

Publications of Russell M. Church

a. Books/monographs

Boe, E. E., & Church, R. M. Eds. (1968). *Punishment: issues and experiments*. New York: Appleton-Century-Crofts.

Campbell, B. A., & Church, R. M., Eds. (1969). *Punishment and aversive behavior*. New York: Appleton-Century-Crofts.

Commons, M. L., Church, R. M., Stellar, J., & Wagner, A. R., Eds. (1988). *Quantitative analysis of behavior: Biological determinants of behavior (Vol 7) The biological basis of reinforcement*. Hillsdale, NJ: Erlbaum Associates.

Church, R. M. *Duration Discrimination* (under contract to Cambridge University Press)

b. Chapters in books

Church, R. M. (1968). Applications of behavior theory to social psychology: Imitation and competition. In E. C. Simmel, R. A. Hoppe, and G. A. Milton (Eds.), *Social facilitation and imitative behavior*. Boston: Allyn and Bacon

Church, R. M. (1969). Response suppression. In B. A. Campbell & R. M. Church, Eds. *Punishment and aversive behavior*. New York: Appleton-Century-Crofts, pp. 111-156.

Church, R. M. (1971). Aversive behavior. In L. A. Riggs & J. W. Kling (Eds), *Experimental psychology*. New York: Holt, pp. 703-741.

Church, R. M., & Church, K. W. (1977). Plans, goals, and search strategies for the selection of a move in chess. In P. Frey (Ed), *Chess skill in man and machine*. New York: Springer-Verlag, pp. 131-156.

Church, R. M. (1978). The internal clock. In S. Hulse, H. Fowler, W. K. Honig (Eds). *Cognitive processes in animal behavior*. Hillsdale, NJ: Erlbaum Associates, pp. 277-310.

Church, R. M. (1975). Punishment. In J. Eysenck, J. Arnold, & R. Meili (Eds.) *Encyclopedia of psychology*. New York: Herder & Herder Press.

Church, R. M., & Meck, W. H. (1983). Acquisition and cross-modal transfer of classification rules for temporal intervals. In M. L. Commons, A. R. Wagner, & R. Herrnstein (Eds.), *Quantitative analyses of behavior: Vol IV, Acquisition*, Ballinger, pp. 75-97.

- Church, R. M. (1984). Properties of the internal clock. In J. Gibbon, L. G. Allan (Eds) *Annals of the New York Academy of Sciences: Timing and time perception*. New York: New York Academy of Sciences, pp. 566-582.
- Church, R. M., & Meck, W. H. (1984). The numerical attribute of stimuli. In H. L. Roitblat, T. G. Bever, & H. S. Terrace (Eds.), *Animal cognition*, Hillsdale, N. J.: Erlbaum Associates, pp. 445-463.
- Gibbon, J., Church, R. M., & Meck, W. H. (1984). Scalar timing in memory. In J. Gibbon, & L. G. Allan (Eds), *Annals of the New York Academy of Sciences: Timing and time perception* , New York: New York Academy of Sciences, pp. 52-77.
- Gibbon, J., & Church, R. M. (1984). Sources of variance in information processing theories of timing. In W. L. Roitblat, T. G. Bever, & H. S. Terrace (Eds), *Animal cognition*, Hillsdale, N. J.: Erlbaum Associates, pp. 465-488.
- Siegel, S. F., & Church, R. M. (1984). The decision rule in temporal bisection. In J. Gibbon, & L. G. Allan (Eds.), *Annals of the New York Academy of Sciences: Timing and time perception*, pp. 643-645.
- Church, R. M. (1985). Approaches to the study of behavioral pharmacology. In F. R. Brush, & J. B. Overmier (Eds.), *Affect, conditioning and cognition: essays on the determinants of behavior*. Hillsdale, N.J.: Erlbaum Associates, pp. 163-180.
- Church, R. M. & Broadbent, H. A. (1991). A connectionist model of timing. In M. L. Commons, S. Grossberg, and J. E. R. Staddon, *Quantitative models of behavior: Neural networks and conditioning*. Hillsdale, NJ: Erlbaum. Pp 225-240.
- Church, R. M., & Meck, W. H. (1988). Biological basis of the remembered time of reinforcement. In W. L. Commons, R. M. Church, J. Stellar, A. R. Wagner (Eds), *Quantitative analysis of behavior: Biological determinants of behavior (Vol 7) Biological basis of reinforcement*. Hillsdale, NJ: Erlbaum Associates, pp. 103-119.
- Church, R. M. (1991). Introduction to Special Issue on Animal Timing, *Learning and Motivation*, 22, 1-2.
- Church, R. M., Broadbent, H. A., & Gibbon, J. (1992). Biological and psychological description of an internal clock. In I. A. Gormezano and E. A. Wasserman (Eds.) *Learning and memory: The behavioral and biological substrates* . Hillsdale NJ: Erlbaum, Pp 105-127.
- Church, R. M. (1989). Theories of timing behavior. In S. B. Klein, & R. Mowrer (Eds) *Contemporary learning theory*. Hillsdale, NJ: Erlbaum, pp 41-69.

- Church, R. M. (1989). The yoked control design. In T. Archer & L. Nilsson (Eds), *Aversion, avoidance and anxiety: Perspectives on aversively motivated behavior*. Hillsdale, NJ: Erlbaum, pp 403-415.
- Broadbent, H. B., Rakitin, B., Meck, W., & Church, R. M. (1993). The quantitative relationship between timing and counting. In S. Boysen and J. Capaldi (Eds). *The development of numerical ability: Animal and human models*. Hillsdale NJ: Erlbaum Associates, pp. 171-187.
- Church, R. M. (1993). Uses of computers in psychological research. In G. Keren and C. Lewis (Eds.) *Methodological and quantitative issues in the analysis of psychological data*. Hillsdale NJ: Erlbaum Associates, pp. 459-491.
- Church, R. M. (1994) Internal-clock models. S. L. Macey (Ed.) *Encyclopedia of Time*. New York: Garland, pp. 314-315.
- Church, R. M.(1997). Timing and temporal search. In C. M. Bradshaw and E. Szabadi (Eds), *Time and behaviour: Psychological and neurobiological analysis*. Elsevier, pp. 41 – 78.
- Collyer, C. E., & Church, R. M. (1998). Interresponse intervals in continuation tapping. In D. A. Rosenbaum & C. E. Collyer (Eds.), *Timing of behavior: Neural, psychological, and computational perspectives*. Cambridge, MA: MIT Press, pp. 63 – 87.
- Church, R. M. (2000). Harold Schlosberg. In A. E. Kazdin (Ed.), *Encyclopedia of Psychology*. American Psychological Association and Oxford University Press.
- Church, R. M., & Kirkpatrick, K. (2001). Theories of conditioning and timing. In R. R. Mowrer & S. B. Klein (Eds.) *Contemporary learning: Theory and Applications* (p. 211 – 253). Hillsdale, NJ: Erlbaum.
- Church, R. M. (2001). Timing: Psychological and neural aspects. In N. J. Smelser & P. B. Baltes, *International Encyclopedia of Social and Behavioral Science* (Vol 4.3, Article 141). Elsevier.
- Church, R. M. (in press). Time perception. In *Encyclopedia of Cognitive Science*. Macmillan.
- Church, R. M. (2002). Temporal learning. In H. Pashler & R. Gallistel (Eds) *Stevens' Handbook of Experimental Psychology, Third Edition: Volume 3, Learning, Motivation, and Emotion* (pp. 365-393). New York, NY: Wiley.
- Church, R. M. (2003). Animal learning. In J. A. Schinka & W. Velicer (Eds.) Volume 2. (Research Methods). *Comprehensive Handbook of Psychology*, New York: Wiley. Pp. 271-287.

Church, R. M. (2003). A concise guide to scalar timing theory. In W. H. Meck (Ed.) *Functional and neural mechanisms of interval timing* (pp. 3-22). Boca Raton, FL: CRC Press.

Church, R. M., Guilhardi, P., Keen, R., MacInnis, M., & Kirkpatrick, K. (2003). Simultaneous temporal processing. In *Time and Mind II: Information Processing Perspectives*. Hogrefe & Huber.

Church, R. M. (2005). Historia da Pesquisa sobre Punicao. In H. J. Guilhardi, & N. C. de Aguirre, *Sobre comportamento e cognicao*, pp. 251-271. Santo Andre, SP, Brazil: ESETec. (English title: *History of Research about Punishment*; Translated by P. Guilhardi.)

Church, R. M. (2006). Behavioristic, cognitive, biological, and quantitative explanations of timing. In E. A. Wasserman and T. R. Zentall (Eds.) *Comparative cognition: Experimental explorations of animal intelligence* (pp. 3-19). Oxford: Oxford University Press.

c. Refereed journal articles

Church, R. M. (1956). Effect of overtraining on subsequent learning of incidental cues. *Psychological Reports* , 2, 247-254.

Church, R. M., Brush, F. R., & Solomon, R. L. (1956). Traumatic avoidance learning: The effects of CS-US interval with a delayed-conditioning procedure in a free-responding situation. *Journal of Comparative and Physiological Psychology* , 49, 301-308.

Church, R. M., & Solomon, R. L. (1956). Traumatic avoidance learning: The effects of delay of shock termination. *Psychological Reports* , 2, 357-368.

Church, R. M. (1957). Transmission of learned behavior between rats. *The Journal of Abnormal and Social Psychology* , 54, 163-165.

Church, R. M. (1957). Two procedures for the establishment of "imitative behavior." *Journal of Comparative and Physiological Psychology* , 50, 315-318.

Church, R. M. (1958). Individual learning curves. *Journal of the Experimental Analysis of Behavior* , 1, 380.

Church, R. M., & Black, A. H. (1958). Latency of the conditioned heart rate as a function of the CS-US interval. *Journal of Comparative and Physiological Psychology* , 51, 478-482.

Maccoby, E. E., Johnson, J. P., & Church, R. M. (1958). Community integration and the social control of juvenile delinquency. *Journal of Social Issues* , 14, 38-51.

- Church, R. M. (1959). Emotional reactions of rats to the pain of others. *Journal of Comparative and Physiological Psychology* , 52, 132-134.
- Church, R. M., & Pfaffmann, C. (1959). A respondent-conditioning apparatus for the student laboratory. *American Journal of Psychology* , 72, 267-270.
- Church, R. M. (1961). Effects of a competitive situation on the speed of response. *Journal of Comparative and Physiological Psychology* , 54, 162-166.
- Church, R. M. (1962). Effect of relative skill on the amount of competitive facilitation. *Psychological Reports* , 11, 603-614.
- Church, R. M. (1962). The effects of competition on reaction time and palmar skin conductance. *Journal of Abnormal and Social Psychology* , 65, 32-40.
- Church, R. M. (1963). The varied effects of punishment on behavior. *Psychological Review* , 70, 369-402.
- Church, R. M., & Carnathan, J. (1963). Differential reinforcement of short latency responses in the white rat. *Journal of Comparative and Physiological Psychology* , 56, 120-123.
- Church, R. M., Millward, R. B., & Miller, P. (1963). Prediction of success in a competitive reaction time situation. *Journal of Abnormal and Social Psychology* , 67, 234-240.
- Church, R. M. (1964). Systematic effect of random error in the yoked control design. *Psychological Bulletin* , 62, 122-131.
- Carnathan, J., & Church, R. M. (1964). The effect of competitive allocation of reinforcements to rats in the straight alley. *Journal of General Psychology* , 71, 137-144.
- Church, R. M., & Camp, D. S. (1965). Change in reaction time as a function of knowledge of results. *The American Journal of Psychology* , 78, 102-106.
- Johnson, J. L., & Church, R. M. (1965). Effects of shock intensity on nondiscriminative avoidance learning of rats in a shuttlebox. *Psychonomic Science* , 3, 497-498.
- Camp, D. S., Raymond, G. A., & Church, R. M. (1966). Response suppression as a function of the schedule of punishment. *Psychonomic Science* , 5, 23-24.
- Church, R. M., LoLordo, V., Overmier, J. B., Solomon, R. L., & Turner, L. H. (1966). Cardiac responses to shock in curarized dogs: Effects of shock intensity and duration, warning signal, and prior experience with shock. *Journal of Comparative and Physiological Psychology* , 62, 1-7.

- Boe, E. E., & Church, R. M. (1967). Permanent effects of punishment during extinction. *Journal of Comparative and Physiological Psychology* , 63, 486-492.
- Camp, D. S., Raymond, G. A., & Church, R. M. (1967). Temporal relationship between responses and punishment. *Journal of Experimental Psychology* , 74, 114-123.
- Church, R. M., & Raymond, G. A. (1967). Influence of the schedule of positive reinforcement on punished behavior. *Journal of Comparative and Physiological Psychology* , 63, 329-332.
- Church, R. M., Raymond, G. A., & Beauchamp, R. D. (1967). Response suppression as a function of intensity and duration of punishment. *Journal of Comparative and Physiological Psychology* , 63, 39-44.
- Dreyer, P. I., & Church, R. M. (1968). Shock-induced fighting as a function of the intensity and duration of the aversive stimulus. *Psychonomic Science* , 10, 271-272.
- Dreyer, P. I., & Church, R. M. (1970). Reinforcement of shock-induced fighting. *Psychonomic Science* , 18, 147-148.
- Church, R. M., Wooten, C. L., & Matthews, T. J. (1970). Contingency between a response and an aversive event in the rat. *Journal of Comparative and Physiological Psychology* , 72, 476-485.
- Church, R. M., Wooten, C. L., & Matthews, T. J. (1970). Discriminative punishment and the conditioned emotional response. *Learning and Motivation* , 1, 1-17.
- Matthews, T. J., Morin, L. P., & Church, R. M. (1971). Avoidance of thermal stimuli in the rat. *Psychonomic Science* , 22, 59-60.
- Church, R. M., & Getty, D. J. (1972). Some consequences of the reaction to an aversive event. *Psychological Bulletin* , 78, 21-27.
- Dyckman, J. L., & Church, R. M. (1972). The TIICIE system for interactive control of independent experiments. *Computers in the Psychology Laboratory* , 2, 27-34.
- Church, R. M. (1973). Seven types of data from computer-controlled experiments. *Behavior Research Methods and Instrumentation* , 6, 122-124.
- Bryant, D., & Church, R. M. (1974). The determinants of random choice. *Animal Learning & Behavior* , 2, 245-248.
- LaBarbera, J. D., & Church, R. M. (1974). Magnitude of fear as a function of expected time to an aversive event. *Animal Learning & Behavior* , 2, 199-202.

- Libby, M. E., & Church, R. M. (1974). Timing of avoidance responses by rats. *Journal of the Experimental Analysis of Behavior* , 22, 513-517.
- Libby, M. E., & Church, R. M. (1975). Fear gradients as a function of the temporal interval between signal and aversive event in the rat. *Journal of Comparative and Physiological Psychology* , 88, 911-916.
- Church, R. M., Getty, D. J., & Lerner, M. D. (1976). Duration discrimination by rats. *Journal of Experimental Psychology: Animal Behavior Processes* , 2, 303-312.
- Church, R. M., & Lerner, M. D. (1976). Does the headless roach learn to avoid? *Physiological Psychology*, 4, 439-442.
- Gracely, R. H., & Church, R. M. (1976). Adjustment of speed on repeated shifts of a negative reinforcer. *Bulletin of the Psychonomic Society* , 7, 455-457.
- Church, R. M., & Deluty, M. Z. (1977). The bisection of temporal intervals. *Journal of Experimental Psychology: Animal Behavior Processes* , 3, 216-228.
- Deluty, M. Z., & Church, R. M. (1978). Time allocation matching between punishing situations. *Journal of the Experimental Analysis of Behavior* , 29, 191-198.
- Roberts, S., & Church, R. M. (1978). Control of an internal clock. *Journal of Experimental Psychology: Animal Behavior Processes* , 4, 318-337.
- Church, R. M. (1980). Short-term memory for time intervals. *Learning and Motivation*, 11, 208-219.
- Church, R. M. (1980). The Albert study: Illustration vs. evidence. *American Psychologist*, 35, 215-216.
- Thompson, C. R., & Church, R. M. (1980). An explanation of the language of a chimpanzee. *Science*, 208, 313-314.
- Gibbon, J., & Church, R. M. (1981). Time left: Linear versus logarithmic subjective time. *Journal of Experimental Psychology: Animal Behavior Processes* , 7, 87-108.
- Maricq, A. V., Roberts, S., & Church, R. M. (1981). Methamphetamine and time estimation. *Journal of Experimental Psychology: Animal Behavior Processes* , 7, 18-30.
- Church, R. M., & Gibbon, J. (1982). Temporal generalization. *Journal of Experimental Psychology: Animal Behavior Processes* , 8, 165-186.
- Fernandes, D. M., & Church, R. M. (1982). Discrimination of the number of sequential events by rats. *Animal Learning & Behavior* , 10, 171-176.

- Meck, W. H., & Church, R. M. (1982). Abstraction of temporal attributes. *Journal of Experimental Psychology: Animal Behavior Processes*, 8, 226-243.
- Meck, W. H., & Church, R. M. (1982). Discrimination of intertrial intervals in cross-modal transfer of duration. *Bulletin of the Psychonomic Society*, 19, 234-236.
- Church, R. M. (1983). The influence of computers on psychological research: A case study. *Behavior Research Methods & Instrumentation*, 15, 117-126.
- Maricq, A. V., & Church, R. M. (1983). The differential effects of haloperidol and methamphetamine on time estimation in the rat. *Psychopharmacology*, 79, 10-15.
- Meck, W. H., & Church, R. M. (1983). A mode control model of counting and timing processes. *Journal of Experimental Psychology: Animal Behavior Processes*, 9, 320-324.
- Meck, W. H., & Church, R. M. (1984). Simultaneous temporal processing. *Journal of Experimental Psychology: Animal Behavior Processes*, 10, 1-29.
- Meck, W. H., Church, R. M., & Olton, D. (1984). Hippocampus, time, and memory. *Behavioral Neuroscience*, 98, 3-22.
- Meck, W. H., Komeily-Zadeh, F., & Church, R. M. (1984). Two-step acquisition: Modification of an internal clock's criterion. *Journal of Experimental Psychology: Animal Behavior Processes*, 10, 297-306.
- Meck, W. H., Church, R. M., & Gibbon, J. (1985). Temporal integration in duration and number discrimination. *Journal of Experimental Psychology: Animal Behavior Processes*, 11, 591-597.
- Meck, W. H., Church, R. M., & Wenk, G. L. (1986). Arginine vasopressin inoculates against age-related increases in sodium-dependent high affinity choline uptake and discrepancies in the content of temporal memory. *European Journal of Pharmacology*, 130, 327-331.
- Meck, W. H., & Church, R. M. (1987). Cholinergic modulation of the content of temporal memory. *Behavioral Neuroscience*, 101, 457-464.
- Meck, W. H., & Church, R. M. (1987). Nutrients that modify the speed of the internal clock and memory storage processes. *Behavioral Neuroscience*, 101, 465-475.
- Olton, D. S., Meck, W. H., & Church, R. M. (1987). Separation of hippocampal and amygdaloid involvement in temporal dysfunctions. *Brain Research*, 404, 180-188.

- Meck, W. H., Church, R. M., Wenk, G. L., & Olton, D. S. (1987). Nucleus Basalis Magnocellularis and Medial Septal Area lesions differentially impair temporal memory. *The Journal of Neuroscience*, 7, 3505-3511.
- Gibbon, J., Church, R. M., Fairhurst, S., & Kacelnik, A. (1988). Scalar expectancy theory and choice between delayed rewards. *Psychological Review*, 95, 102-114.
- Olton, D. S., Wenk, G. L., Church, R. M., & Meck, W. H. (1988). Attention and the frontal cortex as examined by simultaneous temporal processing. *Neuropsychologia*, 26, 307-318.
- Wing, A. M., Church, R. M., & Gentner, D. R. (1989). Variability in the timing of responses during repetitive tapping with alternative hands. *Psychological Research*, 51, 28-37.
- Church, R. M., & Broadbent, H. A. (1990). Alternative representations of time, number, and rate. *Cognition*, 37, 55-81.
- Gibbon, J., & Church, R. M. (1990). Representation of time. *Cognition*, 37, 23-54.
- Schrier, A. M., Brady, P. W., Church, R. M., Povar, M. L., Schrier, J. E., Sehgal, P. K., Boylan, J. M., Schwartz, R., & Susa, J. B. (1990). Neonatal hypoglycemia in the rhesus monkey: Effect on development and behavior. *Infant Behavior and Development*, 13, 189-207.
- Church, R. M., Miller, K. D., Meck, W. H., & Gibbon, J. (1991). Symmetric and asymmetric sources of variance in temporal generalization. *Animal Learning and Behavior*, 19, 207-214.
- Collyer, C. E., Broadbent, H. A., & Church, R. M. (1992). Categorical time production: Evidence for discrete timing in motor control. *Perception & Psychophysics*, 51, 134-144.
- Gibbon, J., & Church, R. M. (1992). Comparison of variance and covariance patterns in parallel and serial theories of timing. *Journal of the Experimental Analysis of Behavior*, 57, 393-406.
- Maksik, Y. A., & Church, R. M. (1992). A system for automatically analyzing and correcting real-time experimental control programs. *Behavior Research Methods, Instruments, & Computers*, 24, 140-146.
- Church, R. M. (1993). Human models of animal behavior. *Psychological Science*, 4, 170-173.
- Collyer, C. E., Broadbent, H. A., & Church, R. M. (1994). Preferred rates of repetitive tapping and categorical time production. *Perception & Psychophysics*, 55, 443-453.

- Church, R. M., Meck, W. H., & Gibbon, J. (1994). Application of scalar timing theory to individual trials. *Journal of Experimental Psychology: Animal Behavior Processes*, 20, 135-155.
- Church, R. M., Crystal, J. D., & Collyer, C. E. (1996). Correction of errors in scientific research. *Behavior Research Methods, Instruments, & Computers*, 28, 305-310.
- Crystal, J. D., Church, R. M., & Broadbent, H. A. (1997). Systematic nonlinearities in the memory representation of time. *Journal of Experimental Psychology: Animal Behavior Processes*, 23, 267 - 282.
- Church, R. M. (1997). Quantitative models of animal learning and cognition, *Journal of Experimental Psychology: Animal Behavior Processes*, 23, 379 - 389.
- Church, R. M., Lacourse, D. M., & Crystal, J. D. (1998). Temporal search as a function of the variability of interfood intervals. *Journal of Experimental Psychology: Animal Behavior Processes*, 24, 291-315.
- Church, R. M., & Lacourse, D. M. (1998). Serial pattern learning of temporal intervals. *Animal Learning & Behavior*, 26, 272-289.
- Kirkpatrick, K., & Church, R. M. (1998). Are separate theories of conditioning and timing necessary? *Behavioral Processes*, 44, 163-182.
- Church, R. M. (1999). Evaluation of quantitative theories of timing. (Commentary on J. E. R. Staddon & J. J. Higa, Time and memory: Toward a pacemaker-free theory). *Journal of the Experimental Analysis of Behavior*, 71, 253-256.
- Kirkpatrick, K., & Church, R. M. (2000). Stimulus and temporal cues in classical conditioning. *Journal of Experimental Psychology: Animal Behavior Processes*, 26, 206 – 219.
- Kirkpatrick, K. & Church, R. M. (2000). Independent effects of stimulus and cycle duration in conditioning: The role of timing processes. *Animal Learning & Behavior*, 28, 373 – 388.
- Church, R. M. (2001). Animal Cognition: 1900 – 2000. *Behavioural Processes*, 54, 53-63.
- Church, R. M. (2001). A Turing test for computational and associative theories of learning. *Current Directions in Psychological Science*, 10, 132-136.
- Church, R. M., & Lacourse, D. M. (2001). Temporal memory of interfood interval distributions with the same mean and variance. *Learning and Motivation*. 32, 2 -21.

Church, R. M. (2002). The effective use of secondary data. *Learning & Motivation*, 33, 32-45.

Church, R. M. (2002). A tribute to John Gibbon. *Behavioural Processes*, 57, 261-274.

Kirkpatrick, K., & Church, R. M. (2003). Tracking of expected times in classical conditioning. *Learning & Behavior*, 31, 3 – 21.

Kirkpatrick, K., & Church, R. M. (2004). Temporal learning in random control procedures. *Journal of Experimental Psychology: Animal Behavior Processes*, 30, 213-228.

Guilhardi, P., & Church, R. M. (2004). Measures of temporal discrimination in fixed-interval performance: A case study in archiving data. *Behavior Research Methods, Instruments, & Computers*, 36, 661-669.

Church, R. M., & Guilhardi, P. (2005). A Turing test of a timing theory. *Behavioural Processes*, 69, 45-58.

Keen, R. G., MacInnis, M. L. M., Guilhardi, P., Chamberland, K., & Church, R. M. (2005). The lack of behavioral effects of fenbendazole for pinworm infection. *Contemporary Topics in Laboratory Animal Science*, 44, 17-23.

Guilhardi, P., Keen, R., MacInnis, M. L. M., & Church, R. M. (2005). How rats combine temporal cues. *Behavioural Processes* 69, 189 - 205.

Guilhardi, P. & Church, R. M. (2005). Dynamics of temporal discrimination. *Learning & Behavior*, 33, 399 - 416.

Guilhardi, P., & Church, R. M. (in press). Memory for interval duration and reinforcement rate after extensive extinction. *Learning & Behavior*.

Guilhardi, P., Yi, L., & Church, R. M. (in press). Effects of repeated acquisitions and extinctions on response rate and pattern. *Journal of Experimental Psychology: Animal Behavior Processes*.

d. Non-refereed journal articles

Allan, L., Balsam, P., Church, R., & Terrace, H. (2002). John Gibbon (1934-2001): Obituary. *American Psychologist*, 57, 436-437.

Kurtzman, H. S., Church, R. M., & Crystal, J. D. (2002). Data archiving for animal cognition research: Report of an NIMH workshop. *Animal Learning & Behavior*, 30, 405-412.

Kyonka, E. G. E., & Church, R. M. (2005). Empirical tests of "Take-the-Best" with non-human subjects. *Behavioural Processes*, 69, 133-135.

e. Book Reviews

- Church, R. M. (1963). Sweet lemons. Review of D. H. Lawrence and L. Festinger (Eds), Deterrents and reinforcements: The psychology of insufficient reward. *Contemporary Psychology* , 8, 177-178.
- Church, R. M. (1971). Operant sociology. Review of R. L. Burgess, & D. Bushell, Jr. (Eds), Behavioral sociology: The experimental analysis of social process. *Contemporary Psychology* , 16, 340-342.
- Church, R. M. (1973). Laws of learning. Review of R. F. Brush (Ed), Aversive conditioning and learning. *Contemporary Psychology* y, 18, 871-874.
- Church, R. M. (1976). Learning theory today. Review of W. K. Estes (Ed), Handbook of learning and cognitive processes: Conditioning and behavior theory, vol 2. *Contemporary Psychology* , 21, 871-874.
- Church, R. M. (1979). How to look at data: A review of John W. Tukey's exploratory data analysis. *Journal of the Experimental Analysis of Behavior* , 31, 433-440.
- Church, R. M. (1979). Prescription for research. Review of L. S. Meyers, & N. E. Grossen (Eds), Behavioral research: Theory and practice. *Contemporary Psychology* , 24, 829.
- Church, R. M. (1979). How chimpanzees think. Review of D. Premack (Ed), Intelligence in ape and man. *Contemporary Psychology* , 24, 745-746.
- Church, R. M. (1981). A review of N. L. Commons, and J. A. Nevin (Eds) Quantitative analyses of behavior:
Vol 1, Discriminative properties of reinforcement schedules. Cambridge, MA: Ballinger. In *American Journal of Psychology*
- Church, R. M. (1982). Review of M. D. Zeiler and P. Harzem (Eds), Advances in analysis of behaviour, Vol 1. Reinforcement and the organization of behaviour. Chichester: Wiley, 1979. In *American Journal of Psychology* .
- Church, R. M. (1983). A review of M. L. Commons, R. J. Herrnstein, & H. Rachlin (Eds), Quantitative analyses of behavior: Matching and maximizing accounts. Vol 2 of Quantitative analyses of behavior. In *Contemporary Psychology* .
- Church, R. M. (1989). The animal mind, revisited. A review of J. Pearce, An introduction to animal cognition. In *Contemporary Psychology*, 163-164.
- Church, R. M. (1989). Review of S. Grossberg (Ed) Neural networks and natural intelligence. *The Quarterly Review of Biology* .
- Church, R. M. (1996). Review of N. J. Mackintosh (Ed.) Animal learning and cognition. *Contemporary Psychology*

Church, R. M. (2000). Review of N. A. Schmajuk & P. C. Holland (Eds.) Occasion setting: Associative learning and cognition in animals. *The Quarterly Journal of Biology*, 75, 216.

Church, R. M. (2003). Review of Gallistel, C. R., & Gibbon, J. The symbolic foundations of conditioned behavior. *American Journal of Psychology*, 116, 655-676