin LJ** (1965). Temporal and intensity characteristics of the conditioned stimulus. In *Classical Conditioning: A Symposium* (Prokasy WF, ed.), pp. 118-147. Appleton-Century-Crofts, New York.
- Kandel ER** (2001). The molecular biology of memory storage: a dialogue between genes and synapses. *Science* **294**: 1030-1038.
- Kantak KM** (2003). Vaccines against drugs of abuse: a viable treatment option? *Drugs* **63**: 341-352.
- Kaplan PS, Hearst E** (1982). Bridging temporal gaps between CS and US in autoshaping: insertion of other stimuli before, during, and after CS. *Journal of Experimental Psychology: Animal Behavior Processes* **8**: 187-203.
- Kawagoe R, Takikawa Y, Hikosaka O** (2004). Reward-predicting activity of dopamine and caudate neurons--a possible mechanism of motivational control of saccadic eye movement. *Journal of Neurophysiology* **91**: 1013-1024.
- Keeler TE, Hu TW, Barnett PG, Manning WG** (1993). Taxation, regulation, and addiction: a demand function for cigarettes based on time-series evidence. *J Health Econ* **12**: 1-18.
- Keh DI** (1996). Drug money in a changing world: economic reform and criminal finance. United Nations Office on Drugs and Crime.
- Kelley AE** (1999). Neural integrative activities of nucleus accumbens subregions in relation to learning and motivation. *Psychobiology* **27**: 198-213.
- Kelley AE** (2004). Ventral striatal control of appetitive motivation: role in ingestive behavior and reward-related learning. *Neuroscience and Biobehavioral Reviews* **27**: 765-776.
- Kelley AE, Bakshi VP, Haber SN, Steininger TL, Will MJ, Zhang M** (2002). Opioid modulation of taste hedonics within the ventral striatum. *Physiology and Behavior* **76**: 365-377.
- Kelley AE, Berridge KC** (2002). The neuroscience of natural rewards: relevance to addictive drugs. *Journal of Neuroscience* **22**: 3306-3311.
- Kelley AE, Schochet T, Landry CF** (2004). Risk taking and novelty seeking in adolescence: introduction to part I. *Annals of the New York Academy of Sciences* **1021**: 27-32.
- Kelley AE, Smith-Roe SL, Holahan MR** (1997). Response-reinforcement learning is dependent on N-methyl-D-aspartate receptor activation in the nucleus accumbens core. *Proceedings of the National Academy of Sciences of the United States of America* **94**: 12174-12179.
- Kelley AE, Swanson CJ** (1997). Feeding induced by blockade of AMPA and kainate receptors within the ventral striatum: a microinfusion mapping study. *Behavioural Brain Research* **89**: 107-113.
- Kelley AE, Will MJ, Steininger TL, Zhang M, Haber SN** (2003). Restricted daily consumption of a highly palatable food (chocolate Ensure(R)) alters striatal enkephalin gene expression. *European Journal of Neuroscience* **18**: 2592-2598.

- Kemp JM, Powell TPS** (1971). The connections of the striatum and globus pallidus: synthesis and speculation. *Philosophical Transactions of the Royal Society of London, Series B - Biological Sciences* **262**: 441-457.
- Kempermann G, Kronenberg G** (2003). Depressed new neurons--adult hippocampal neurogenesis and a cellular plasticity hypothesis of major depression. *Biological Psychiatry* **54**: 499-503.
- Kenny PJ, Koob GF, Markou A** (2003). Conditioned facilitation of brain reward function after repeated cocaine administration. *Behavioral Neuroscience* **117**: 1103-1107.
- Keppel G** (1982). *Design and analysis: a researcher's handbook*. second edition. Englewood Cliffs: Prentice-Hall, London.
- Kesner RP, Williams JM** (1995). Memory for magnitude of reinforcement: dissociation between the amygdala and hippocampus. *Neurobiology of Learning and Memory* **64**: 237-244.
- Khantzian EJ** (1985). The self-medication hypothesis of addictive disorders: focus on heroin and cocaine dependence. *American Journal of Psychiatry* **142**: 1259-1264.
- Kheramin S, Body S, Herrera FM, Bradshaw CM, Szabadi E, Deakin JF, Anderson IM** (2005). The effect of orbital prefrontal cortex lesions on performance on a progressive ratio schedule: implications for models of inter-temporal choice. *Behavioural Brain Research* **156**: 145-152.
- Kheramin S, Body S, Ho M, Velazquez-Martinez DN, Bradshaw CM, Szabadi E, Deakin JF, Anderson IM** (2003). Role of the orbital prefrontal cortex in choice between delayed and uncertain reinforcers: a quantitative analysis. *Behavioural Processes* **64**: 239-250.
- Kheramin S, Body S, Ho MY, Velazquez-Martinez DN, Bradshaw CM, Szabadi E, Deakin JF, Anderson IM** (2004). Effects of orbital prefrontal cortex dopamine depletion on inter-temporal choice: a quantitative analysis. *Psychopharmacology* **175**: 206-214.
- Kheramin S, Body S, Mobini S, Ho MY, Velazquez-Martinez DN, Bradshaw CM, Szabadi E, Deakin JF, Anderson IM** (2002). Effects of quinolinic acid-induced lesions of the orbital prefrontal cortex on inter-temporal choice: a quantitative analysis. *Psychopharmacology* **165**: 9-17.
- Kieres AK, Hausknecht KA, Farrar AM, Acheson A, de Wit H, Richards JB** (2004). Effects of morphine and naltrexone on impulsive decision making in rats. *Psychopharmacology* **173**: 167-174.
- Killcross AS, Coutureau E** (2003). Coordination of actions and habits in the medial prefrontal cortex of rats. *Cerebral Cortex* **13**: 400-408.
- Killeen PR** (1972). The matching law. *Journal of the Experimental Analysis of Behavior* **17**: 489-495.
- Killeen PR, Fetterman JG** (1988). A behavioral theory of timing. *Psychological Review* **95**: 274-295.
- Kilts CD, Schweitzer JB, Quinn CK, Gross RE, Faber TL, Muhammad F, Ely TD, Hoffman JM, Drexler KP** (2001). Neural activity related to drug craving in cocaine addiction. *Archives of General Psychiatry* **58**: 334-341.
- Kim JJ, Baxter MG** (2001). Multiple brain-memory systems: the whole does not equal the sum of its parts. *Trends in Neurosciences* **24**: 324-330.
- Kim JJ, Fanselow MS** (1992). Modality-specific retrograde amnesia of fear. *Science* **256**: 675-677.
- Kim JJ, Rison RA, Fanselow MS** (1993). Effects of amygdala, hippocampus, and periaqueductal gray lesions on short- and long-term contextual fear. *Behavioral Neuroscience* **107**: 1093-1098.
- Kirby KN, Marakovc NN** (1996). Delay-discounting probabilistic rewards: Rates decrease as amounts increase. *Psychonomic Bulletin & Review*.
- Kirby KN, Petry NM** (2004). Heroin and cocaine abusers have higher discount rates for delayed rewards than alcoholics or non-drug-using controls. *Addiction* **99**: 461-471.
- Kirby KN, Petry NM, Bickel WK** (1999). Heroin addicts have higher discount rates for delayed rewards than non-drug-using controls. *Journal of Experimental Psychology: General* **128**: 78-87.
- Knackstedt LA, Samimi MM, Ettenberg A** (2002). Evidence for opponent-process actions of intravenous cocaine and cocaethylene. *Pharmacology, Biochemistry and Behavior* **72**: 931-936.
- Knutson B, Adams CM, Fong GW, Hommer D** (2001). Anticipation of increasing monetary reward selectively recruits nucleus accumbens. *Journal of Neuroscience* **21**: RC159.
- Knutson B, Taylor J, Kaufman M, Peterson R, Glover G** (2005). Distributed neural representation of expected value. *Journal of Neuroscience* **25**: 4806-4812.
- Koob GF** (1992). Dopamine, addiction and reward. *Seminars in the Neurosciences* **4**: 139-148.
- Koob GF, Ahmed SH, Boutrel B, Chen SA, Kenny PJ, Markou A, O'Dell LE, Parsons LH, Sanna PP** (2004). Neurobiological mechanisms in the transition from drug use to drug dependence. *Neuroscience and Biobehavioral Reviews* **27**: 739-749.
- Koob GF, Bloom FE** (1988). Cellular and molecular mechanisms of drug dependence. *Science* **242**: 715-723.
- Koob GF, Caine SB, Parsons L, Markou A, Weiss F** (1997). Opponent process model and psychostimulant addiction. *Pharmacology Biochemistry and Behavior* **57**: 513-521.

- Koob GF, Rocio M, Carrera A, Gold LH, Heyser CJ, Maldonado-Irizarry C, Markou A, Parsons LH, Roberts AJ, Schulteis G, Stinus L, Walker JR, Weissenborn R, Weiss F** (1998a). Substance dependence as a compulsive behavior. *Journal of Psychopharmacology* **12**: 39-48.
- Koob GF, Sanna PP, Bloom FE** (1998b). Neuroscience of addiction. *Neuron* **21**: 467-476.
- Krasnegor NA** (1978). Behavioral tolerance: research and treatment implications: introduction. *NIDA Research Monograph*: 1-3.
- Kuhnen CM, Knutson B** (2005). The neural basis of financial risk taking. *Neuron* **47**: 763-770.
- Kuntsi J, Oosterlaan J, Stevenson J** (2001). Psychological mechanisms in hyperactivity: I. Response inhibition deficit, working memory impairment, delay aversion, or something else? *Journal of Child Psychology and Psychiatry and Allied Disciplines* **42**: 199-210.
- Lagorio CH, Madden GJ** (2005). Delay discounting of real and hypothetical rewards III: steady-state assessments, forced-choice trials, and all real rewards. *Behavioural Processes* **69**: 173-187.
- Lamb RJ, Preston KL, Schindler CW, Meisch RA, Davis F, Katz JL, Henningfield JE, Goldberg SR** (1991). The reinforcing and subjective effects of morphine in post-addicts: a dose-response study. *Journal of Pharmacology and Experimental Therapeutics* **259**: 1165-1173.
- Lane SD, Cherek DR, Pietras CJ, Tcheremissine OV** (2004). Alcohol effects on human risk taking. *Psychopharmacology* **172**: 68-77.
- Lattal KA** (1987). Considerations in the experimental analysis of reinforcement delay. In *Quantitative Analyses of Behavior: V. The Effect of Delay and of Intervening Events on Reinforcement Value* (Commons ML, Mazur JE, Nevin JA, Rachlin H, eds.), pp. 107-123. Lawrence Erlbaum, Hillsdale, New Jersey.
- Lattal KA, Gleeson S** (1990). Response acquisition with delayed reinforcement. *Journal of Experimental Psychology: Animal Behavior Processes* **16**: 27-39.
- LeDoux JE** (2000). The amygdala and emotion: a view through fear. In *The amygdala: a functional analysis*, Second edition (Aggleton JP, ed.), pp. 289-310. Oxford University Press, New York.
- Lee HJ, Groshek F, Petrovich GD, Cantalini JP, Gallagher M, Holland PC** (2005a). Role of amygdala-nigral circuitry in conditioning of a visual stimulus paired with food. *Journal of Neuroscience* **25**: 3881-3888.
- Lee HJ, Youn JM, O MJ, Gallagher M, Holland PC** (2005b). Role of amygdala-nigral connections in enhanced attention for conditioned stimulus processing. *Society for Neuroscience Abstracts* **35**: 411.15.
- Lee JL, Everitt BJ, Thomas KL** (2004). Independent cellular processes for hippocampal memory consolidation and reconsolidation. *Science* **304**: 839-843.
- Leland DS, Paulus MP** (2005). Increased risk-taking decision-making but not altered response to punishment in stimulant-using young adults. *Drug and Alcohol Dependence* **78**: 83-90.
- Leon MI, Gallistel CR** (1998). Self-stimulating rats combine subjective reward magnitude and subjective reward rate multiplicatively. *Journal of Experimental Psychology: Animal Behavior Processes* **24**: 265-277.
- Leshner AI** (1997). Addiction is a brain disease, and it matters. *Science* **278**: 45-47.
- Leslie FM, Loughlin SE, Wang R, Perez L, Lotfipour S, Belluzzi JD** (2004). Adolescent development of forebrain stimulant responsiveness: insights from animal studies. *Annals of the New York Academy of Sciences* **1021**: 148-159.
- Levene H** (1960). Robust tests for the equality of variance. In *Contributions to probability and statistics* (Oklin I, ed.). Stanford University Press, Palo Alto, California.
- Levita L, Dalley JW, Robbins TW** (2002). Disruption of Pavlovian contextual conditioning by excitotoxic lesions of the nucleus accumbens core. *Behavioral Neuroscience* **116**: 539-552.
- Lewis DA, Cruz D, Eggen S, Erickson S** (2004). Postnatal development of prefrontal inhibitory circuits and the pathophysiology of cognitive dysfunction in schizophrenia. *Annals of the New York Academy of Sciences* **1021**: 64-76.
- Liao RM, Chuang FJ** (2003). Differential effects of diazepam infused into the amygdala and hippocampus on negative contrast. *Pharmacology, Biochemistry and Behavior* **74**: 953-960.
- Lindgren JL, Gallagher M, Holland PC** (2003). Lesions of basolateral amygdala impair extinction of CS motivational value, but not of explicit conditioned responses, in Pavlovian appetitive second-order conditioning. *European Journal of Neuroscience* **17**: 160-166.
- Linnoila M, Virkkunen M, George T, Higley D** (1993). Impulse control disorders. *International Clinical Psychopharmacology* **8 (Supplement 1)**: 53-56.
- Linnoila M, Virkkunen M, Scheinin M, Nuutila A, Rimon R, Goodwin FK** (1983). Low cerebrospinal fluid 5-hydroxyindoleacetic acid concentration differentiates impulsive from nonimpulsive violent behavior. *Life Sciences* **33**: 2609-2614.
- Liu YP, Wilkinson LS, Robbins TW** (2004). Effects of acute and chronic buspirone on impulsive choice and efflux of 5-HT and dopamine in hippocampus, nucleus accumbens and prefrontal cortex. *Psychopharmacology* **173**: 175-185.

- Loewenstein G** (1996). Out of control: visceral influences on behavior. *Organizational Behavior and Human Decision Processes* **63**: 272-292.
- Loewenstein GF, O'Donoghue T** (2004). Animal Spirits: Affective and Deliberative Processes in Economic Behavior [<http://ssrn.com/abstract=539843>].
- Logue AW, Tobin H, Chelonis JJ, Wang RY, Geary N, Schachter S** (1992). Cocaine decreases self-control in rats: a preliminary report. *Psychopharmacology* **109**: 245-247.
- Lopes LL** (1994). Psychology and economics: perspectives on risk, cooperation, and the marketplace. *Annual Review of Psychology* **45**: 197-227.
- Lovibond PF** (1983). Facilitation of instrumental behavior by a Pavlovian appetitive conditioned stimulus. *Journal of Experimental Psychology: Animal Behavior Processes* **9**: 225-247.
- Luna B, Sweeney JA** (2004). The emergence of collaborative brain function: fMRI studies of the development of response inhibition. *Annals of the New York Academy of Sciences* **1021**: 296-309.
- Maas LC, Lukas SE, Kaufman MJ, Weiss RD, Daniels SL, Rogers VW, Kukes TJ, Renshaw PF** (1998). Functional magnetic resonance imaging of human brain activation during cue-induced cocaine craving. *American Journal of Psychiatry* **155**: 124-126.
- MacCoun R** (2003a). Comments on Chaloupka, Emery, and Liang. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 90-94. Elsevier, Oxford.
- MacCoun R** (2003b). Is the addiction concept useful for drug policy? In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 383-401, 407. Elsevier, Oxford.
- MacCrimmon KR** (1968). Descriptive and normative implications of the decision-theory postulates. In *Risk and Uncertainty* (Borch K, Mossin J, eds.), pp. 3-23. MacMillan, London.
- Mackintosh NJ** (1974). *The Psychology of Animal Learning*. Academic Press, London.
- Mackintosh NJ** (1983). *Conditioning and associative learning*. Oxford University Press, Oxford.
- MacLean PD** (1949). Psychosomatic disease and the "visceral brain": recent developments bearing on the Papez theory of emotion. *Psychosomatic Medicine* **11**: 338-353.
- MacLean PD** (1952). Some psychiatric implications of physiological studies on the frontotemporal portion of the limbic system (visceral brain). *Electroencephalography and Clinical Neurophysiology* **4**: 407-418.
- MacLean PD** (1993). Introduction: perspectives on cingulate cortex in the limbic system. In *Neurobiology of cingulate cortex and limbic thalamus: a comprehensive handbook* (Vogt BA, Gabriel M, eds.), pp. 1-15. Birkhauser, Boston, Massachusetts.
- Mactutus CF, Ferek JM, George CA, Riccio DC** (1982). Hypothermia-induced amnesia for newly acquired and old reactivated memories: commonalities and distinctions. *Physiological Psychology* **10**: 79-95.
- Madden GJ, Bickel WK** (1999). Abstinence and price effects on demand for cigarettes: a behavioral-economic analysis. *Addiction* **94**: 577-588.
- Madden GJ, Bickel WK, Jacobs EA** (1999). Discounting of delayed rewards in opioid-dependent outpatients: exponential or hyperbolic discounting functions? *Experimental and Clinical Psychopharmacology* **7**: 284-293.
- Madden GJ, Petry NM, Badger GJ, Bickel WK** (1997). Impulsive and self-control choices in opioid-dependent patients and non-drug-using control participants: drug and monetary rewards. *Experimental and Clinical Psychopharmacology* **5**: 256-262.
- Maguire EA, Burgess N, Donnett JG, Frackowiak RS, Frith CD, O'Keefe J** (1998). Knowing where and getting there: a human navigation network. *Science* **280**: 921-924.
- Maguire EA, Frackowiak RS, Frith CD** (1997). Recalling routes around London: activation of the right hippocampus in taxi drivers. *Journal of Neuroscience* **17**: 7103-7110.
- Maguire EA, Gadian DG, Johnsrude IS, Good CD, Ashburner J, Frackowiak RS, Frith CD** (2000). Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences of the United States of America* **97**: 4398-4403.
- Malberg JE, Duman RS** (2003). Cell proliferation in adult hippocampus is decreased by inescapable stress: reversal by fluoxetine treatment. *Neuropsychopharmacology* **28**: 1562-1571.
- Maldonado-Irizarry CS, Kelley AE** (1995). Excitotoxic lesions of the core and shell subregions of the nucleus accumbens differentially disrupt body-weight regulation and motor activity in the rat. *Brain Research Bulletin* **38**: 551-559.
- Manes F, Sahakian B, Clark L, Rogers R, Antoun N, Aitken M, Robbins T** (2002). Decision-making processes following damage to the prefrontal cortex. *Brain* **125**: 624-639.
- Mann JJ** (2003). Neurobiology of suicidal behaviour. *Nature Reviews Neuroscience* **4**: 819-828.
- Maren S** (1999). Neurotoxic or electrolytic lesions of the ventral subiculum produce deficits in the acquisition and expression of Pavlovian fear conditioning in rats. *Behavioral Neuroscience* **113**: 283-290.

- Maren S, Fanselow MS** (1997). Electrolytic lesions of the fimbria/fornix, dorsal hippocampus, or entorhinal cortex produce anterograde deficits in contextual fear conditioning in rats. *Neurobiology of Learning and Memory* **67**: 142-149.
- Markou A, Koob GF** (1991). Postcocaine anhedonia. An animal model of cocaine withdrawal. *Neuropsychopharmacology* **4**: 17-26.
- Markou A, Kosten TR, Koob GF** (1998). Neurobiological similarities in depression and drug dependence: a self-medication hypothesis. *Neuropsychopharmacology* **18**: 135-174.
- Marlin NA** (1980). Contextual associations in trace conditioning. *Animal Learning and Behavior* **9**: 519-523.
- Marlin NA, Miller RR** (1981). Associations to contextual stimuli as a determinant of long-term habituation. *Journal of Experimental Psychology: Animal Behavior Processes* **7**: 313-333.
- Marshall JF, Teitelbaum P** (1977). New considerations in the neuropsychology of motivated behaviors. In *Handbook of Psychopharmacology* (Iversen LL, Iversen SD, Snyder SH, eds.), Vol. 7, pp. 201-222. Plenum Press, New York.
- Martin JH** (1989). *Neuroanatomy: Text and Atlas*. Appleton & Lange, East Norwalk, CT.
- Martin PD, Ono T** (2000). Effects of reward anticipation, reward presentation, and spatial parameters on the firing of single neurons recorded in the subiculum and nucleus accumbens of freely moving rats. *Behavioural Brain Research* **116**: 23-38.
- Martin-Iverson MT, Wilkie D, Fibiger HC** (1987). Effects of haloperidol and d-amphetamine on perceived quantity of food and tones. *Psychopharmacology* **93**: 374-381.
- Matthews SC, Simmons AN, Lane SD, Paulus MP** (2004). Selective activation of the nucleus accumbens during risk-taking decision making. *Neuroreport* **15**: 2123-2127.
- Mauchly JW** (1940). Significance test for sphericity of a normal n -variate distribution. *Annals of Mathematical Statistics* **11**: 204-209.
- Maurice N, Deniau JM, Glowinski J, Thierry AM** (1998). Relationships between the prefrontal cortex and the basal ganglia in the rat: physiology of the corticosubthalamic circuits. *Journal of Neuroscience* **18**: 9539-9546.
- Maviel T, Durkin TP, Menzaghi F, Bontempi B** (2004). Sites of neocortical reorganization critical for remote spatial memory. *Science* **305**: 96-99.
- Mazur JE** (1987). An adjusting procedure for studying delayed reinforcement. In *Quantitative Analyses of Behavior: V. The Effect of Delay and of Intervening Events on Reinforcement Value* (Commons ML, Mazur JE, Nevin JA, Rachlin H, eds.), pp. 55-73. Lawrence Erlbaum, Hillsdale, New Jersey.
- Mazur JE** (1988). Choice between small certain and large uncertain reinforcers. *Animal Learning & Behavior* **16**: 199-205.
- Mazur JE** (1989). Theories of probabilistic reinforcement. *Journal of the Experimental Analysis of Behavior* **51**: 87-99.
- Mazur JE** (1995). Conditioned reinforcement and choice with delayed and uncertain primary reinforcers. *Journal of the Experimental Analysis of Behavior* **63**: 139-150.
- Mazur JE** (1997). Choice, delay, probability, and conditioned reinforcement. *Animal Learning & Behavior* **25**: 131-147.
- Mazur JE, Stellar JR, Waraczynski M** (1987). Self-control choice with electrical stimulation of the brain as a reinforcer. *Behavioural Processes* **15**: 143-153.
- McClelland JL, McNaughton BL, O'Reilly RC** (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. *Psychological Review* **102**: 419-457.
- McCloskey M, Cohen N**, Eds. (1989). *Catastrophic interference in connectionist networks: The sequential learning problem*. The Psychology of Learning and Motivation (Vol. 24). Edited by Bower GH. New York: Academic Press.
- McClure SM, Berns GS, Montague PR** (2003a). Temporal prediction errors in a passive learning task activate human striatum. *Neuron* **38**: 339-346.
- McClure SM, Daw ND, Montague PR** (2003b). A computational substrate for incentive salience. *Trends in Neuroscience* **26**: 423-428.
- McClure SM, Laibson DI, Loewenstein G, Cohen JD** (2004). Separate neural systems value immediate and delayed monetary rewards. *Science* **306**: 503-507.
- McCollister KE, French MT** (2003). The relative contribution of outcome domains in the total economic benefit of addiction interventions: a review of first findings. *Addiction* **98**: 1647-1659.
- McEchron MD, Bouwmeester H, Tseng W, Weiss C, Disterhoft JF** (1998). Hippocampectomy disrupts auditory trace fear conditioning and contextual fear conditioning in the rat. *Hippocampus* **8**: 638-646.
- McEchron MD, Disterhoft JF** (1999). Hippocampal encoding of non-spatial trace conditioning. *Hippocampus* **9**: 385-396.

- McNish KA, Gewirtz JC, Davis M** (1997). Evidence of contextual fear after lesions of the hippocampus: a disruption of freezing but not fear-potentiated startle. *Journal of Neuroscience* **17**: 9353-9360.
- Meck WH** (1988). Hippocampal function is required for feedback control of an internal clock's criterion. *Behavioral Neuroscience* **102**: 54-60.
- Meck WH, Church RM, Olton DS** (1984). Hippocampus, time, and memory. *Behavioral Neuroscience* **98**: 3-22.
- Mehlman PT, Higley JD, Faucher I, Lilly AA, Taub DM, Vickers J, Suomi SJ, Linoila M** (1994). Low CSF 5-HIAA concentrations and severe aggression and impaired impulse control in nonhuman primates. *American Journal of Psychiatry* **151**: 1485-1491.
- Mérö L** (1998). *Moral Calculations: Game Theory, Logic, and Human Frailty*. Springer-Verlag, New York.
- Miles FJ, Everitt BJ, Dickinson A** (2003). Oral cocaine seeking by rats: Action or habit? *Behavioral Neuroscience* **117**: 927-938.
- Mill JS** (1863). *Utilitarianism* [http://www.gutenberg.org/etext/11224], London.
- Miller RR, Ott CA, Berk AM, Springer AD** (1974). Appetitive memory restoration after electro-convulsive shock in the rat. *Journal of Comparative and Physiological Psychology* **87**: 717-723.
- Miller RR, Springer AD** (1972). Induced recovery of memory in rats following electroconvulsive shock. *Physiology and Behavior* **8**: 645-651.
- Millin PM, Moody EW, Riccio DC** (2001). Interpretations of retrograde amnesia: old problems redux. *Nature Reviews Neuroscience* **2**: 68-70.
- Mingote S, Weber SM, Ishiwari K, Correa M, Salamone JD** (2005). Ratio and time requirements on operant schedules: effort-related effects of nucleus accumbens dopamine depletions. *European Journal of Neuroscience* **21**: 1749-1757.
- Minsky ML** (1961). Steps towards artificial intelligence. *Proceedings of the Institute of Radio Engineers* **9**: 8-30.
- Miron JA** (2003). The effect of drug prohibition on drug prices: evidence from the markets for cocaine and heroin. *The Review of Economics and Statistics* **85**: 522-530.
- Miron JA, Zwiebel J** (1995). The economic case against drug prohibition. *Journal of Economic Perspectives* **9**: 175-192.
- Misanin JR, Miller RR, Lewis DJ** (1968). Retrograde amnesia produced by electroconvulsive shock after reactivation of a consolidated memory trace. *Science* **160**: 554-555.
- Mischel W** (1966). Theory and research on the antecedents of self-imposed delay of reward. In *Progress in experimental personality research* (Maher BA, ed.), Vol. 3, pp. 85-132. Academic Press, New York.
- Mishkin M, Malamut B, Bachevalier J** (1984). Memories and habits: two neural systems. In *Neurobiology of Learning and Memory* (Lynch G, McGaugh JL, Weinberger NM, eds.), pp. 65-77. Guildford Press, New York.
- Mitchell SH** (1999). Measures of impulsivity in cigarette smokers and non-smokers. *Psychopharmacology* **146**: 455-464.
- Mitchell SH** (2003). Discounting the value of commodities according to different types of cost. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 339-357. Elsevier, Oxford.
- Mitchell SH** (2004a). Effects of short-term nicotine deprivation on decision-making: delay, uncertainty and effort discounting. *Nicotine & Tobacco Research* **6**: 819-828.
- Mitchell SH** (2004b). Measuring impulsivity and modeling its association with cigarette smoking. *Behavioral and Cognitive Neuroscience Reviews* **3**: 261-275.
- Mitchell SH, Laurent CL, de Wit H** (1996). Interaction of expectancy and the pharmacological effects of d-amphetamine: subjective effects and self-administration. *Psychopharmacology* **125**: 371-378.
- Miyazaki K, Mogi E, Araki N, Matsumoto G** (1998). Reward-quality dependent anticipation in rat nucleus accumbens. *Neuroreport* **9**: 3943-3948.
- Mobini S, Body S, Ho MY, Bradshaw CM, Szabadi E, Deakin JF, Anderson IM** (2002). Effects of lesions of the orbitofrontal cortex on sensitivity to delayed and probabilistic reinforcement. *Psychopharmacology* **160**: 290-298.
- Mobini S, Chiang TJ, Al-Ruwaitea AS, Ho MY, Bradshaw CM, Szabadi E** (2000a). Effect of central 5-hydroxytryptamine depletion on inter-temporal choice: a quantitative analysis. *Psychopharmacology* **149**: 313-318.
- Mobini S, Chiang TJ, Ho MY, Bradshaw CM, Szabadi E** (2000b). Effects of central 5-hydroxytryptamine depletion on sensitivity to delayed and probabilistic reinforcement. *Psychopharmacology* **152**: 390-397.
- Mogenson GJ, Jones DL, Yim CY** (1980). From motivation to action: functional interface between the limbic system and the motor system. *Progress in Neurobiology* **14**: 69-97.
- Morgan MA, LeDoux JE** (1995). Differential contribution of dorsal and ventral medial prefrontal cortex to the acquisition and extinction of conditioned fear in rats. *Behavioral Neuroscience* **109**: 681-688.
- Morgan MA, LeDoux JE** (1999). Contribution of ventrolateral prefrontal cortex to the acquisition and extinction of conditioned fear in rats. *Neurobiology of Learning and Memory* **72**: 244-251.

- Morgan MA, Romanski LM, LeDoux JE** (1993). Extinction of emotional learning: contribution of medial prefrontal cortex. *Neuroscience Letters* **163**: 109-113.
- Morris RG** (2001). Episodic-like memory in animals: psychological criteria, neural mechanisms and the value of episodic-like tasks to investigate animal models of neurodegenerative disease. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences* **356**: 1453-1465.
- Morris RG, Anderson E, Lynch GS, Baudry M** (1986). Selective impairment of learning and blockade of long-term potentiation by an N-methyl-D-aspartate receptor antagonist, AP5. *Nature* **319**: 774-776.
- Morris RG, Frey U** (1997). Hippocampal synaptic plasticity: role in spatial learning or the automatic recording of attended experience? *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences* **352**: 1489-1503.
- Morris RG, Garrud P, Rawlins JN, O'Keefe J** (1982). Place navigation impaired in rats with hippocampal lesions. *Nature* **297**: 681-683.
- Morris RGM** (1994). The neural basis of learning with particular reference to the role of synaptic plasticity. Where are we a century after Cajal's speculations? In *Animal Learning and Cognition* (Mackintosh NJ, ed.), pp. 135-183. Academic Press, San Diego.
- Moser MB, Moser EI, Forrest E, Andersen P, Morris RG** (1995). Spatial learning with a minislab in the dorsal hippocampus. *Proceedings of the National Academy of Sciences of the United States of America* **92**: 9697-9701.
- Mowrer OH** (1960). *Learning Theory and Behavior*. Wiley, New York.
- Muir JL, Everitt BJ, Robbins TW** (1996). The cerebral cortex of the rat and visual attentional function: dissociable effects of mediofrontal, cingulate, anterior dorsolateral, and parietal cortex lesions on a five-choice serial reaction time task. *Cerebral Cortex* **6**: 470-481.
- Mullainathan S** (2002). Behavioral economics. In *International Encyclopedia of the Social & Behavioral Sciences* (Baltes PB, Smelser NJ, eds.). Pergamon, Oxford.
- Murray EA, Bussey TJ** (2001). Consolidation and the medial temporal lobe revisited: methodological considerations. *Hippocampus* **11**: 1-7.
- Murray EA, Mishkin M** (1998). Object recognition and location memory in monkeys with excitotoxic lesions of the amygdala and hippocampus. *Journal of Neuroscience* **18**: 6568-6582.
- Myers KM, Davis M** (2002). Behavioral and neural analysis of extinction. *Neuron* **36**: 567-584.
- Myerson J, Green L** (1995). Discounting of delayed rewards: models of individual choice. *Journal of the Experimental Analysis of Behavior* **64**: 263-276.
- Myerson J, Green L, Hanson JS, Hold DD, Estle SJ** (2003). Discounting delayed and probabilistic rewards: Processes and traits. *Journal of Economic Psychology* **24**: 619-635.
- Nadel L, Bohbot V** (2001). Consolidation of memory. *Hippocampus* **11**: 56-60.
- Nadel L, Moscovitch M** (1997). Memory consolidation, retrograde amnesia and the hippocampal complex. *Current Opinion in Neurobiology* **7**: 217-227.
- Nader K** (2003). Memory traces unbound. *Trends in Neurosciences* **26**: 65-72.
- Nader K, Schafe GE, Le Doux JE** (2000). Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval. *Nature* **406**: 722-726.
- Nelson A, Killcross S** (2006). Amphetamine exposure enhances habit formation. *Journal of Neuroscience* **26**: 3805-3812.
- Newhouse PA, Potter A, Singh A** (2004). Effects of nicotinic stimulation on cognitive performance. *Current Opinion in Pharmacology* **4**: 36-46.
- NHSDA** (2001). Summary of Findings from the 2000 National Household Survey on Drug Abuse [DHHS Publication Number (SMA) 01-3549]. Substance Abuse and Mental Health Services Administration (Department of Health and Human Services, USA).
- Niv Y, Duff MO, Dayan P** (2005). Dopamine, uncertainty and TD learning. *Behavioral and Brain Functions* **1**: 6.
- O'Brien CP** (1997). A range of research-based pharmacotherapies for addiction. *Science* **278**: 66-70.
- O'Brien CP, Childress AR, Ehrman R, Robbins SJ** (1998). Conditioning factors in drug abuse: can they explain compulsion? *Journal of Psychopharmacology* **12**: 15-22.
- O'Brien CP, McLellan AT** (1996). Myths about the treatment of addiction. *Lancet* **347**: 237-240.
- O'Brien CP, O'Brien TJ, Mintz J, Brady JP** (1975). Conditioning of narcotic abstinence symptoms in human subjects. *Drug and Alcohol Dependence* **1**: 115-123.
- O'Brien CP, Testa T, O'Brien TJ, Brady JP, Wells B** (1977). Conditioned narcotic withdrawal in humans. *Science* **195**: 1000-1002.
- O'Brien CP, Testa T, O'Brien TJ, Greenstein R** (1976). Conditioning in human opiate addicts. *Pavlov J Biol Sci* **11**: 195-202.
- O'Carroll RE, Papps BP** (2003). Decision making in humans: the effect of manipulating the central noradrenergic system. *Journal of Neurology, Neurosurgery and Psychiatry* **74**: 376-378.

- Odling-Smee FJ** (1975). Background stimuli and the inter-stimulus interval during Pavlovian conditioning. *Quarterly Journal of Experimental Psychology* **27**: 387-392.
- O'Doherty J, Dayan P, Schultz J, Deichmann R, Friston K, Dolan RJ** (2004). Dissociable roles of ventral and dorsal striatum in instrumental conditioning. *Science* **304**: 452-454.
- O'Doherty JP** (2004). Reward representations and reward-related learning in the human brain: insights from neuroimaging. *Current Opinion in Neurobiology* **14**: 769-776.
- O'Donnell P, Grace AA** (1995). Synaptic interactions among excitatory afferents to nucleus accumbens neurons: hippocampal gating of prefrontal cortical input. *Journal of Neuroscience* **15**: 3622-3639.
- Ohmura Y, Takahashi T, Kitamura N** (2005). Discounting delayed and probabilistic monetary gains and losses by smokers of cigarettes. *Psychopharmacology* **182**: 508-515.
- O'Keefe J, Dostrovsky J** (1971). The hippocampus as a spatial map. Preliminary evidence from unit activity in the freely-moving rat. *Brain Research* **34**: 171-175.
- O'Keefe J, Nadel L** (1978). *The Hippocampus as a Cognitive Map*. Oxford, New York.
- Olausson P, Jentsch JD, Taylor JR** (2003). Repeated Nicotine Exposure Enhances Reward-Related Learning in the Rat. *Neuropharmacology* **28**: 1264-1271.
- Olds J, Milner P** (1954). Positive reinforcement produced by electrical stimulation of septal area and other regions of rat brain. *Journal of Comparative and Physiological Psychology* **47**: 419-427.
- Olmstead MC, Lafond MV, Everitt BJ, Dickinson A** (2001). Cocaine seeking by rats is a goal-directed action. *Behavioral Neuroscience* **115**: 394-402.
- Olton DS, Meck WH, Church RM** (1987). Separation of hippocampal and amygdaloid involvement in temporal memory dysfunctions. *Brain Research* **404**: 180-188.
- Ortner CN, MacDonald TK, Olmstead MC** (2003). Alcohol intoxication reduces impulsivity in the delay-discounting paradigm. *Alcohol and Alcoholism* **38**: 151-156.
- Ostaszewski P, Green L, Myerson J** (1998). Effects of inflation on the subjective value of delayed and probabilistic rewards. *Psychonomic Bulletin & Review* **5**: 324-333.
- Ostaszewski P, Karzel K** (2002). Discounting of delayed and probabilistic losses of different amounts. *European Psychologist* **7**: 295-301.
- OUP** (1997). *New Shorter Oxford English Dictionary*. Oxford University Press, Oxford, UK.
- Packard MG, McGaugh JL** (1996). Inactivation of hippocampus or caudate nucleus with lidocaine differentially affects expression of place and response learning. *Neurobiology of Learning and Memory* **65**: 65-72.
- Padoa-Schioppa C, Assad JA** (2006). Neurons in the orbitofrontal cortex encode economic value. *Nature* **441**: 223-226.
- Paine TA, Dringenberg HC, Olmstead MC** (2003). Effects of chronic cocaine on impulsivity: relation to cortical serotonin mechanisms. *Behavioural Brain Research* **147**: 135-147.
- Papa M, Sagvolden T, Sergeant JA, Sadile AG** (1996). Reduced CaMKII-positive neurones in the accumbens shell of an animal model of attention-deficit hyperactivity disorder. *Neuroreport* **7**: 3017-3020.
- Papa M, Sellitti S, Sadile AG** (2000). Remodeling of neural networks in the anterior forebrain of an animal model of hyperactivity and attention deficits as monitored by molecular imaging probes. *Neuroscience and Biobehavioral Reviews* **24**: 149-156.
- Papa M, Sergeant JA, Sadile AG** (1998). Reduced transduction mechanisms in the anterior accumbal interface of an animal model of attention-deficit hyperactivity disorder. *Behavioural Brain Research* **94**: 187-195.
- Papez JW** (1937). A proposed mechanism of emotion. *Archives of Neurology and Psychiatry* **38**: 725-743.
- Parkinson JA** (1998). Limbic corticostriatal circuitry underlying Pavlovian associative learning. Unpublished PhD thesis, University of Cambridge.
- Parkinson JA, Cardinal RN, Everitt BJ** (2000a). Limbic cortical-ventral striatal systems underlying appetitive conditioning. *Progress in Brain Research* **126**: 263-285.
- Parkinson JA, Dalley JW, Cardinal RN, Bamford A, Fehnert B, Lachenal G, Rudarakanchana N, Halkerston KM, Robbins TW, Everitt BJ** (2002). Nucleus accumbens dopamine depletion impairs both acquisition and performance of appetitive Pavlovian approach behaviour: implications for mesoaccumbens dopamine function. *Behavioural Brain Research* **137**: 149-163.
- Parkinson JA, Olmstead MC, Burns LH, Robbins TW, Everitt BJ** (1999a). Dissociation in effects of lesions of the nucleus accumbens core and shell on appetitive Pavlovian approach behavior and the potentiation of conditioned reinforcement and locomotor activity by d-amphetamine. *Journal of Neuroscience* **19**: 2401-2411.
- Parkinson JA, Robbins TW, Everitt BJ** (1999b). Selective excitotoxic lesions of the nucleus accumbens core and shell differentially affect aversive Pavlovian conditioning to discrete and contextual cues. *Psychobiology* **27**: 256-266.
- Parkinson JA, Robbins TW, Everitt BJ** (2000b). Dissociable roles of the central and basolateral amygdala in appetitive emotional learning. *European Journal of Neuroscience* **12**: 405-413.

- Parkinson JA, Willoughby PJ, Robbins TW, Everitt BJ** (2000c). Disconnection of the anterior cingulate cortex and nucleus accumbens core impairs Pavlovian approach behavior: Further evidence for limbic cortical-ventral striatopallidal systems. *Behavioral Neuroscience* **114**: 42-63.
- Parrott S, Godfrey C, Raw M, West R, McNeill A** (1998). Guidance for commissioners on the cost effectiveness of smoking cessation interventions. Health Educational Authority. *Thorax* **53 Suppl 5 Pt 2**: S1-38.
- Paulus MP, Rogalsky C, Simmons A, Feinstein JS, Stein MB** (2003). Increased activation in the right insula during risk-taking decision making is related to harm avoidance and neuroticism. *Neuroimage* **19**: 1439-1448.
- Paus T** (2001). Primate anterior cingulate cortex: where motor control, drive and cognition interface. *Nature Reviews Neuroscience* **2**: 417-424.
- Pavlov IP** (1927). *Conditioned Reflexes*. Oxford University Press, Oxford.
- Paxinos G, Watson C** (1997). *The Rat Brain in Stereotaxic Coordinates*. Compact Third (CD-Rom) edition. Academic Press.
- Paxinos G, Watson C** (1998). *The Rat Brain in Stereotaxic Coordinates*. Fourth edition. Academic Press, London.
- Pearce JM, Roberts AD, Good M** (1998). Hippocampal lesions disrupt navigation based on cognitive maps but not heading vectors. *Nature* **396**: 75-77.
- Pecina S, Berridge KC, Parker LA** (1997). Pimozide does not shift palatability: Separation of anhedonia from sensorimotor suppression by taste reactivity. *Pharmacology Biochemistry and Behavior* **58**: 801-811.
- Pecina S, Cagniard B, Berridge KC, Aldridge JW, Zhuang X** (2003). Hyperdopaminergic mutant mice have higher "wanting" but not "liking" for sweet rewards. *Journal of Neuroscience* **23**: 9395-9402.
- Pecina S, Schuklin J, Berridge KC** (2006). Nucleus accumbens corticotropin-releasing factor increases cue-triggered motivation for sucrose reward: paradoxical positive incentive effects in stress? *BMC Biol* **4**: 8.
- Pennartz CM, Groenewegen HJ, Lopes da Silva FH** (1994). The nucleus accumbens as a complex of functionally distinct neuronal ensembles: an integration of behavioural, electrophysiological and anatomical data. *Progress in Neurobiology* **42**: 719-761.
- Perin CT** (1943). A quantitative investigation of the delay-of-reinforcement gradient. *Journal of Experimental Psychology* **32**: 37-51.
- Petry NM** (2001). Delay discounting of money and alcohol in actively using alcoholics, currently abstinent alcoholics, and controls. *Psychopharmacology* **154**: 243-250.
- Petry NM, Bickel WK, Arnett M** (1998). Shortened time horizons and insensitivity to future consequences in heroin addicts. *Addiction* **93**: 729-738.
- Pettit HO, Ettenberg A, Bloom FE, Koob GF** (1984). Destruction of dopamine in the nucleus accumbens selectively attenuates cocaine but not heroin self-administration in rats. *Psychopharmacology* **84**: 167-173.
- Pettit HO, Justice JB, Jr.** (1989). Dopamine in the nucleus accumbens during cocaine self-administration as studied by in vivo microdialysis. *Pharmacology, Biochemistry and Behavior* **34**: 899-904.
- Pettit HO, Pan HT, Parsons LH, Justice JB, Jr.** (1990). Extracellular concentrations of cocaine and dopamine are enhanced during chronic cocaine administration. *Journal of Neurochemistry* **55**: 798-804.
- Phillips AG, Ahn S, Howland JG** (2003). Amygdalar control of the mesocorticolimbic dopamine system: parallel pathways to motivated behavior. *Neuroscience and Biobehavioral Reviews* **27**: 543-554.
- Phillips GD, Robbins TW, Everitt BJ** (1994). Bilateral intra-accumbens self-administration of d-amphetamine: antagonism with intra-accumbens SCH-23390 and sulpiride. *Psychopharmacology* **114**: 477-485.
- Phillips RG, LeDoux JE** (1992). Differential contribution of amygdala and hippocampus to cued and contextual fear conditioning. *Behavioral Neuroscience* **106**: 274-285.
- Phillips RG, LeDoux JE** (1994). Lesions of the dorsal hippocampal formation interfere with background but not foreground contextual fear conditioning. *Learning & Memory* **1**: 34-44.
- Phillips RG, LeDoux JE** (1995). Lesions of the fornix but not the entorhinal or perirhinal cortex interfere with contextual fear conditioning. *Journal of Neuroscience* **15**: 5308-5315.
- Philpot RM, McQuown S, Kirstein CL** (2001). Stereotaxic localization of the developing nucleus accumbens septi. *Brain Research. Developmental Brain Research* **130**: 149-153.
- Pickens CL, Saddoris MP, Setlow B, Gallagher M, Holland PC, Schoenbaum G** (2003). Different roles for orbitofrontal cortex and basolateral amygdala in a reinforcer devaluation task. *Journal of Neuroscience* **23**: 11078-11084.
- Pilla M, Perachon S, Sautel F, Garrido F, Mann A, Wermuth CG, Schwartz JC, Everitt BJ, Sokoloff P** (1999). Selective inhibition of cocaine-seeking behaviour by a partial dopamine D3 receptor agonist. *Nature* **400**: 371-375.
- Pitkänen A** (2000). Connectivity of the rat amygdaloid complex. In *The amygdala: a functional analysis*, Second edition (Aggleton JP, ed.), pp. 31-115. Oxford University Press, New York.
- Plutchik R, Van Praag H** (1989). The measurement of suicidality, aggressivity and impulsivity. *Progress in Neuro-Psychopharmacology and Biological Psychiatry* **13 Suppl**: S23-34.

- Port R, Curtis K, Inoue C, Briggs J, Seybold K** (1993). Hippocampal damage does not impair instrumental appetitive conditioning with delayed reinforcement. *Brain Research Bulletin* **30**: 41-44.
- Port RL, Romano AG, Steinmetz JE, Mikhail AA, Patterson MM** (1986). Retention and acquisition of classical trace conditioned responses by rabbits with hippocampal lesions. *Behavioral Neuroscience* **100**: 745-752.
- Post RM, Weiss SR** (1988). Psychomotor stimulant vs. local anesthetic effects of cocaine: role of behavioral sensitization and kindling. *NIDA Research Monograph* **88**: 217-238.
- Pothuizen HH, Jongen-Relo AL, Feldon J, Yee BK** (2005). Double dissociation of the effects of selective nucleus accumbens core and shell lesions on impulsive-choice behaviour and salience learning in rats. *European Journal of Neuroscience* **22**: 2605-2616.
- Pothuizen HH, Jongen-Relo AL, Feldon J, Yee BK** (2006). Latent inhibition of conditioned taste aversion is not disrupted, but can be enhanced, by selective nucleus accumbens shell lesions in rats. *Neuroscience* **137**: 1119-1130.
- Poulos CX, Le AD, Parker JL** (1995). Impulsivity predicts individual susceptibility to high levels of alcohol self-administration. *Behavioural Pharmacology* **6**: 810-814.
- Poulos CX, Parker JL, Le AD** (1996). Dexfenfluramine and 8-OH-DPAT modulate impulsivity in a delay-of-reward paradigm: implications for a correspondence with alcohol consumption. *Behavioural Pharmacology* **7**: 395-399.
- Pu L, Bao GB, Xu NJ, Ma L, Pei G** (2002). Hippocampal long-term potentiation is reduced by chronic opiate treatment and can be restored by re-exposure to opiates. *Journal of Neuroscience* **22**: 1914-1921.
- Quirk GJ, Likhtik E, Pelletier JG, Pare D** (2003). Stimulation of medial prefrontal cortex decreases the responsiveness of central amygdala output neurons. *Journal of Neuroscience* **23**: 8800-8807.
- Rachlin H** (1971). On the tautology of the matching law. *Journal of the Experimental Analysis of Behavior* **15**: 249-251.
- Rachlin H** (1997). Four teleological theories of addiction. *Psychonomic Bulletin & Review* **4**: 462-473.
- Rachlin H** (2000a). The lonely addict. In *Reframing health behavior change with behavioral economics* (Bickel WK, Vuchinich RE, eds.), pp. 145-166. Lawrence Erlbaum Associates, Mahwah, NJ.
- Rachlin H** (2000b). *The science of self-control*. Harvard University Press, Cambridge, Massachusetts.
- Rachlin H** (2003). Economic concepts in the behavioral study of addiction. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 129-149. Elsevier, Oxford.
- Rachlin H, Brown J, Cross D** (2000). Discounting in judgments of delay and probability. *Journal of Behavioral Decision Making* **13**: 145-149.
- Rachlin H, Castrogiovanni A, Cross D** (1987). Probability and delay in commitment. *Journal of the Experimental Analysis of Behavior* **48**: 347-353.
- Rachlin H, Green L** (1972). Commitment, choice and self-control. *Journal of the Experimental Analysis of Behavior* **17**: 15-22.
- Rachlin H, Green L, Kagel J, Battalio R** (1976). Economic demand theory and psychological studies of choice. In *The Psychology of Learning and Motivation* (Bower G, ed.), pp. 129-154. Academic Press, New York.
- Rachlin H, Logue AW, Gibbon J, Frankel M** (1986). Cognition and behavior in studies of choice. *Psychological Review* **93**: 33-45.
- Rachlin H, Rainieri A, Cross D** (1991). Subjective probability and delay. *Journal of the Experimental Analysis of Behavior* **55**: 233-244.
- Rachlin H, Siegel E** (1994). Temporal patterning in probabilistic choice. *Organizational Behavior and Human Decision Processes* **59**: 161-176.
- Rahman S, Sahakian BJ, Cardinal RN, Rogers RD, Robbins TW** (2001). Decision making and neuropsychiatry. *Trends in Cognitive Sciences* **5**: 271-277.
- Rawlins JN, Feldon J, Butt S** (1985). The effects of delaying reward on choice preference in rats with hippocampal or selective septal lesions. *Behavioural Brain Research* **15**: 191-203.
- Rawlins JN, Winocur G, Gray JA** (1983). The hippocampus, collateral behavior, and timing. *Behavioral Neuroscience* **97**: 857-872.
- Reading PJ, Dunnett SB** (1991). The effects of excitotoxic lesions of the nucleus accumbens on a matching to position task. *Behavioural Brain Research* **46**: 17-29.
- Reading PJ, Dunnett SB** (1995). Embryonic striatal grafts reverse the disinhibitory effects of ibotenic acid lesions of the ventral striatum. *Experimental Brain Research* **105**: 76-86.
- Reilly S, Good M** (1989). Hippocampal lesions and associative learning in the pigeon. *Behavioral Neuroscience* **103**: 731-742.
- Rescorla RA** (1982). Effect of a stimulus intervening between CS and US in autoshaping. *Journal of Experimental Psychology: Animal Behavior Processes* **8**: 131-141.

- Rescorla RA** (1990a). Evidence for an association between the discriminative stimulus and the response-outcome association in instrumental learning. *Journal of Experimental Psychology: Animal Behavior Processes* **16**: 326-334.
- Rescorla RA** (1990b). The role of information about the response-outcome relation in instrumental discrimination learning. *Journal of Experimental Psychology: Animal Behavior Processes* **16**: 262-270.
- Revusky S, Garcia J** (1970). Learned associations over long delays. In *The Psychology of Learning and Motivation* (Bower GH, ed.), Vol. 4, pp. 1-84. Academic Press, New York.
- Reynolds B** (2006). The Experiential Discounting Task is sensitive to cigarette-smoking status and correlates with a measure of delay discounting. *Behavioural Pharmacology* **17**: 133-142.
- Reynolds B, Richards JB, Dassinger M, de Wit H** (2004a). Therapeutic doses of diazepam do not alter impulsive behavior in humans. *Pharmacology, Biochemistry and Behavior* **79**: 17-24.
- Reynolds B, Richards JB, de Wit H** (2006). Acute-alcohol effects on the Experiential Discounting Task (EDT) and a question-based measure of delay discounting. *Pharmacology, Biochemistry and Behavior*.
- Reynolds B, Richards JB, Horn K, Karraker K** (2004b). Delay discounting and probability discounting as related to cigarette smoking status in adults. *Behavioural Processes* **65**: 35-42.
- Reynolds JN, Hyland BI, Wickens JR** (2001). A cellular mechanism of reward-related learning. *Nature* **413**: 67-70.
- Reynolds JN, Wickens JR** (2002). Dopamine-dependent plasticity of corticostriatal synapses. *Neural Networks* **15**: 507-521.
- Richards JB, Chock MA, Carlson B, de Wit H, Seiden L** (1997a). Comparison of two models of impulsive behavior in rats: effects of amphetamine and haloperidol. *Society for Neuroscience Abstracts* **23**: 2406.
- Richards JB, Mitchell SH, de Wit H, Seiden LS** (1997b). Determination of discount functions in rats with an adjusting-amount procedure. *Journal of the Experimental Analysis of Behavior* **67**: 353-366.
- Richards JB, Sabol KE, de Wit H** (1999a). Effects of methamphetamine on the adjusting amount procedure, a model of impulsive behavior in rats. *Psychopharmacology* **146**: 432-439.
- Richards JB, Seiden LS** (1995). Serotonin depletion increases impulsive behavior in rats. *Society for Neuroscience Abstracts* **21**: 1693.
- Richards JB, Zhang L, Mitchell SH, de Wit H** (1999b). Delay or probability discounting in a model of impulsive behavior: effect of alcohol. *Journal of the Experimental Analysis of Behavior* **71**: 121-143.
- Richardson NR, Gratton A** (1998). Changes in medial prefrontal cortical dopamine levels associated with response-contingent food reward: an electrochemical study in rat. *Journal of Neuroscience* **18**: 9130-9138.
- Richmond J, Colombo M** (2002). Hippocampal lesions, contextual retrieval, and autosshaping in pigeons. *Brain Research* **928**: 60-68.
- Robbins TW** (1976). Relationship between reward-enhancing and stereotypical effects of psychomotor stimulant drugs. *Nature* **264**: 57-59.
- Robbins TW** (1978). The acquisition of responding with conditioned reinforcement: effects of pipradrol, methylphenidate, d-amphetamine, and nomifensine. *Psychopharmacology* **58**: 79-87.
- Robbins TW, Cardinal RN, DiCiano P, Halligan PW, Hellemans KGC, Lee JLC, Everitt BJ** (2005). Neuroscience of drugs and addiction [Foresight: Brain Science, Addiction and Drugs project; www.foresight.gov.uk]. UK Office of Science and Technology.
- Robbins TW, Everitt BJ** (1992). Functions of dopamine in the dorsal and ventral striatum. *Seminars in the Neurosciences* **4**: 119-127.
- Robbins TW, Everitt BJ** (1996). Neurobehavioural mechanisms of reward and motivation. *Current Opinion in Neurobiology* **6**: 228-236.
- Robbins TW, Everitt BJ** (1999). Drug addiction: bad habits add up [news]. *Nature* **398**: 567-570.
- Robbins TW, Watson BA, Gaskin M, Ennis C** (1983). Contrasting interactions of pipradrol, d-amphetamine, cocaine, cocaine analogues, apomorphine and other drugs with conditioned reinforcement. *Psychopharmacology* **80**: 113-119.
- Roberts S** (1981). Isolation of an internal clock. *Journal of Experimental Psychology: Animal Behavior Processes* **7**: 242-268.
- Robinson TE, Berridge KC** (1993). The neural basis of drug craving: an incentive-sensitization theory of addiction. *Brain Research Reviews* **18**: 247-291.
- Rogers RD, Everitt BJ, Baldacchino A, Blackshaw AJ, Swainson R, Wynne K, Baker NB, Hunter J, Carthy T, Booker E, London M, Deakin JF, Sahakian BJ, Robbins TW** (1999a). Dissociable deficits in the decision-making cognition of chronic amphetamine abusers, opiate abusers, patients with focal damage to prefrontal cortex, and tryptophan-depleted normal volunteers: evidence for monoaminergic mechanisms. *Neuropsychopharmacology* **20**: 322-339.
- Rogers RD, Lancaster M, Wakeley J, Bhagwagar Z** (2004a). Effects of beta-adrenoceptor blockade on components of human decision-making. *Psychopharmacology* **172**: 157-164.

- Rogers RD, Owen AM, Middleton HC, Williams EJ, Pickard JD, Sahakian BJ, Robbins TW** (1999b). Choosing between small, likely rewards and large, unlikely rewards activates inferior and orbital prefrontal cortex. *Journal of Neuroscience* **19**: 9029-9038.
- Rogers RD, Ramnani N, Mackay C, Wilson JL, Jezzard P, Carter CS, Smith SM** (2004b). Distinct portions of anterior cingulate cortex and medial prefrontal cortex are activated by reward processing in separable phases of decision-making cognition. *Biological Psychiatry* **55**: 594-602.
- Rogers RD, Tunbridge EM, Bhagwagar Z, Drevets WC, Sahakian BJ, Carter CS** (2003). Tryptophan depletion alters the decision-making of healthy volunteers through altered processing of reward cues. *Neuropsychopharmacology* **28**: 153-162.
- Rolls ET** (2000). Hippocampo-cortical and cortico-cortical backprojections. *Hippocampus* **10**: 380-388.
- Rosenbaum RS, Winocur G, Moscovitch M** (2001). New views on old memories: re-evaluating the role of the hippocampal complex. *Behavioural Brain Research* **127**: 183-197.
- Rosenkranz JA, Moore H, Grace AA** (2003). The prefrontal cortex regulates lateral amygdala neuronal plasticity and responses to previously conditioned stimuli. *Journal of Neuroscience* **23**: 11054-11064.
- Rosenzweig ES, Barnes CA, McNaughton BL** (2002). Making room for new memories. *Nature Neuroscience* **5**: 6-8.
- Rotter JB** (1954). *Social learning and clinical psychology*. Prentice-Hall, Englewood Cliffs, NJ.
- Roy A, DeJong J, Linnola M** (1989). Extraversion in pathological gamblers: correlates with indices of noradrenergic function. *Archives of General Psychiatry* **46**: 679-681.
- Rubia K, Overmeyer S, Taylor E, Brammer M, Williams SCR, Simmons A, Bullmore ET** (1999). Hypofrontality in attention deficit hyperactivity disorder during higher-order motor control: A study with functional MRI. *American Journal of Psychiatry* **156**: 891-896.
- Rubin RD** (1976). Clinical use of retrograde amnesia produced by electroconvulsive shock. A conditioning hypothesis. *Clin Psychiatr Assoc J* **21**: 87-90.
- Rubin RD, Fried R, Franks CM** (1969). New application of ECT. In *Advances in Behavior Therapy, 1968* (Rubin RD, Franks CM, eds.), pp. 37-44. Academic Press, New York.
- Rudy JW, Barrientos RM, O'Reilly RC** (2002). Hippocampal formation supports conditioning to memory of a context. *Behavioral Neuroscience* **116**: 530-538.
- Russell SJ, Norvig PN** (1995). *Artificial Intelligence: a modern approach*. Prentice-Hall, Upper Saddle River, New Jersey.
- Russell V, de Villiers A, Sagvolden T, Lamm M, Taljaard J** (1998). Differences between electrically-, ritalin- and D-amphetamine- stimulated release of [H-3]dopamine from brain slices suggest impaired vesicular storage of dopamine in an animal model of attention-deficit hyperactivity disorder. *Behavioural Brain Research* **94**: 163-171.
- Russell V, Devilliers A, Sagvolden T, Lamm M, Taljaard J** (1995). Altered dopaminergic function in the prefrontal cortex, nucleus accumbens and caudate-putamen of an animal model of attention-deficit hyperactivity disorder - the spontaneously hypertensive rat. *Brain Research* **676**: 343-351.
- Russell VA** (2000). The nucleus accumbens motor-limbic interface of the spontaneously hypertensive rat as studied in vitro by the superfusion slice technique. *Neuroscience and Biobehavioral Reviews* **24**: 133-136.
- Russell VA, Sagvolden T, Johansen EB** (2005). Animal models of attention-deficit hyperactivity disorder. *Behavioral and Brain Functions* **1**: 9.
- Sacchetti B, Lorenzini CA, Baldi E, Tassoni G, Bucherelli C** (1999). Auditory thalamus, dorsal hippocampus, basolateral amygdala, and perirhinal cortex role in the consolidation of conditioned freezing to context and to acoustic conditioned stimulus in the rat. *Journal of Neuroscience* **19**: 9570-9578.
- Sadile AG** (2000). Multiple evidence of a segmental defect in the anterior forebrain of an animal model of hyperactivity and attention deficit. *Neuroscience and Biobehavioral Reviews* **24**: 161-169.
- Saffer H, Chaloupka FJ** (1995). The demand for illicit drugs [Working Paper 5238]. National Bureau of Economic Research.
- Sagvolden T** (2000). Behavioral validation of the spontaneously hypertensive rat (SHR) as an animal model of attention-deficit/hyperactivity disorder (AD/HD). *Neuroscience and Biobehavioral Reviews* **24**: 31-39.
- Sagvolden T, Aase H, Zeiner P, Berger D** (1998). Altered reinforcement mechanisms in attention-deficit/hyperactivity disorder. *Behavioural Brain Research* **94**: 61-71.
- Sagvolden T, Metzger MA, Schiorbeck HK, Rugland AL, Spinnangr I, Sagvolden G** (1992). The spontaneously hypertensive rat (SHR) as an animal model of childhood hyperactivity (ADHD): changed reactivity to reinforcers and to psychomotor stimulants. *Behavioral and Neural Biology* **58**: 103-112.
- Sagvolden T, Pettersen MB, Larsen MC** (1993). Spontaneously hypertensive rats (SHR) as a putative animal model of childhood hyperkinesis: SHR behavior compared to four other rat strains. *Physiology and Behavior* **54**: 1047-1055.

- Sagvolden T, Sergeant JA** (1998). Attention deficit/hyperactivity disorder - from brain dysfunctions to behaviour. *Behavioural Brain Research* **94**: 1-10.
- Salamone JD** (1994). The involvement of nucleus accumbens dopamine in appetitive and aversive motivation. *Behavioural Brain Research* **61**: 117-133.
- Salamone JD, Correa M** (2002). Motivational views of reinforcement: implications for understanding the behavioral functions of nucleus accumbens dopamine. *Behavioural Brain Research* **137**: 3-25.
- Salamone JD, Correa M, Mingote SM, Weber SM** (2003). Nucleus accumbens dopamine and the regulation of effort in food-seeking behavior: implications for studies of natural motivation, psychiatry, and drug abuse. *Journal of Pharmacology and Experimental Therapeutics* **305**: 1-8.
- Salamone JD, Correa M, Mingote SM, Weber SM** (2005). Beyond the reward hypothesis: alternative functions of nucleus accumbens dopamine. *Current Opinion in Pharmacology* **5**: 34-41.
- Salamone JD, Cousins MS, Bucher S** (1994). Anhedonia or anergia? Effects of haloperidol and nucleus accumbens dopamine depletion on instrumental response selection in a T-maze cost/benefit procedure. *Behavioural Brain Research* **65**: 221-229.
- Salamone JD, Cousins MS, Snyder BJ** (1997). Behavioral functions of nucleus accumbens dopamine: empirical and conceptual problems with the anhedonia hypothesis. *Neuroscience and Biobehavioral Reviews* **21**: 341-359.
- Salamone JD, Wisniecki A, Carlson BB, Correa M** (2001). Nucleus accumbens dopamine depletions make animals highly sensitive to high fixed ratio requirements but do not impair primary food reinforcement. *Neuroscience* **105**: 863-870.
- Salinas JA, Introini-Collison IB, Dalmau C, McGaugh JL** (1997). Posttraining intraamygdala infusions of oxotremorine and propranolol modulate storage of memory for reductions in reward magnitude. *Neurobiology of Learning and Memory* **68**: 51-59.
- Salinas JA, McGaugh JL** (1996). The amygdala modulates memory for changes in reward magnitude: involvement of the amygdaloid GABAergic system. *Behavioural Brain Research* **80**: 87-98.
- Salinas JA, Packard MG, McGaugh JL** (1993). Amygdala modulates memory for changes in reward magnitude: reversible post-training inactivation with lidocaine attenuates the response to a reduction in reward. *Behavioural Brain Research* **59**: 153-159.
- Savage LM, Buzzetti RA, Ramirez DR** (2004). The effects of hippocampal lesions on learning, memory, and reward expectancies. *Neurobiology of Learning and Memory* **82**: 109-119.
- Sax KW, Strakowski SM** (2001). Behavioral sensitization in humans. *Journal of Addictive Diseases* **20**: 55-65.
- Schaler JA** (2000). *Addiction is a choice*. Open Court Publishing, Chicago, Illinois.
- Schmaltz LW, Isaacson RL** (1967). Effect of bilateral hippocampal destruction on the acquisition and extinction of an operant response. *Physiology and Behavior* **2**: 291-298.
- Schmitt WB, Arianpour R, Deacon RM, Seeburg PH, Sprengel R, Rawlins JN, Bannerman DM** (2004). The role of hippocampal glutamate receptor-A-dependent synaptic plasticity in conditional learning: the importance of spatiotemporal discontiguity. *Journal of Neuroscience* **24**: 7277-7282.
- Schneider F, Habel U, Wagner M, Franke P, Salloum JB, Shah NJ, Toni I, Sulzbach C, Honig K, Maier W, Gaebel W, Zilles K** (2001). Subcortical correlates of craving in recently abstinent alcoholic patients. *American Journal of Psychiatry* **158**: 1075-1083.
- Schneiderman N** (1966). Interstimulus interval function of the nictitating membrane response of the rabbit under delay versus trace conditioning. *Journal of Comparative and Physiological Psychology* **62**: 397-402.
- Schramm NL, Egli RE, Winder DG** (2002). LTP in the mouse nucleus accumbens is developmentally regulated. *Synapse* **45**: 213-219.
- Schultz W** (1998). Predictive reward signal of dopamine neurons. *Journal of Neurophysiology* **80**: 1-27.
- Schultz W** (2004). Neural coding of basic reward terms of animal learning theory, game theory, microeconomics and behavioural ecology. *Current Opinion in Neurobiology* **14**: 139-147.
- Schultz W** (2006). Behavioral theories and the neurophysiology of reward. *Annual Review of Psychology* **57**: 87-115.
- Schultz W, Apicella P, Romo R, Scarnati E** (1995). Context-dependent activity in primate striatum reflecting past and future behavioral events. In *Models of Information Processing in the Basal Ganglia* (Houk JC, Davis JL, Beiser DG, eds.), pp. 11-27. MIT Press, Cambridge, Massachusetts / London.
- Schultz W, Apicella P, Scarnati E, Ljungberg T** (1992). Neuronal activity in monkey ventral striatum related to the expectation of reward. *Journal of Neuroscience* **12**: 4595-4610.
- Schultz W, Dayan P, Montague PR** (1997). A neural substrate of prediction and reward. *Science* **275**: 1593-1599.
- Schultz W, Dickinson A** (2000). Neuronal coding of prediction errors. *Annual Review of Neuroscience* **23**: 473-500.
- Schultz W, Tremblay L, Hollerman JR** (1998). Reward prediction in primate basal ganglia and frontal cortex. *Neuropharmacology* **37**: 421-429.

- Schultz W, Tremblay L, Hollerman JR** (2000). Reward processing in primate orbitofrontal cortex and basal ganglia. *Cerebral Cortex* **10**: 272-284.
- Scoville WB, Milner B** (1957). Loss of recent memory after bilateral hippocampal lesions. *Journal of Neurology, Neurosurgery and Psychiatry* **20**: 11-21.
- Seeman P, Madras B** (2002). Methylphenidate elevates resting dopamine which lowers the impulse-triggered release of dopamine: a hypothesis. *Behavioural Brain Research* **130**: 79-83.
- Selden NR, Everitt BJ, Jarrard LE, Robbins TW** (1991). Complementary roles for the amygdala and hippocampus in aversive conditioning to explicit and contextual cues. *Neuroscience* **42**: 335-350.
- Sell LA, Morris JS, Bearn J, Frackowiak RS, Friston KJ, Dolan RJ** (2000). Neural responses associated with cue evoked emotional states and heroin in opiate addicts. *Drug and Alcohol Dependence* **60**: 207-216.
- Shahan TA, Lattal KA** (1998). On the functions of the changeover delay. *Journal of the Experimental Analysis of Behavior* **69**: 141-160.
- Shastri L, Ajjanagadde V** (1993). From simple associations to systematic reasoning: a connectionist representation of rules, variables and dynamic bindings using temporal synchrony. *Behavioral and Brain Sciences* **16**: 417-494.
- Shaw B** (2000). UK Drug Policy Report to the Cleveland Police Authority. Cleveland Police.
- Shizgal P** (1997). Neural basis of utility estimation. *Current Opinion in Neurobiology* **7**: 198-208.
- Shors TJ** (2004). Memory traces of trace memories: neurogenesis, synaptogenesis and awareness. *Trends in Neuroscience* **27**: 250-256.
- Shors TJ, Townsend DA, Zhao M, Kozorovitskiy Y, Gould E** (2002). Neurogenesis may relate to some but not all types of hippocampal-dependent learning. *Hippocampus* **12**: 578-584.
- Shull RL, Pliskoff SS** (1967). Changeover delay and concurrent schedules: some effects on relative performance measures. *Journal of the Experimental Analysis of Behavior* **10**: 517-527.
- Siegel S** (1975). Evidence from rats that morphine tolerance is a learned response. *Journal of Comparative and Physiological Psychology* **89**: 498-506.
- Siegel S** (1976). Morphine analgesic tolerance: its situation specificity supports a Pavlovian conditioning model. *Science* **193**: 323-325.
- Siegel S** (1988). Drug anticipation and the treatment of dependence. *NIDA Research Monograph* **84**: 1-24.
- Siegel S** (1999). Drug anticipation and drug addiction. The 1998 H. David Archibald Lecture. *Addiction* **94**: 1113-1124.
- Skinner BF** (1938). *The behavior of organisms: an experimental analysis*. Appleton, New York.
- Skinner BF** (1953). *Science and Human Behavior*. Macmillan, New York.
- Skog O-J** (2003). Addiction: definitions and mechanisms. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 157-175, 182. Elsevier, Oxford.
- Slovic P, Fischhoff B, Lichtenstein S** (1982). Facts versus fears: understanding perceived risk. In *Judgement Under Uncertainty: Heuristics and Biases* (Kahneman D, Slovic P, Tversky A, eds.), pp. 463-489. Cambridge University Press, New York.
- Slovic P, Lichtenstein S** (1983). Preference reversals: a broader perspective. *American Economic Review* **73**: 596-605.
- Smith DM, Mizumori SJ** (2006). Learning-related development of context-specific neuronal responses to places and events: the hippocampal role in context processing. *Journal of Neuroscience* **26**: 3154-3163.
- Smith Z** (1999). The revenue effect of changing alcohol duties. Institute for Fiscal Studies.
- Smith-Roe SL, Kelley AE** (2000). Coincident activation of NMDA and dopamine D1 receptors within the nucleus accumbens core is required for appetitive instrumental learning. *Journal of Neuroscience* **20**: 7737-7742.
- Sokoloff P, Giros B, Martres MP, Bouthenet ML, Schwartz JC** (1990). Molecular cloning and characterization of a novel dopamine receptor (D3) as a target for neuroleptics. *Nature* **347**: 146-151.
- Solanto MV** (1998). Neuropsychopharmacological mechanisms of stimulant drug action in attention-deficit hyperactivity disorder: a review and integration. *Behavioural Brain Research* **94**: 127-152.
- Solanto MV** (2002). Dopamine dysfunction in AD/HD: integrating clinical and basic neuroscience research. *Behavioural Brain Research* **130**: 65-71.
- Solomon PR, Vander Schaaf ER, Thompson RF, Weisz DJ** (1986). Hippocampus and trace conditioning of the rabbit's classically conditioned nictitating membrane response. *Behavioral Neuroscience* **100**: 729-744.
- Solomon RL** (1980a). The opponent-process theory of acquired motivation: the costs of pleasure and the benefits of pain. *American Psychologist* **35**: 691-712.
- Solomon RL** (1980b). Recent experiments testing an opponent-process theory of acquired motivation. *Acta Neurobiol Exp (Wars)* **40**: 271-289.
- Solomon RL, Corbit JD** (1973). An opponent-process theory of motivation. II. Cigarette addiction. *Journal of Abnormal Psychology* **81**: 158-171.

- Solomon RL, Corbit JD** (1974). An opponent-process theory of motivation. I. Temporal dynamics of affect. *Psychological Review* **81**: 119-145.
- Sonuga-Barke EJ** (2002). Psychological heterogeneity in AD/HD--a dual pathway model of behaviour and cognition. *Behavioural Brain Research* **130**: 29-36.
- Soubrié P** (1986). Reconciling the role of central serotonin neurons in human and animal behavior. *Behavioral and Brain Sciences* **9**: 319-335.
- Sougné J** (1998). Connectionism and the problem of multiple instantiation. *Trends in Cognitive Sciences* **2**: 183-189.
- Sozou PD** (1998). On hyperbolic discounting and uncertain hazard rates [DOI: 10.1098/rspb.1998.0534]. *Proceedings of the Royal Society of London. Series B: Biological Sciences* **265**: 2015-2020.
- Spence KW** (1956). *Behavior Theory and Conditioning*. Prentice-Hall, Englewood Cliffs, New Jersey.
- Springer AD, Miller RR** (1972). Retrieval failure induced by electroconvulsive shock: reversal with dissimilar training and recovery agents. *Science* **177**: 628-630.
- Squire LR** (1980). Specifying the defect in human amnesia: storage, retrieval and semantics. *Neuropsychologia* **18**: 369-372.
- Squire LR** (1986). Mechanisms of memory. *Science* **232**: 1612-1619.
- Squire LR** (1992). Memory and the hippocampus: a synthesis from findings with rats, monkeys, and humans. *Psychological Review* **99**: 195-231.
- Squire LR, Clark RE, Knowlton BJ** (2001). Retrograde amnesia. *Hippocampus* **11**: 50-55.
- Squire LR, Davis HP, Spanis CW** (1980). Neurobiology of amnesia. *Science* **209**: 836-837.
- Squire LR, Shimamura AP, Graf P** (1987). Strength and duration of priming effects in normal subjects and amnesic patients. *Neuropsychologia* **25**: 195-210.
- Squire LR, Slater PC, Chace PM** (1975). Retrograde amnesia: temporal gradient in very long term memory following electroconvulsive therapy. *Science* **187**: 77-79.
- Stevens KE, Shiotsu G, Stein L** (1991). Hippocampal mu-receptors mediate opioid reinforcement in the CA3 region. *Brain Research* **545**: 8-16.
- Stevenson MK** (1986). A discounting model for decisions with delayed positive and negative outcomes. *Journal of Experimental Psychology: General* **115**: 131-154.
- Stigler G, Becker GS** (1977). De gustibus non est disputandum. *American Economic Review* **67**: 76-90.
- Stockmeier CA** (2003). Involvement of serotonin in depression: evidence from postmortem and imaging studies of serotonin receptors and the serotonin transporter. *Journal of Psychiatric Research* **37**: 357-373.
- Stratford TR, Kelley AE** (1997). GABA in the nucleus accumbens shell participates in the central regulation of feeding behavior. *Journal of Neuroscience* **17**: 4434-4440.
- Streatfeild D** (2001). *Cocaine*. Virgin, London.
- Stricker EM, Zigmond MJ** (1976). Recovery of function after damage to central catecholamine-containing neurons: a neurochemical model for the lateral hypothalamic syndrome. In *Progress in Psychology and Physiological Psychology* (Sprague JM, Epstein AN, eds.), pp. 121-188. Academic Press, New York.
- Stroustrup B** (1986). *The C++ Programming Language*. Addison-Wesley, Reading, Massachusetts.
- Sullivan JM, Zhang JQ** (2005). MIVA 0.9 [<http://ccni.wpi.edu>]. Centre for Comparative Neuroimaging.
- Sutton RS** (1988). Learning to predict by the method of temporal differences. *Machine Learning* **3**: 9-44.
- Swanson CJ, Heath S, Stratford TR, Kelley AE** (1997). Differential behavioral responses to dopaminergic stimulation of nucleus accumbens subregions in the rat. *Pharmacology Biochemistry and Behavior* **58**: 933-945.
- Swanson J, Castellanos FX, Murias M, LaHoste G, Kennedy J** (1998). Cognitive neuroscience of attention deficit hyperactivity disorder and hyperkinetic disorder. *Current Opinion in Neurobiology* **8**: 263-271.
- Szerman N, Peris L, Mesias B, Colis P, Rosa J, Prieto A** (2005). Reboxetine for the treatment of patients with Cocaine Dependence Disorder. *Hum Psychopharmacol* **20**: 189-192.
- Takehara K, Kawahara S, Takatsuki K, Kirino Y** (2002). Time-limited role of the hippocampus in the memory for trace eyeblink conditioning in mice. *Brain Research* **951**: 183-190.
- Takikawa Y, Kawagoe R, Hikosaka O** (2002). Reward-dependent spatial selectivity of anticipatory activity in monkey caudate neurons. *Journal of Neurophysiology* **87**: 508-515.
- Taylor JR, Horger BA** (1999). Enhanced responding for conditioned reward produced by intra-accumbens amphetamine is potentiated after cocaine sensitization. *Psychopharmacology* **142**: 31-40.
- Taylor JR, Robbins TW** (1984). Enhanced behavioural control by conditioned reinforcers following microinjections of d-amphetamine into the nucleus accumbens. *Psychopharmacology* **84**: 405-412.
- Taylor JR, Robbins TW** (1986). 6-Hydroxydopamine lesions of the nucleus accumbens, but not of the caudate nucleus, attenuate enhanced responding with reward-related stimuli produced by intra-accumbens d-amphetamine. *Psychopharmacology* **90**: 390-397.

- Thiebot MH, Lebihan C, Soubrie P, Simon P** (1985). Benzodiazepines Reduce the Tolerance to Reward Delay in Rats. *Psychopharmacology* **86**: 147-152.
- Thompson AM, Swant J, Gosnell BA, Wagner JJ** (2004). Modulation of long-term potentiation in the rat hippocampus following cocaine self-administration. *Neuroscience* **127**: 177-185.
- Thorndike EL** (1905). *The Elements of Psychology*. Seiler, New York.
- Thorndike EL** (1911). *Animal intelligence: experimental studies*. Macmillan, New York.
- Tiffany ST, Carter BL** (1998). Is craving the source of compulsive drug use? *Journal of Psychopharmacology* **12**: 23-30.
- Tiffany ST, Drobis DJ** (1990). Imagery and smoking urges: the manipulation of affective content. *Addictive Behaviors* **15**: 531-539.
- Toates F** (1986). *Motivational systems*. Cambridge University Press, Cambridge.
- Tobler PN, Fiorillo CD, Schultz W** (2005). Adaptive coding of reward value by dopamine neurons. *Science* **307**: 1642-1645.
- Tolman EC** (1932). *Purposive Behavior in Animals and Men*. Century, New York.
- Tomie A, Aguado AS, Pohorecky LA, Benjamin D** (1998). Ethanol induces impulsive-like responding in a delay-of-reward operant choice procedure: impulsivity predicts autosizing. *Psychopharmacology* **139**: 376-382.
- Träskman-Bendz L, Åsberg M, Schalling D** (1986). Serotonergic function and suicidal behavior in personality disorders. *Annals of the New York Academy of Sciences* **487**: 168-174.
- Tzschentke TM** (2000). The medial prefrontal cortex as a part of the brain reward system. *Amino Acids* **19**: 211-219.
- Uchtenhagen A** (1997). Summary of the Synthesis Report. Institute for Social and Preventive Medicine at the University of Zurich.
- Uhlenhuth EH, Johanson CE, Kilgore K, Kobasa SC** (1981). Drug preference and mood in humans: preference for d-amphetamine and subject characteristics. *Psychopharmacology* **74**: 191-194.
- UK** (2000). *Spending Review 2000: New Public Spending Plans 2001-2004*. HM Treasury, London.
- UK** (2003). Alcohol misuse: how much does it cost? Cabinet Office Strategy Unit.
- Ungerstedt U** (1971). Stereotaxic mapping of the monoamine pathways in the rat brain. *Acta Physiologica Scandinavica* **82 (Suppl. 367)**: 1-48.
- Ursin R, Ursin H, Olds J** (1966). Self-stimulation of hippocampus in rats. *Journal of Comparative and Physiological Psychology* **61**: 353-359.
- USA** (2001). Leading Causes Charts [National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; www.cdc.gov/ncipc/osp/charts.htm].
- Uylings HB, Groenewegen HJ, Kolb B** (2003). Do rats have a prefrontal cortex? *Behavioural Brain Research* **146**: 3-17.
- Uz T, Ahmed R, Akhisaroglu M, Kurtuncu M, Imbesi M, Dirim Arslan A, Manev H** (2005). Effect of fluoxetine and cocaine on the expression of clock genes in the mouse hippocampus and striatum. *Neuroscience* **134**: 1309-1316.
- Vanderschuren LJ, Everitt BJ** (2004). Drug seeking becomes compulsive after prolonged cocaine self-administration. *Science* **305**: 1017-1019.
- Villarreal DM, Do V, Haddad E, Derrick BE** (2002). NMDA receptor antagonists sustain LTP and spatial memory: active processes mediate LTP decay. *Nature Neuroscience* **5**: 48-52.
- Vogt BA** (2005). Pain and emotion interactions in subregions of the cingulate gyrus. *Nature Reviews Neuroscience* **6**: 533-544.
- Volkow ND, Fowler JS, Wang GJ** (1999). Imaging studies on the role of dopamine in cocaine reinforcement and addiction in humans. *Journal of Psychopharmacology* **13**: 337-345.
- Volkow ND, Wang GJ, Fowler JS** (1997). Imaging studies of cocaine in the human brain and studies of the cocaine addict. *Annals of the New York Academy of Sciences* **820**: 41-54; discussion 54-45.
- von Neumann J, Morgenstern O** (1947). *Theory of games and economic behavior*. Princeton University Press, Princeton, New Jersey.
- Vorel SR, Ashby CR, Jr., Paul M, Liu X, Hayes R, Hagan JJ, Middlemiss DN, Stemp G, Gardner EL** (2002). Dopamine D3 receptor antagonism inhibits cocaine-seeking and cocaine-enhanced brain reward in rats. *Journal of Neuroscience* **22**: 9595-9603.
- Vorel SR, Liu X, Hayes RJ, Spector JA, Gardner EL** (2001). Relapse to cocaine-seeking after hippocampal theta burst stimulation. *Science* **292**: 1175-1178.
- Vuchinich RE, Calamas ML** (1997). Does the repeated gambles procedure measure impulsivity in social drinkers? *Experimental and Clinical Psychopharmacology* **5**: 157-162.
- Vuchinich RE, Heather N** (2003). Introduction: overview of behavioural economic perspectives on substance use and addiction. In *Choice, Behavioral Economics and Addiction* (Heather N, Vuchinich RE, eds.), pp. 1-31. Elsevier, Oxford.

- Wade TR, de Wit H, Richards JB** (2000). Effects of dopaminergic drugs on delayed reward as a measure of impulsive behavior in rats. *Psychopharmacology* **150**: 90-101.
- Wagner AR, Logan FA, Haberlandt K** (1968). Stimulus selection in animal discrimination learning. *J Exp Psychol* **76**: 177-186.
- Wakabayashi KT, Fields HL, Nicola SM** (2004). Dissociation of the role of nucleus accumbens dopamine in responding to reward-predictive cues and waiting for reward. *Behavioural Brain Research* **154**: 19-30.
- Walderhaug E, Lunde H, Nordvik JE, Landro NI, Refsum H, Magnusson A** (2002). Lowering of serotonin by rapid tryptophan depletion increases impulsiveness in normal individuals. *Psychopharmacology* **164**: 385-391.
- Wallensteiner GV, Eichenbaum H, Hasselmo ME** (1998). The hippocampus as an associator of discontiguous events. *Trends in Neurosciences* **21**: 317-323.
- Walton ME, Bannerman DM, Alterescu K, Rushworth MF** (2003). Functional specialization within medial frontal cortex of the anterior cingulate for evaluating effort-related decisions. *Journal of Neuroscience* **23**: 6475-6479.
- Walton ME, Bannerman DM, Rushworth MF** (2002). The role of rat medial frontal cortex in effort-based decision making. *Journal of Neuroscience* **22**: 10996-11003.
- Walton ME, Croxson PL, Rushworth MF, Bannerman DM** (2005). The mesocortical dopamine projection to anterior cingulate cortex plays no role in guiding effort-related decisions. *Behavioral Neuroscience* **119**: 323-328.
- Ward HG, Nicklous DM, Aloyo VJ, Simansky KJ** (2006). Mu-opioid receptor cellular function in the nucleus accumbens is essential for hedonically driven eating. *European Journal of Neuroscience* **23**: 1605-1613.
- Warner LA, Kessler RC, Hughes M, Anthony JC, Nelson CB** (1995). Prevalence and correlates of drug use and dependence in the United States. Results from the National Comorbidity Survey. *Archives of General Psychiatry* **52**: 219-229.
- Warrington EK, Weiskrantz L** (1970). Amnesic syndrome: consolidation or retrieval? *Nature* **228**: 628-630.
- Waterhouse JW** (1891). Ulysses and the Sirens.
- Watkins CJCH** (1989). Learning from delayed rewards. Unpublished PhD thesis, University of Cambridge.
- Weatherly JN, McSweeney FK, Swindell S** (2004). Within-session rates of responding when reinforcer magnitude is changed within the session. *Journal of General Psychology* **131**: 5-16.
- Weiss C, Bouwmeester H, Power JM, Disterhoft JF** (1999a). Hippocampal lesions prevent trace eyeblink conditioning in the freely moving rat. *Behavioural Brain Research* **99**: 123-132.
- Weiss C, Knuttilen MG, Power JM, Patel RI, O'Connor MS, Disterhoft JF** (1999b). Trace eyeblink conditioning in the freely moving rat: optimizing the conditioning parameters. *Behavioral Neuroscience* **113**: 1100-1105.
- Weiss RD, Mirin SM** (1986). Subtypes of cocaine abusers. *Psychiatric Clinics of North America* **9**: 491-501.
- White AM, Swartzwelder HS** (2004). Hippocampal function during adolescence: a unique target of ethanol effects. *Annals of the New York Academy of Sciences* **1021**: 206-220.
- White KG, Pipe ME** (1987). Sensitivity to reinforcer duration in a self-control procedure. *Journal of the Experimental Analysis of Behavior* **48**: 235-250.
- White NM** (1997). Mnemonic functions of the basal ganglia. *Current Opinion in Neurobiology* **7**: 164-169.
- Wickens J, Kötter R** (1995). Cellular models of reinforcement. In *Models of Information Processing in the Basal Ganglia* (Houk JC, Davis JL, Beiser DG, eds.), pp. 187-214. MIT Press, Cambridge, Massachusetts / London.
- Wikler A** (1965). Conditioning factors in opiate addiction and relapse. In *Narcotics* (Wilner DI, Kessenbaum GG, eds.), pp. 85-100. McGraw-Hill, New York.
- Wikler A** (1973). Dynamics of drug dependence: Implications of a conditioning theory for research and treatment. *Archives of General Psychiatry* **28**: 611-616.
- Will MJ, Franzblau EB, Kelley AE** (2003). Nucleus accumbens mu-opioids regulate intake of a high-fat diet via activation of a distributed brain network. *Journal of Neuroscience* **23**: 2882-2888.
- Williams BA** (1994). Reinforcement and choice. In *Animal Learning and Cognition* (Mackintosh NJ, ed.), pp. 81-108. Academic Press, San Diego.
- Williams BA, Dunn R** (1991). Preference for conditioned reinforcement. *Journal of the Experimental Analysis of Behavior* **55**: 37-46.
- Williams DR, Williams H** (1969). Auto-maintenance in the pigeon: sustained pecking despite contingent nonreinforcement. *Journal of the Experimental Analysis of Behavior* **12**: 511-520.
- Williams J, Dayan P** (2005). Dopamine, learning, and impulsivity: a biological account of attention-deficit/hyperactivity disorder. *Journal of Child and Adolescent Psychopharmacology* **15**: 160-179; discussion 157-169.

- Williams WA, Shoaf SE, Hommer D, Rawlings R, Linnoila M** (1999). Effects of acute tryptophan depletion on plasma and cerebrospinal fluid tryptophan and 5-hydroxyindoleacetic acid in normal volunteers. *Journal of Neurochemistry* **72**: 1641-1647.
- Wilson C, Nomikos GG, Collu M, Fibiger HC** (1995). Dopaminergic correlates of motivated behavior: importance of drive. *Journal of Neuroscience* **15**: 5169-5178.
- Winstanley CA, Baunez C, Theobald DE, Robbins TW** (2005a). Lesions to the subthalamic nucleus decrease impulsive choice but impair autoshaping in rats: the importance of the basal ganglia in Pavlovian conditioning and impulse control. *European Journal of Neuroscience* **21**: 3107-3116.
- Winstanley CA, Dalley JW, Theobald DE, Robbins TW** (2003). Global 5-HT depletion attenuates the ability of amphetamine to decrease impulsive choice on a delay-discounting task in rats. *Psychopharmacology* **170**: 320-331.
- Winstanley CA, Dalley JW, Theobald DE, Robbins TW** (2004a). Fractionating impulsivity: contrasting effects of central 5-HT depletion on different measures of impulsive behavior. *Neuropsychopharmacology* **29**: 1331-1343.
- Winstanley CA, Theobald DE, Cardinal RN, Robbins TW** (2004b). Contrasting roles of basolateral amygdala and orbitofrontal cortex in impulsive choice. *Journal of Neuroscience* **24**: 4718-4722.
- Winstanley CA, Theobald DE, Dalley JW, Glennon JC, Robbins TW** (2004c). 5-HT2A and 5-HT2C receptor antagonists have opposing effects on a measure of impulsivity: interactions with global 5-HT depletion. *Psychopharmacology* **176**: 376-385.
- Winstanley CA, Theobald DE, Dalley JW, Robbins TW** (2005b). Interactions between serotonin and dopamine in the control of impulsive choice in rats: therapeutic implications for impulse control disorders. *Neuropsychopharmacology* **30**: 669-682.
- Winston GC** (1980). Addiction and backslicing: a theory of compulsive consumption. *Journal of Economic Behavior and Organization* **1**: 295-324.
- Wise RA** (1981). Brain dopamine and reward. In *Theory in Psychopharmacology Volume 1* (Cooper SJ, ed.), pp. 103-122. Academic Press, London.
- Wise RA** (1982). Neuroleptics and operant behavior: the anhedonia hypothesis. *Behavioral and Brain Sciences* **5**: 39-87.
- Wise RA** (1985). The anhedonia hypothesis: Mark III. *Behavioral and Brain Sciences* **8**: 178-186.
- Wise RA** (1994). A brief history of the anhedonia hypothesis. In *Appetite: Neural and Behavioural Bases* (Legg CR, Booth D, eds.), pp. 243-263. Oxford University Press, New York.
- Wise RA** (1996). Neurobiology of addiction. *Current Opinion in Neurobiology* **6**: 243-251.
- Wise RA, Bozarth MA** (1985). Brain mechanisms of drug reward and euphoria. *Psychiatric Medicine* **3**: 445-460.
- Wogar MA, Bradshaw CM, Szabadi E** (1993). Effect of lesions of the ascending 5-hydroxytryptaminergic pathways on choice between delayed reinforcers. *Psychopharmacology* **111**: 239-243.
- Wood ER, Dudchenko PA, Eichenbaum H** (1999). The global record of memory in hippocampal neuronal activity. *Nature* **397**: 613-616.
- Wultz B, Sagvolden T, Moser EI, Moser MB** (1990). The spontaneously hypertensive rat as an animal model of attention-deficit hyperactivity disorder: effects of methylphenidate on exploratory behavior. *Behavioral and Neural Biology* **53**: 88-102.
- Wyvell CL, Berridge KC** (2000). Intra-accumbens amphetamine increases the conditioned incentive salience of sucrose reward: enhancement of reward "wanting" without enhanced "liking" or response reinforcement. *Journal of Neuroscience* **20**: 8122-8130.
- Wyvell CL, Berridge KC** (2001). Incentive sensitization by previous amphetamine exposure: increased cue-triggered "wanting" for sucrose reward. *Journal of Neuroscience* **21**: 7831-7840.
- Yamaguchi M, Suzuki T, Seki T, Namba T, Juan R, Arai H, Hori T, Asada T** (2004). Repetitive cocaine administration decreases neurogenesis in adult rat hippocampus. *Annals of the New York Academy of Sciences* **1025**: 351-362.
- Yamaguchi M, Suzuki T, Seki T, Namba T, Liu J, Arai H, Hori T, Shiga T** (2005). Decreased cell proliferation in the dentate gyrus of rats after repeated administration of cocaine. *Synapse* **58**: 63-71.
- Yin HH, Knowlton BJ, Balleine BW** (2004). Lesions of dorsolateral striatum preserve outcome expectancy but disrupt habit formation in instrumental learning. *European Journal of Neuroscience* **19**: 181-189.
- Young AM** (2004). Increased extracellular dopamine in nucleus accumbens in response to unconditioned and conditioned aversive stimuli: studies using 1 min microdialysis in rats. *Journal of Neuroscience Methods* **138**: 57-63.
- Yu AJ, Dayan P** (2005). Uncertainty, neuromodulation, and attention. *Neuron* **46**: 681-692.
- Zaborszky L, Alheid GF, Beinfeld MC, Eiden LE, Heimer L, Palkovits M** (1985). Cholecystokinin innervation of the ventral striatum - a morphological and radioimmunological study. *Neuroscience* **14**: 427.

- Zahm DS, Brog JS** (1992). On the significance of subterritories in the “accumbens” part of the rat ventral striatum. *Neuroscience* **50**: 751-767.
- Zhang M, Gosnell BA, Kelley AE** (1998). Intake of high-fat food is selectively enhanced by mu opioid receptor stimulation within the nucleus accumbens. *Journal of Pharmacology and Experimental Therapeutics* **285**: 908-914.
- Zhang M, Kelley AE** (2000). Enhanced intake of high-fat food following striatal mu-opioid stimulation: microinjection mapping and fos expression. *Neuroscience* **99**: 267-277.
- Zhang M, Kelley AE** (2002). Intake of saccharin, salt, and ethanol solutions is increased by infusion of a mu opioid agonist into the nucleus accumbens. *Psychopharmacology* **159**: 415-423.
- Zhuang X, Oosting RS, Jones SR, Gainetdinov RR, Miller GW, Caron MG, Hen R** (2001). Hyperactivity and impaired response habituation in hyperdopaminergic mice. *Proceedings of the National Academy of Sciences of the United States of America* **98**: 1982-1987.
- Zink CF, Pagnoni G, Martin-Skurski ME, Chappelow JC, Berns GS** (2004). Human striatal responses to monetary reward depend on saliency. *Neuron* **42**: 509-517.
- Zola-Morgan S, Squire LR, Amaral DG** (1986). Human amnesia and the medial temporal region: enduring memory impairment following a bilateral lesion limited to field CA1 of the hippocampus. *Journal of Neuroscience* **6**: 2950-2967.

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