

Allen Joel Neuringer
Professor of Psychology

Academic Degrees:

B. A. (summa cum laude), Columbia College (1962)
Ph.D., Harvard University (1967)

Fellowships and Grants:

Principal Investigator, National Institute of Mental Health Research Grant MH 068259 (2004-2008)
Principal Investigator, National Science Foundation Research Grant #IBN-9317923, "Reinforcement and Control of Behavioral Variability" (1994-1998)
Principal Investigator, Medical Research Foundation Grant, "Learning, Mental Health, and Controlled Variability" (1992-1994)
Principal Investigator, National Science Foundation Research Grant #BNS-8707992, "Reinforcement and Control of Behavioral Variability" (1987-1991)
Project Director, National Science Foundation College Science Instrumentation Grant #CSI-8551632, "Core Laboratory for Reed College Psychology Department" (1985-1987)
Principal Investigator, National Institute of Mental Health Research Grant MH 19602-01, "Effects of Free Rewards on Behavior" (1969-71)
Principal Investigator, National Institute of Mental Health Research Grant MH 15495-01, "Effects of Rate of Reinforcement on Responding" (1969-70)
National Science Foundation Pre-Doctoral Fellow (1963-1966)

Professional Experience:

Chair, Psychology Department, Reed College (1993-1995)
Professor of Psychology, Reed College (1983-)
Associate Professor of Psychology, Reed College (1976-83)
Assistant Professor of Psychology, Reed College (1970-76)
Chief, Experimental Psychology Laboratory, Foundation for Research on the Nervous System (1969-70)
Research Associate, Foundation for Research on the Nervous System (1967-69)

Professional Service:

National Institutes of Health, Biobehavioral Regulation, Learning and Ethology (BRLE) Study Section, 2004-
National Institutes of Health, Behavioral and Biobehavioral Processes Study Section (BBBP-1), 2000 - 2003
National Science Foundation, Advisory Panel, Physiology and Behavior Program, Animal Behavior Study Section , 1994- 1997
National Science Foundation, Chair, Graduate Fellowship Panel (Psychology), 1990-1992
Organizing Committee, Winter Conference on Animal Learning, 1992-
National Science Foundation, Graduate Fellowship Panel (Psychology), 1985,

1988-1989

National Institute of Mental Health, Ad Hoc member Basic Behavioral Processes
Research Review Committee, 1988

National Science Foundation, College Science Instrumentation Review Panel, 1985.

Organizer, Reed Psychology Mini-Convention, 1985, 1994

Board of Scientific Affairs, Education and Training, Oregon Psychological Association,
1974-76

Board of Directors, Oregon Psychological Association, 1974-76

Editorial Boards:

Board of Editors, Behavior Analysis and Society

Board of Editors, Journal of the Experimental Analysis of Behavior, 1970-76 ; 1991-

Associate Editor, Behavior and Social Issues, 1990-1993

Board of Editors, Behaviorists for Social Action, 1978-79

Reviewer:

American Psychologist

Animal Learning and Behavior

Behavioral Assessment

Behavior Analyst

Behavioural Processes

Behavior Research Methods, Instruments, & Computers

Behaviorism

Cognition

Journal of Applied Behavior Analysis

Journal of the Experimental Analysis of Behavior

Journal of Experimental Psychology: Animal Behavior Processes

Journal of Experimental Psychology: General

Journal of Experimental Psychology: Human Perception and Performance

Learning and Motivation

Memory & Cognition

Perception & Psychophysics

Perceptual and Motor Skills

Physiology and Behavior

Psychological Bulletin

Psychological Review

Psychological Science

Psychonomic Bulletin & Review

Psychonomic Science

Science

Publications (with undergraduate student co-authors in bold):

Operant variability when reinforcement is delayed. Learning & Behavior, in revision.
(Wagner, K. & Neuringer, A.)

- Reasons to respond randomly. In Zentall, T. & Wasserman, E. (Eds.) *Comparative Cognition: Experimental Explorations of Animal Intelligence*. Oxford University Press, in press. (Jensen, G., Miller, C., & Neuringer, A.)
- Reinforced variability in animals and people. *American Psychologist*, 2004, 59, 891-906.
- Reinforced variability and creativity. In K. A. Lattal and P. N. Chase (Eds.) *Behavior Theory and Philosophy* (pp 323-338). New York: Plenum Publishing, 2003.
- Modifying behavioral variability in moderately depressed students. *Behavior Modification*, 2003, 27, 251-264. (Hopkinson, J. and Neuringer, A.)
- [Operant variability: evidence, functions, and theory. *Psychonomic Bulletin & Review*, 2002, 9, 672-705.](#)
- Reinforcement of variations and repetitions along three independent response dimensions. *Behavioral Processes*, 2002, 57, 199-209. (Ross, C. and Neuringer, A.)
- [Learning to vary and varying to learn. *Psychonomic Bulletin & Review*, 2002, 9, 250-258. \(Grunow, A. & Neuringer, A.\)](#)
- Stability and variability in extinction. *Journal of Experimental Psychology: Animal Behavior Processes*, 2001, 27, 79-94 (Neuringer, A., Kornell, N. & Olufs, M.)
- Comparing choices and variations in people and rats: Two teaching experiments. *Behavior Research Methods, Instruments, & Computers*, 2000, 32, 407-416. (Neuringer, A., Deiss, C. & Imig, S.)
- Reinforcing operant variability in adolescents with autism. *Journal of Applied Behavior Analysis*, 2000, 33, 151-165. (Miller, N. & Neuringer, A.)
- Pigeon reaction time, Hick's law and intelligence. *Psychonomic Bulletin & Review*, 2000, 7, 284-291. (Vickrey, C. & Neuringer, A.)
- Reinforced variability and operant learning. *Journal of Experimental Psychology: Animal Behavior Processes*, 2000, 26, 98-111. (Neuringer, A., Deiss, C. & Olson, G.)
- Is instrumental variability abnormally high in children exhibiting ADHD and aggressive behavior? *Behavioural Brain Research*, 1998, 94, 51-59. (Saldana, R. L. & Neuringer, A.)
- Behavioral variability is controlled by discriminative stimuli. *Animal Learning & Behavior*, 1998, 26, 154-162. (Denney, J. & Neuringer, A.)
- Self-Experimentation. In Lattal, K. A., & Perone, M. (Eds.) *Handbook of Research Methods in Human Operant Behavior* (pp 619-655). New York: Plenum Press. 1998. (Roberts, S. & Neuringer, A.)

- Reinforced variability decreases with approach to reinforcers. Journal of Experimental Psychology: Animal Behavior Processes, 1996, 22, 497-508. (Cherot, C., Jones, A. & Neuringer, A.)
- Behavioral variability in SHR and WKY rats as a function of rearing environment and reinforcement contingency. Journal of the Experimental Analysis of Behavior. 1996, 65, 129-144. (Hunziker, M. H. L, Saldana, R. L. & Neuringer, A.)
- Different effects of amphetamine on reinforced variations versus repetitions in Spontaneously Hypertensive Rats (SHR). Physiology & Behavior, 1994, 56, 939-944. (Mook, D. M. & Neuringer, A.)
- Social reinforcement of operant behavior in rats: A methodological note. Journal of the Experimental Analysis of Behavior, 1994, 62 (Evans, M., Duvel, A., Funk, M., Lehman, B., Sparrow, J, Watson, N. T. & Neuringer, A.).
- Reinforced variation and selection. Animal Learning & Behavior, 1993, 21, 83-91.
- National Science Foundation Graduate Fellowship Evaluations: Human and actuarial. American Psychologist, 1993, 913-915.
- Approximating chaotic behavior. Psychological Science, 1993, 4, 113-119 (Neuringer, A. & Voss, C.)
- Spontaneously hypertensive rats (SHR) readily learn to vary but not repeat instrumental responses. Behavioral & Neural Biology, 1993, 59, 126-135. (Mook, D. Jeffrey, J., & Neuringer, A.)
- Choosing to vary and repeat. Psychological Science, 1992, 3, 246-250.
- Reinforced variability in rats: Effects of gender, age and contingency. Physiology & Behavior, 1992, 51, 145-149. (Neuringer, A. & Huntley, R. W.)
- Operant variability and repetition as functions of interresponse time. Journal of Experimental Psychology: Animal Behavior Processes, 1991, 17, 3-12.
- Humble behaviorism. The Behavior Analyst, 1991, 14, 1-13.
- Behaviorism: Methodological, radical, assertive, skeptical, ethological, modest, humble and evolving. The Behavior Analyst, 1991, 14, 43-47.
- Effects of alcohol on repetitive and variable operant response sequences in rats. Psychopharmacology, 1990, 102, 49-55 (McElroy, E. and Neuringer, A.)
- Behavioral variability as a function of response topography and reinforcement contingency. Animal Learning & Behavior, 1990, 18, 257-263. (Morgan, L. and Neuringer, A.)

- Effects of ethanol on reinforced variations and repetitions by rats under a multiple schedule. Journal of the Experimental Analysis of Behavior, 1990, 54, 1-12 (**Cohen, L.**, Neuringer, A., & Rhodes, D.)
- Aversive and neutral punishers produce autonomic and performance differences in a human learning task. Biological Psychology. 1990, 30, 203-217 (**Balaban, M. T.**, Rhodes, D. L., and Neuringer, A.)
- Personal paths to peace. Behavior Analysis and Social Action, 1988, 6, 51-56.
- Response sequence learning as a function of primary versus conditioned reinforcement. Animal Learning and Behavior, 1988, 16, 8-14. (**Luck, S.**, **Colgrove, M.** and Neuringer, A.)
- Can people behave 'randomly': The role of feedback. Journal of Experimental Psychology: General, 1986, 115, 62-75.
- Not recommended, 2nd edition: Review of William S. Sahakian's Introduction to the Psychology of Learning. Contemporary Psychology, 1986, 31, 44-45.
- Variability is an operant. Journal of Experimental Psychology: Animal Behavior Processes, 1985, 11, 429-452. (**Page, S.** and Neuringer, A.)
- Melioration and self-experimentation. Journal of the Experimental Analysis of Behavior, 1984, 42, 397-406.
- Music discrimination by pigeons. Journal of Experimental Psychology: Animal Behavior Processes, 1984, 10, 138-148 (**Porter, D.** & Neuringer, A.).
- Dance and sports compared: Effects on psychological well-being. Journal of Sports Medicine and Physical Fitness, 1984, 24, 58-68 (**Gurley, V.**, Neuringer, A. & Masee, J.).
- Cardiac and electrodermal responses to aversive and neutral feedback in a memory task (Abstract). Psychophysiology, 20, 1983, 431. (**Balaban, M. T.**, Rhodes, D. L. and Neuringer, A. J.)
- Eating as a function of body weight and hours deprivation. Physiology & Behavior, 1983, 30, 863-866 (Neuringer, A. & **Campbell, N.**)
- Punishment, why it works and why not (Abstract). Behavior Analysis Letters, 1982, 2, 286-287 (Neuringer, A., **Balaban, M.**, **Neiworth, J.** & Rhodes, D.).
- Self-experimentation: A call for change. Behaviorism, 1981, 9, 79-94.
- Self-control in pigeons under the Mischel paradigm. Journal of the Experimental Analysis of Behavior, 1981, 35, 3-21 (**Grosch, J.** & Neuringer, A.).

- Social learning by following: An analysis. Journal of the Experimental Analysis of Behavior, 1977, 27, 127-135 (**Bullock, D.** & Neuringer, A.).
- Autoshaping as a function of prior food presentations. Journal of the Experimental Analysis of Behavior, 1976, 26, 463-469 (**Downing, K.** & Neuringer, A.).
- Group behavior of rats under schedules of reinforcement. Journal of the Experimental Analysis of Behavior, 1974, 22, 311-321 (**Grott, R.** & Neuringer, A.).
- Learning by following a food source. Science, 1974, 184, 1005-1008 (Neuringer, A. & Neuringer, M.).
- Pigeons respond to produce periods in which rewards are independent of responding. Journal of the Experimental Analysis of Behavior, 1973, 19, 39-54.
- Extinction in the presence of free food. Psychonomic Science, 1972, 26, 267-269 (**Enkema, S., Slavin, R., Spaeth, C.** & Neuringer, A.).
- Responding under discrete-trial fixed-interval schedules of reinforcement. Journal of the Experimental Analysis of Behavior, 1972, 18, 187-199 (Schneider, B. & Neuringer, A.).
- Magnitude estimation of loudness with a minimum 24-h interstimulus interval. Psychonomic Science, 1972, 27, 243-245 (Schneider, B., Neuringer, A. & Ramsey, D.).
- Many responses per food reward with free food present. Science, 1970, 169, 503-504.
- Superstitious key-pecking after three peck-produced reinforcements. Journal of the Experimental Analysis of Behavior, 1970, 13, 127-134.
- Operant conditioning in the Mongolian gerbil. Psychonomic Science, 1969, 16, 255-256 (**Campbell, N., Straney, D.** & Neuringer, A.).
- Animals respond for food in the presence of free food. Science, 1969, 166, 399-401.
- Delayed reinforcement versus reinforcement after a fixed interval. Journal of the Experimental Analysis of Behavior, 1969, 12, 375-383.
- Separating the effects of interreinforcement time and number of interreinforcement responses. Journal of the Experimental Analysis of Behavior, 1968, 11, 661-667 (Neuringer, A. & Schneider, B.).
- Varying reinforcement frequency on a percentage-reinforcement schedule. Psychonomic Science, 1968, 11, 163-164.
- Control of responding by a percentage-reinforcement schedule. Psychonomic Science, 1967, 8, 25-26 (Chung, S. H. & Neuringer, A.).

Effects of reinforcement magnitude on choice and rate of responding. Journal of the Experimental Analysis of Behavior, 1967, 10, 417-424.

Quasi-reinforcement: Control of responding by a percentage-reinforcement schedule. Journal of the Experimental Analysis of Behavior, 1967, 10, 45-54 (Neuringer, A. & Chung, S. H.).

Invited Addresses and Colloquia:

Association for Behavior Analysis, Toronto, May 27, 2002. Behavioral Approaches to "after Sept 11th". Group presentation.

Society for Quantitative Analysis of Behavior Invited Tutorial, Toronto, May 25, 2002: Invited Tutorial -- Variability of the Operant.

Texas Association for Behavior Analysis, Houston, Texas, March 2, 2002. "Reinforced Variability and the Voluntary Operant."

American Psychological Association, San Francisco, August 24, 2001: Symposium -- Adapting to Changing World --- Variability of Stimuli, Responses, and Strategies.

Society for the Quantitative Analysis of Behavior, New Orleans, May 25, 2001. "Operant variability."

Association for Behavior Analysis, New Orleans, May 26, 2001. Symposium: How Operant Variability Contributes to the Conditioning of Operants: Basic Research, Applied Research, and Practical Application.

Behavioral Toxicology Society, Research Triangle Park, North Carolina, May 5, 2001. Premedica Lecture: "The Variable Nature of the Operant and the Operant Nature of Variability."

International Conference on Comparative Cognition, Melbourne Beach, Florida, March, 2001: "Operant Variability."

Association for Behavior Analysis, Washington, D.C. , May, 2000, Panel Discussion: "Millenia Ending/Beginning: Self-Experimentation 15 Years after Allen Neuringer's 'Melioration and Self-Experimentation.'"

West Virginia University Conference on Behavior: Theory and Philosophy, Morgantown, WV, April, 2000. "Education."

Association for Behavior Analysis, Invited Address, Chicago, May 1999, "The Significance of Behavioral Variability."

California Association of Behavior Analysis, Invited Address, January 1999, San Francisco. "Behavioral Variability: An Overview Tutorial."

Lewis & Clark College, Psychology Department Colloquium, 1997, Portland, Or. "Variations on Variability."

University of Sao Paulo, Department of Psychology, Sao Paulo, Brazil, March, 1996,
"Short Course on Behavioral Variability"

University of Sao Paulo, Department of Psychology, Sao Paulo, Brazil, March, 1996,
"Self-Experimentation and self-control."

Northwest Association for Behavior Analysis, Invited Address, Eugene, Oregon,
October, 1995, "Behavioral Variability and the Detrimental Effects of Reward."

Northern California Association for Behavior Analysis, Invited Address, Oakland,
California, February, 1994, "Behavioral Variability and Behavior Analysis."

Association for Behavior Analysis, Plenary Invited Address, Chicago, Illinois, May, 1993,
"Behavioral Variability."

Third International Institute on Verbal Relations, Sao Paulo, Brazil, January, 1989,
"Variability and Voluntary Behavior."

American Psychological Association, Division 25 Invited Address, Atlanta, Georgia,
August, 1988. "Behavioral Variability: Chaotic Bases of Learning."

University of Kansas, Department of Human Development. Pro Seminar Lecturer,
October, 1988, "Chaotic Bases of Operant Behavior."

Association for Behavior Analysis, Nashville, Tennessee, 1987, Invited Address, "Self-
Experimentation Revisited."

Association for Behavior Analysis, Nashville, Tennessee, May, 1987, Invited Address,
"Personal Paths to Peace."

Association for Behavior Analysis, Milwaukee, Wisconsin, 1986, Invited Address,
"Operant, Voluntary, and Free."

University of California, San Diego, June, 1985, "Randomness, operant behavior and
human freedom."

Oregon State University, Corvallis, Oregon, 1985 "Randomness and freedom."

Johns Hopkins University, Baltimore, Maryland, 1985, "Randomness in pigeons and
people."

Association for Behavior Analysis, Nashville, Tennessee, 1984, Invited Address, "Is
variability an operant?"

Conference on Future Directions in the Experimental Analysis of Behavior,
Morgantown, West Virginia, 1983, "Self-experimentation."

- Portland State University, Portland, Oregon, 1983, "Self-experimentation: Methodological concerns."
- Lewis & Clark College, Portland, Oregon, 1983, "Self-control and self experimentation."
- Association for Behavior Analysis, Milwaukee, Wisconsin, 1982, "Punishment: Why it works and why not." (Neuringer, A., Balaban, M. & Neiworth, J.)
- Association for Behavior Analysis, Milwaukee, Wisconsin, 1982, "Melioration."
- Linfield College, McMinnville, Oregon, 1982, "Self-experimentation."
- Association for Behavior Analysis, Milwaukee, Wisconsin, 1981, "Freedom: A definition, a demonstration, and a discussion of its implications for behaviorists."
- University of Nevada, Reno, 1980, "Self-experimentation and the future of psychology."
- Association for Behavior Analysis, Dearborn, Michigan, 1980, "Self-experimentation."
- Association for Behavior Analysis, Dearborn, Michigan, 1979, "Towards a science of self."
- St. Cloud State University Summer Institute in the Experimental Analysis of Behavior, St. Cloud, Minnesota, 1978, "The experimental analysis of complex animal behavior."
- Association for Behavior Analysis, Dearborn, Michigan, 1978, "Complex pigeon behavior: Imitation, self-control and music appreciation."
- Portland State University, Portland, Oregon, 1978, "Recent findings in the experimental analysis of behavior."
- University of California, San Diego, 1976, "Complex human processes in man and other beasts."
- Portland State University, Portland, Oregon, 1976, "Complex human processes in man and other beasts."
- Lewis and Clark College, Portland, Oregon, 1975, "Of people and beasts."
- Lewis and Clark College, Portland, Oregon, 1973, "Response-independent reinforcement."
- Oregon Zoological Society, Portland, Oregon, 1973, "Follow the feeder: How pigeons learn."
- University of California, San Diego, 1972, "Independency and the control of behavior."

Research Reports and Posters:

- Society for the Quantitative Analysis of Behavior, May 1999, Chicago, "Learning to Vary and Varying to Learn" (Poster with **Alicia Grunow**)
- Western Conference on Animal Learning and Behavior, January 1999, Winter Park, Colorado. "Functional Variability."
- American Psychological Association, August 1998, San Francisco, "Functional Variability: A Symposium." (with Robert Siegler, Pat Stokes, Armando Machado and Edison Manoel.)
- Society for Research on Child Development, April 1997, Washington, D.C. "Some Detrimental Effects of Extrinsic Reinforcers." (with **A. Donnelly**.)
- Society for the Quantitative Analysis of Behavior, May 1996, San Francisco, "Reaction time increases as a function of number of choices in pigeons: Hick's law supported." (Poster with **C. Vickrey** and M. Neuringer.)
- Society for the Quantitative Analysis of Behavior, May 1996, San Francisco, "The Aristotle model of operant behavior." (Poster with **J. Hopson**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Operant variations and repetitions under a mixed schedule of reinforcement." (Poster with **D. Burt**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Computer-based data acquisition, graphics, and analysis procedures for self-experimentation." (Poster with **J. Hopson**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Behavioral variability in old and young SHR and WKY rats." (Poster with **R. Burnette**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Social reinforcement of alcohol drinking in the rat." (Poster with **N. Watson**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Operant variability and the detrimental effects of rewards." (with **A. Jones**, & **Colin Cherot**.)
- Association for Behavior Analysis, San Francisco, May 1996, "Self-experimentation and self-control methods and issues."
- Winter Conference on Animal Learning, Winter Park, Colorado, January 1995. "Stimulus control and behavioral variability."
- Association for Behavior Analysis, Atlanta, May 1994, "Variability as a function of SHR vs. WKY strain, rearing conditions, and reinforcement contingencies." (with **R. L. Saldana** and M. H. L. Hunziker).
- Association for Behavior Analysis, Atlanta, May 1994, "Operant variability and choice."

- Winter Conference on Animal Learning, Winter Park, Colorado, January 1994. "Choice, Voluntary and Variable."
- Winter Conference on Animal Learning, Winter Park, Colorado, January 1993. "Behavior Variability."
- Winter Conference on Animal Learning, Winter Park, Colorado, January 1992. "Voluntary Action."
- Winter Conference on Animal Learning, Hyde Park Address, Winter Park, Colorado, January 1990. "Behavioral Variability."
- Psychonomic Society, Seattle, Washington, November, 1987, "Effects of ethanol injection on fixed vs. variable response patterns in rats" (with **Betsy McElroy**).
- Winter Conference on Animal Learning, Winter Park, Colorado, January, 1987, "Variability, Selection, and the Free Operant."
- Winter Conference on Animal Learning, Winter Park, Colorado, January, 1987, "Animal Consciousness."
- Winter Conference on Animal Learning, Winter Park, Colorado, January, 1986, "Variability and discrimination."
- Psychonomic Society, Boston, 1985, "Learning to respond randomly in pigeons" (with **Nathan Wilson**).
- Radical Behaviorist Retreat V, Lake Tahoe, Nevada, September, 1985, "Behavioral variability."
- Psychonomic Society, San Diego, 1983, "Information is better than rewards when pigeons and people learn sequences" (with **Steve Luck** and **Marianne Colgrove**).
- Society for Psychophysiological Research, 1983, "Cardiac and electrodermal responses to aversive and neutral feedback in a memory task" (with **Marie Balaban** and Dell Rhodes).
- Psychonomic Society, St. Louis, 1980, "Learning to emit random numbers."
- Western Psychological Association, San Diego, 1979, "Self-control in pigeons" (with **Jim Grosch**).
- Western Psychological Association, Seattle, 1977, "Delay of gratification" (with **Jim Grosch**).
- Psychonomic Society, St. Louis, 1976, "Delay of gratification in pigeons."
- Western Psychological Association, Los Angeles, 1975, "Autoshaping of the pigeon's keypeck" (with **Steve Buck**).

Western Psychological Association, Los Angeles, 1975, "Pigeons discriminate Bach from Stravinsky" (with **Debra Porter**).

Western Psychological Association, Los Angeles, 1975, "Rats prefer unsignalled over signalled reinforcement" (with **Jon Schull** and **Ann Fullerton**).

Western Psychological Association, San Francisco, 1974, "Interaction of schedule-induced polydipsia and escape" (with **John Penney**).

Western Psychological Association, Anaheim, 1973, "Self-control" (with **Laura Leviton**).

American Psychological Association, Montreal, 1973, "Towards a science of self."

Western Psychological Association, Portland, Oregon, 1972, "If you're not part of the solution, you're part of the problem."

Western Psychological Association, Portland, Oregon, 1972, "Behavior of groups under schedules of reinforcement" (with **Robert Grott**).

Western Psychological Association, Portland, Oregon, 1972, "Response-independent rewards enhance responding for food" (with **Pat Couets** and **Ned Conner**).

Oregon Psychological Association, Portland, Oregon, 1971, "Experiments in education."