VITA

James L. McClelland

Lucie Stern Professor in the Social Sciences

Director, Center for Mind, Brain and Computation

Stanford University, Stanford, CA 94305

mcclelland@stanford.edu; web.stanford.edu/~jlmcc

(650) 736-4278/(650) 725-5699(fax)

Birth date: December 1, 1948. Citizenship: USA

Degrees

B. A. in Psychology, Columbia University, June, 1970
Ph. D. in Cognitive Psychology, University of Pennsylvania, June, 1975

Positions Held

Assistant Professor, Department of Psychology, UCSD, 1974-1980
Associate Professor, Department of Psychology, UCSD, 1980-1984
Visiting Scientist, Psychology and Cognitive Science, MIT, 1982-1984
Visiting Scholar, Department of Psychology, Harvard University, 1982-1984
Associate Professor, Department of Psychology, Carnegie-Mellon University, 1984-1985
Professor, Department of Psychology, Carnegie Mellon University, 1985-2006
Joint Appointment in Computer Science, Carnegie Mellon University, 1987-2006
Acting Head, Department of Psychology, Carnegie Mellon University, 1989-90
Co-Director, Center for the Neural Basis of Cognition, Carnegie Mellon University, 1994-2006
Adjunct Professor, Dept. of Neuroscience, University of Pittsburgh, 1995-2006
Joint Appointment in Biological Sciences, Carnegie Mellon, 2000-2006
University Professor, Carnegie Mellon, 2001-2006
Walter Van Dyke Bingham Professorship in Psychology and Cognitive Neuroscience, 2002
Professor, Department of Psychology, Stanford University, 2006-
Founder and Director, Center for Mind, Brain, and Computation, Stanford Universirty, 2006-2018
Adjunct Professor, University of Manchester, Manchester, UK, 2007-
Chair, Department of Psychology, Stanford University, 2009-2012
Lucie Stern Professor in the Social Sciences, Stanford University, 2009-
Co-Director, Center for Mind, Brain, Computation, and Technology, Stanford University, 2018-

Honors and Major Service Positions

Phi Beta Kappa, Columbia University, 1970
William W. Cumming Prize in Psychology, Columbia University, 1970
National Science Foundation Fellow, 1970-1973
Research Scientist Career Development Award, NIMH, 1981-1986; 1987-1992
Research Scientist Award, NIMH, 1992-1997
Association Lecturer, International Association for Attention and Performance, 1986
President, Cognitive Science Society, 1991-1992
Member, Society of Experimental Psychologists, 1990
Howard Crosby Warren Medal, Society of Experimental Psychologists, 1993
Fellow, American Association for the Advancement of Science, 1993
Fellow, Association for Psychological Science, 1996
Distinguished Scientific Contribution Award, American Psychological Association, 1996
Associate, Neurosciences Research Program, 1997-2003
Member, National Advisory Mental Health Council, 1999-2003
Bartlett Lecturer, Experimental Psychology Society (UK), 2001
Member, National Academy of Sciences, 2001; Chair, Section 52 (Psychology), 2004-2007
Grawemeyer Award in Psychology, 2001
IEEE Neural Networks Pioneer Award, 2002
Doctor Honoris Causa, New Bulgarian University, 2003
William James Fellow Award, Association for Psychological Science, 2003-2004
Mind-Brain Prize, University of Turin, 2005
Doctor Honoris Causa, Free University of Brussels, 2005
Member, American Philosophical Society, 2008
Frijda Lecturer, University of Amsterdam, 2008.
David E. Rumelhart Prize, Cognitive Science Society, 2010
President, Federation of Associations in the Behavioral and Brain Sciences, 2010-2011
President, Section J (Psychology), American Association for the Advancement of Science, 2014-2015
NAS Atkinson Prize in Psychological and Cognitive Sciences (Inaugural Recipient), 2014
Heineken Prize in Cognitive Science, 2014
Corresponding Fellow, British Academy, 2017

Memberships in Professional Societies

Psychonomics Society
Cognitive Science Society
Cognitive Neuroscience Society
International Association for the Study of Attention and Performance
Society for Neuroscience
American Association for the Advancement of Science
International Neural Network Society

American Psychological Association
Association for Psychological Science
Society of Experimental Psychologists
National Academy of Sciences
American Philosophical Society

Editorial Board Memberships

Perception & Psychophysics, 1977-1982
Journal of Verbal Learning and Verbal Behavior, 1980-1984
Cognitive Science, 1983- (Senior Editor, 1988-1991)
Journal of Experimental Psychology: General, 1984-1989
Cognitive Neuropsychology, 1983-1992
Cognitive Psychology, 1984-1994
Language & Cognitive Processes, 1988-1991
Neural Computation, 1989-2000 (Associate Editor, 1997-2000)
Psychological Review, 1994-1996
Hippocampus, 1994-2002 (Associate Editor, 1996-2002)
Trends in Cognitive Sciences, 1999-
Neurocomputing, 1999- (Associate Editor, 1999-)
Cognitive Brain Research, 2002-
Proceedings of the National Academy of Sciences, 2003-2006

Review Panel Appointments

NIMH Review Panel, Cognition, Emotion and Personality, 1983-1987
NIMH Review Panel, Cognitive Functional Neuroscience, 1995-1998
Chair, CSR Review Panel, IFCN-7, 1998-1999

Other Professional Activities (Selected)

Participant, Conference on Advanced Computing for Psychology, Federation of Behavioral, Psychological, and Cognitive Sciences, 1984.

Member, National Research Council Committee on Basic Research in the Behavioral and Social Sciences, Information and Cognitive Sciences Working Group, 1985.

Member, Memory Working Group, an interdisciplinary research group supported by the Sloan Foundation, 1985-1987.

Organizer, with B. Adelson, NSF Workshop on Connectionism and Cognitive Science, Feb. 1986.

Chair, CMU Advisory Committee on Cognitive Science, and PI, Sloan Grant for Cognitive Science, 1985-87.

Member, Behavioral Sciences Research Branch Assessment Panel, NIMH, 1987-1988.

Member, Governing Board, International Association for the Study of Attention and Performance, 1986-1994.

Participant, AIDS Workshop: Neuropsychological Assessment Approaches, National Institute of Mental Health, April 10-11, 1989.

Member, Psychology Electorate Nominating Committee of AAAS, 1997-2000

Member, McDonnell/Sackler Human Brain Development Project, Panel on Development and Language, 1999-2000.

Council Delegate from the Section on Psychology, AAAS, 2000-2003

Chair, Rumelhart Prize Selection Committee, 2000-2007

General Chair, 7th International Conference on Development & Learning, Asilomar, CA, Aug. 9-13, 2008

Member, Scientific Advisory Board, RIKEN Neuroscience Institute, 2004-2008

Member, Scientific Advisory Board, Gatsby Computational Neuroscience Unit, 2003-2008

Member, External Advisory Board, Computational Cognitive & Systems Neuroscience Training Program, Washington University, St. Louis, 2007-

Member, Scientific Advisory Board, NSF Temporal Dynamics of Learning Center, 2007-2016; (Chair, 07-12)

Member, Board of Trustees, Center for Advanced Study in the Behavioral Sciences, 2006-2012

Member, External Advisory Board, Basque Center for Brain and Language, San Sebastian, Spain, 2010-

External Member, Strategic Planning Committee, Psychonomic Society, 2012

Chair, NAS Atkinson Prize Selection Committee, 2015-2016

Organizer, 15th Neural Computation and Psychology Workshop, Philadelphia, PA. August 8-9, 2016

Member, NRC Army Research Laboratory Review Panel on Information Science, Aberdeen, MD, June, 2017

AAAS Council Member, Section J (Psychology), AAAS, 2019-2021.

Chair, External Peer Review Panel, CIFAR *Learning in Machines and Brains* program renewal review panel. Montreal, Canada, December, 2019.

Grants and Contracts

- Levels of Processing in Reading. NSF Grant BNS76-14830, November 1, 1976 - October 31, 1979. Total award: $96,000.00.

- Information Processing and Reading in the Context of the Cascade Model. BNS79-24062, February 1, 1980 - January 31, 1984. Total award: $120,000.00.

- Interactive Activation Models of Speech Perception. (with Jeff Elman). Office of Naval Research, March 1, 1982 - September 31, 1984. Total award: $300,000.00.

- Interactive Activation Models of Perception and Cognition. (with Jeff Elman). Office of Naval Research, October 1, 1984 - September 31, 1987. Total award: $450,000.00.

- Learning in Massively Parallel Networks. (with Geoff Hinton). Office of Naval Research, January 1986- December 1987. Total award: $395,000.00.

- An advanced scientific computer for simulating massively parallel models of higher-level cognitive processes. Office of Naval Research (DoD-University Research Instrumentation Program), July 1, 1986 - June 30, 1987, $281,965.00. And the National Science Foundation, August 15, 1986 - August 15, 1987, $196,698.00.

- Cognition, learning and memory: A Parallel distributed processing approach. National Science Foundation, BNS-8812048, August 1, 1988- January 31, 1991, $105,000.00.

- A Mini-Super Computer for Modeling Normal & Disordered Cognition. National Science Foundation, DIR-9102196, July 15, 1991 - December 31, 1993, $262,302.00.

- Toward a Model of Normal and Disordered Cognition. National Institute of Mental Health. Program Project. Sept. 30, 1991 - Aug. 31, 1996, $2,267,267.00; June 1, 1997 - May 31, 2002, $3,070,925.

- Complementary Learning Systems: Hippocampus and Neocortex. Part of a multinational project funded by the Human Frontiers Science Program. September 1, 1992 - August 31, 1995, $116,575.00.

- Tracking the Human Brain. National Science Foundation. July 1, 1997 - June 30, 2000, $1,738,246.

- Intervention Strategies that Promote Learning: Their Basis in Enhancing Literacy. National Science Foundation. October 1, 1997 - September 30, 2000, $980,654.

- Consortium: Research Computing Facility for the CMU-Pitt Center for the Neural Basis of Cognition. National Science Foundation. July 1, 1996 - June 30, 1999, $214,035.

- Consortium: Research Computing Resource for the CMU/Pitt Center for the Neural Basis of Cognition. National Science Foundation. July 1, 1999 - June 30, 2002, $314,779.

- Graduate Education in the Neural Basis of Cognition: An Interdisciplinary Program. National Institute of Mental Health. August 22, 2000 - July 31, 2005, $156,008.

- Toward a Neurobiologically Constrained Framework for Modeling Human Cognition. National Institute of Mental Health. July 1, 2002 - June 31, 2007, $9,733,932.

- Dynamic Decision Making in Complex Task Environments: Principles and Neural Mechanisms. Air Force Office of Scientific Research. MURI Program. July 1, 2007 – July 1, 2012, $7,290,000.

- Emergent Functions of Neural Systems. NSF IGERT Training Grant, submitted Oct 5, 2007. Recommended for Funding. August 1, 2008 – July 31, 2016. $3,200,000.

- Fostering reliance on a visuospatial representation to enhance high-school student's success in pre-calculus trigonometry. Institute for Educational Sciences, July 1, 2015 – June 30, 2019. $1,543,138.

- Cognitive neuroscience research on numerical, mathematical, and spatial cognition. Stanford Neurosciences Institute Seed Grant Program, Sept. 1, 2015-Aug. 21, 2017, $200,000.

- STELLAR: Super-Turing Evolving Lifelong Learning Architectures. Lifelong Learning Machines Program, Defence Advance Research Projects Agency, awarded to HRL Laboratories (P. Pilly, PI.; J. McClelland Stanford Subcontract PI.). Apri1 1, 2018 – March 31, 2020. Subaward amount: $200,000.

- NeuroTech: Bringing Technology to Neuroscience. NSF National Research Training Grant. (E. J. Chichilnisky, PI; J. McClelland, Co-PI). September 1, 2018-August 31, 2023. $3,000,000.

Ph.D. Thesis

- Preliminary letter identification in the perception of words and nonwords. University of Pennsylvania, 1975.

Encyclopedia Editorship

- McClelland, J. L. (2001). Section Editor (with R. Thompson) for Cognitive and Behavioral Neuroscience. In N. J. Smelser & P. B. Baltes (Eds.), *The International Encyclopedia of Social and Behavioral Sciences.* Oxford: Elsevier Publishing.

Publications

- Johnston, J. C., & McClelland, J. L. (1973). Visual factors in word perception. *Perception and Psychophysics, 14*, 365-370.

- Johnston, J. C., & McClelland, J. L. (1974). Perception of letters in words: Seek not and ye shall find. *Science, 184*, 1192-1194.

- Jackson, M. D., & McClelland, J. L. (1975). Sensory and cognitive determinants of reading speed. *Journal of Verbal Learning and Verbal Behavior, 14*, 565-574.

- McClelland, J. L. (1976). Preliminary letter identification in the perception of words and nonwords. *Journal of Experimental Psychology: Human Perception and Performance, 2*, 80-91.

- McClelland, J. L. (1977). Letter and configuration information in word identification. *Journal of Verbal Learning and Verbal Behavior, 16*, 137-150.

- McClelland, J. L., & Johnston, J. C. (1977). The role of familiar units in perception of words and nonwords. *Perception and Psychophysics, 22*, 249-261.

- McClelland, J. L. (1978). Cognitive psychology: The way we were. *Contemporary Psychology, 23*, 860-861.

- McClelland, J. L. (1978). Perception and masking of wholes and parts. *Journal of Experimental Psychology: Human Perception and Performance, 4*, 210-223.

- McClelland, J. L. (1978). The phenomenology of perception. *Science, 201*, 899-900.

- McClelland, J. L., & Jackson, M. D. (1978). Studying individual differences in reading. In A. M. Lesgold, J.W. Pellegrino, S.Fokkema, & R. Glaser (Eds.), *Cognitive psychology and instruction*. New York: Plenum.

- Jackson, M. D., & McClelland, J. L. (1979). Processing determinants of reading speed. *Journal of Experimental Psychology: General*, 108, 151-181.

- McClelland, J. L. (1979). On the time relations of mental processes: An examination of systems of processes in cascade. *Psychological Review, 86*, 287-330.

- McClelland, J. L., & Miller, J. O. (1979). Structural factors in figure perception. *Perception and Psychophysics, 26*, 221-229.

- Johnston, J. C., & McClelland, J. L. (1980). Experimental tests of a hierarchical model of word identification. *Journal of Verbal Learning and Verbal Behavior, 19*, 503-524.

- Larochelle, S., McClelland, J. L., & Rodriguez, E. (1980). Context and the allocation of resources in word recognition. Journal of Experimental Psychology: *Human Perception and Performance, 6*, 686-694.

- Goodman, G. O., McClelland, J. L., & Gibbs, R. W. (1981). The role of syntactic context in visual word recognition. *Memory and Cognition, 9*, 580-586.

- Jackson, M. D., & McClelland, J. L. (1981). Exploring the nature of a basic visual processing component of reading ability. In O. Tzeng and H. Singer (Eds.), *Perception of print: Reading research in experimental psychology*. Hillsdale, NJ: Erlbaum.

- McClelland, J. L., & O'Regan, J. K. (1981). Expectations increase the benefit derived from parafoveal visual information in reading words aloud. *Journal of Experimental Psychology: Human Perception and Performance, 7*, 634-644.

- McClelland, J. L., & O'Regan, J. K. (1981). On visual and contextual factors in reading: A reply to Rayner and Slowiaczek. *Journal of Experimental Psychology: Human Perception and Performance, 7*, 652-657.

- McClelland, J. L., & Rumelhart, D. E. (1981). An interactive activation model of context effects in letter perception, Part I: An account of basic findings. *Psychological Review, 88*, 375-407. **A Social Science Citation Classic.**

- Rumelhart, D. E., & J. L. McClelland. (1981). Interactive processing through spreading activation. In C. Perfetti & A. Lesgold (Eds.), *Interactive processes in reading*. Hillsdale NJ: Erlbaum.

- Rumelhart, D. E., & McClelland, J. L. (1982). An interactive activation model of context effects in letter perception, Part II: The contextual enhancement effect and some tests and extensions of the model. *Psychological Review, 89*, 60-94.

- Elman, J. L., & McClelland, J. L. (1984). Speech perception as a cognitive process: The interactive activation model. In Norman Lass (Ed.), *Speech and Language, Vol. 10*. New York: Academic Press.

- McClelland, J. L. (1985). Distributed models of cognitive processes. In D. Olton, E. Gamzu, & S. Corkin (Eds.), *Memory Dysfunctions: An integration of animal and human research*. New York: New York Academy of Sciences.

- McClelland, J. L. (1985). Putting knowledge in its place: A scheme for programming parallel processing structures on the fly. *Cognitive Science, 9*, 113-146.

- McClelland, J. L., & Rumelhart, D. E. (1985). Distributed memory and the representation of general and specific information. *Journal of Experimental Psychology: General, 114,* 159-188.

- Rumelhart, D. E., & McClelland, J. L. (1985). Levels indeed! A response to Broadbent. *Journal of Experimental Psychology: General, 114*, 193-197.

- McClelland, J. L., Feldman, J., Adelson, B., Bower, G., & McDermott, D. (1986). Connectionist models and cognitive science: Goals, directions, and implications. *Report to the National Science Foundation.*

- Elman, J. L., & McClelland, J. L. (1986). An architecture for parallel processing in speech recognition: The TRACE model. In M. R. Schroeder (Ed.), *Speech recognition.* Basel: S. Krager AG.

- Elman, J. L., & McClelland, J. L. (1986). Exploiting the lawful variability in the speech wave. In J. S. Perkell and D. H. Klatt (Eds.), *Invariance and variability of speech processes.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

- McClelland, J. L. & Elman, J. L. (1986). The TRACE model of speech perception. *Cognitive Psychology, 18*, 1-86.

- McClelland, J. L. & Mozer, M. C. (1986). Perceptual interactions in two-word displays: Familiarity and similarity effects. *Journal of Experimental Psychology: Human Perception and Performance, 12*, 18-35.

- Rumelhart, D. E., McClelland, J. L., and the PDP research group. (1986). *Parallel distributed processing: Explorations in the microstructure of cognition. Volume I.* Cambridge, MA: MIT Press.

- McClelland, J. L., Rumelhart, D. E., and the PDP research group. (1986). *Parallel distributed processing: Explorations in the microstructure of cognition. Volume II.* Cambridge, MA: MIT Press.

- Chapters in above volumes:

  McClelland, J. L., Rumelhart, D. E., & Hinton, G. E. The appeal of parallel distributed processing. Vol I, Ch 1.

  Rumelhart, D. E., Hinton, G. E., & McClelland, J. L. A framework for parallel distributed processing. Vol I, Ch 2.

  Hinton, G. E., McClelland, J. L., & Rumelhart, D. E. Distributed representations. Vol I, Ch 3.

  Rumelhart, D. E., & McClelland, J. L. Discussion and preview. Vol I, Ch 4.

  McClelland, J. L. Resource requirements of fixed and programmable nets. Vol I, Ch 12.

  Rumelhart, D. E., Smolensky, P., McClelland, J. L., & Hinton, G. E. Parallel distributed processing models of schemata and sequential thought processes. Vol II, Ch 14.

  McClelland, J. L., & Elman, J. E. Interactive processes in speech perception: The TRACE model. Vol II, Ch 15. [Adapted version of McClelland & Elman (1986) *Cognitive Science, 18*, 1-86.]

  McClelland, J. L. The programmable blackboard model of reading. Vol II, Ch 16.

  McClelland, J. L., & Rumelhart, D. E. A distributed model of memory. Vol II, Ch 17. [Adapted from McClelland and Rumelhart (1985), *Journal of Experimental Psychology: General, 114*, 159-188.]

  Rumelhart, D. E., & McClelland, J. L. On learning the past tenses of English verbs. Vol II, Ch 18.

  McClelland, J. L., & Kawamoto, A. H. Mechanisms of sentence processing: Assigning roles to constituents of sentences. Vol II, Ch 19.

  McClelland, J. L., & Rumelhart, D. E. Distributed memory and amnesia. Vol II, Ch 25.

- McClelland, J. L. (1987). The case for interactionism in language processing. In M. Coltheart (Ed.), *Attention and performance XII: The psychology of reading* (pp. 1-36). London: Erlbaum.

- Rumelhart, D. E., & McClelland, J. L. (1987). Learning the past tenses of english verbs: Implicit rules or parallel distributed processing. In B. MacWhinney (Ed.), *Mechanisms of Language Acquisition* (pp. 194-248). Mahwah, NJ: Erlbaum.

- Taraban, R., & McClelland, J. L. (1987). Conspiracy effects in word pronunciation. *Journal of Memory and Language, 26*, 608-631.

- Elman, J. L., & McClelland, J. L. (1988). Cognitive penetration of the mechanisms of perception: Compensation for coarticulation of lexically restored phonemes. *Journal of Memory and Language, 27*, 143-165.

- Hinton, G. E., & McClelland, J. L. (1988). Learning representations by recirculation. In D. Z. Anderson, (Ed.), *Neural information processing systems* (pp. 358-366). New York: American Institute of Physics.

- McClelland, J. L. (1988). Connectionist models and psychological evidence. *Journal of Memory and Language, 27*, 107-123.

- McClelland, J. L., & Rumelhart, D. E. (1988). A simulation-based tutorial system for exploring parallel distributed processing. *Behavior Research Methods, Instruments & Computers, 2*, 263-275.

- McClelland, J. L., & Rumelhart, D. E. (1988). *Explorations in parallel distributed processing: A handbook of models, programs, and exercises.* Boston, MA: MIT Press. Macintosh edition, 1990.

- Taraban, R., & McClelland, J. L. (1988). Constituent attachment and thematic role assignment in sentence processing: Influences of content-based expectations. *Journal of Memory and Language, 27*, 597-632.

- Cleeremans, A., Servan-Schreiber, D., & McClelland, J. L. (1989). Finite state automata and simple recurrent networks. *Neural Computation, 1 (3)*, 372-381.

- McClelland, J. L. (1989). Parallel distributed processing and role assignment constraints. In Y. Wilks (Ed.), *Theoretical issues in natural language processing* (pp. 78-85). Hillsdale, NJ: Lawrence Erlbaum Associates.

- McClelland, J. L. (1989). Parallel distributed processing: Implications for cognition and development. In Morris, R. (Ed.), *Parallel distributed processing: Implications for psychology and neurobiology.* Oxford University Press.

- McClelland, J. L., St. John. M., and Taraban, R. (1989). Sentence comprehension: A parallel distributed processing approach. *Language and Cognitive Processes, 4*, SI 287-335.

- Patterson, K., Seidenberg, M. S., & McClelland, J. L. (1989). Connections and disconnections: Acquired dyslexia in a computational model of reading processes. In Morris, R. (Ed.), *Parallel distributed processing: Implications for psychology and neurobiology.* New York: Oxford University Press.

- Seidenberg, M. S., & McClelland, J. L. (1989). A distributed developmental model of word recognition and naming. *Psychological Review, 96(4)*, 523-568.

- Seidenberg, M. S., & McClelland, J. L. (1989). Visual word recognition and pronunciation: A computational model of acquisition, skilled performance, and dyslexia. In Galaburda, A. (Ed). *From Neurons to Reading* (pp. 255-305). Cambridge, MA: MIT Press.

- Servan-Schreiber, D., Cleeremans, A., & McClelland, J. L. (1989). Encoding sequential structure in simple recurrent networks. In D.Touretzky, (Ed.), *Advances in neural information processing systems I.* New York: Morgan Kaufman, 643-652.

- Ward, R., & McClelland, J. L. (1989). Conjunctive search for one and two identical targets. *Journal of Experimental Psychology: Human Perception and Performance, 15*, 664-672.

- Butters, N., Grant, I., Haxby, J., Judd, L. L., Martin, A., McClelland, J., Pequegnat, W., Schacter, D., & Stover, E. (1990). Assessment of aids-related cognitive changes: Recommendations of the NIMH workshop on neuropsychological assessment approaches. *Journal of Clinical and Experimental Neuropsychology, 12*, 963-978.

- Cohen, J. D., Dunbar, K., & McClelland, J. L. (1990). On the control of automatic processes: A parallel distributed processing model of the stroop effect. *Psychological Review, 97*, 332-361.

- McClelland, J. L., Cleeremans, A., and Servan-Schreiber, D. (1990). Parallel distributed processing: Bridging the gap between human and machine intelligence. *Journal of the Japanese Society for Artificial Intelligence, 5*, 2-14.

- St. John, M. F., & McClelland, J. L. (1990). Learning and applying contextual constraints in sentence comprehension. *Artificial Intelligence, 46*, 217-257.

- Seidenberg, M. S., & McClelland, J. L. (1990). More words but still no lexicon. Reply to Besner et al. (1990). *Psychological Review, 97*, 447-452.

- Taraban, R. & McClelland, J. L. (1990). Parsing and Comprehension. A multiple constraint view. In Rayner, K., Balota, M., & Flores D'Arcais, I. *Comprehension processes in reading.* Hillsdale, NJ: Erlbaum.

- Cleeremans, A., & McClelland, J. L. (1991). Learning the structure of event sequences. *Journal of Experimental Psychology: General, 120*, 235-253.

- Farah, M. J., & McClelland, J. L. (1991). A computational model of semantic memory impairment: Modality-specificity and emergent category-specificity. *Journal of Experimental Psychology: General, 120,* 339-357.

- McClelland, J. L. (1991). Stochastic interactive processes and the effect of context on perception. *Cognitive Psychology, 23*, 1-44.

- McClelland, J. L., & Jenkins, E. (1991). Nature, nurture, and connections: Implications of connectionist models for cognitive development. In K. Van Lehn (Ed.), *Architectures for Intelligence*, pp. 41-73. Hillsdale, NJ: Erlbaum.

- Servan-Schreiber, D., Cleeremans, A., & McClelland, J. L. (1991). Graded state machines: The representation of temporal contingencies in simple recurrent networks. *Machine Learning, 7*, 161-193. [A version of this also appeared in Y. Chauvin, & D. E. Rumelhart (Eds.), Back-propagation: *Theory, architectures, and applications.* Hillsdale, NJ: Erlbaum.]

- Cohen, J. D., Servan-Schreiber, D., & McClelland, J. L. (1992). A parallel distributed processing approach to automaticity. *American Journal of Psychology, 105,* 239-269.

- Farah, M. J., & McClelland, J. L. (1992). Neural network models and cognitive neuropsychology. *Psychiatric Annals, 22*, 148-153.

- McClelland, J. L. (1992). Can connectionist models discover the structure of natural language? In Morelli, R., Brown, W. M., Anselmi, D., Haberlandt, K., Lloyd, D. (Eds.) *Minds, Brains & Computers,* pp. 168-189. Ablex Publishing: Norwood, NJ.

- Nystrom, L. E., & McClelland, J. L. (1992). Trace synthesis in cued recall. *Journal of Memory and Language, 31,* 591-614.

- Servan-Schreiber, D., Cohen, J. D., & McClelland, J. L. (1992). A parallel distributed model of the mechanisms of processing in the Eriksen response-competition task: Relation to event-related potential studies. *Psychophysiology* (Suppl). *29*, 6.

- Hoeffner, J. H., & McClelland, J. L. (1993). Can a perceptual processing deficit explain the impairment of inflectional morphology in developmental dysphasia? A computational investigation. In *The Proceedings of the Twenty-fifth Annual Child Language Research Forum,* pp. 38-49. Stanford, CA.

- McClelland, J. L. (1993). Toward a theory of information processing in graded, random, interactive networks. In D. E. Meyer and S. Kornblum (Eds.), *Attention & Performance XIV: Synergies in experimental psychology, artificial intelligence and cognitive neuroscience*, pp. 655-688. Cambridge, MA: MIT Press.

- McClelland, J. L., & Plaut, D. C. (1993). Computational approaches to cognition: Top-down approaches. *Current Opinion in Neurobiology, 3*, 209-216.

- Movellan, J. R., & McClelland, J. L. (1993). Learning continuous probability distributions with symmetric diffusion networks. *Cognitive Science, 17*, 463-496.

- Plaut, D. C., & McClelland, J. L. (1993). Generalization with componential attractors: Word and nonword reading in an attractor network. In *Proceedings of the 15th Annual Conference of the Cognitive Science Society*, pp. 824-829. Hillsdale, NJ: Erlbaum.

- McClelland, J. L. (1994). Learning the general but not the specific. *Current Biology, 4*, 357-358.

- McClelland, J. L. (1994). The interaction of nature and nurture in development: A parallel distributed processing perspective. In P. Bertelson, P. Eelen, & G. d'Ydewalle (Eds.), *International Perspectives on Psychological Science, Volume 1: Leading Themes*. United Kingdom: Erlbaum.

- McClelland, J. L. (1994). Comment: Neural networks and cognitive science: Motivations and applications. (Cheng, B. & Titterington, D. M. Neural Networks: A review from a statistical perspective.) *Statistical Science, 9*, 1, 2-54.

- McClelland, J. L. (1994). The organization of memory: A parallel distributed processing perspective. *Revue Neurologique (Paris), 150, 8-9,* 570-579.

- Movellan, J. R., & McClelland, J. L. (1994). Contrastive learning with graded random networks. In T. Petsche & M. Kearns (Eds.), *Computational Learning Theory and Natural Learning Systems, Vol. 2*. MIT Press: Cambridge, MA.

- O'Reilly, R. C., & McClelland, J. L. (1994). Hippocampal conjunctive encoding, storage, and recall: Avoiding a trade-off. *Hippocampus, 4*, 661-682.

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- McClelland, J. L. & Lambon Ralph, M. A. (2015). Cognitive Neuroscience. In: J. D. Wright (Ed.), *International Encyclopedia of the Social & Behavioral Sciences, 2nd edition, Vol 4.* pp. 95-102. Oxford: Elsevier.

- Noorbaloochi, S., Sharon, D. & McClelland, J. L. (2015). Payoff Information Biases a Fast Guess Process in Perceptual Decision Making under Deadline Pressure: Evidence from Behavior, Evoked Potentials, and Quantitative Model Comparison. *Journal of Neurscience, 35*(31), 10989-11011.

- Sadeghi, Z., Mcclelland, J. L., & Hoffman, P. (2015). You shall know an object by the company it keeps: An investigation of semantic representations derived from object co-occurrence in visual scenes. *Neuropsychologia, 76,* 52-61.

- Turner, B. M., Sederberg, P. B., & McClelland, J. L. (2015). Bayesian analysis of simulation-based models. *Journal of Mathematical Psychology.*

- Kumaran, D., Hassabis, D., & McClelland, J. L. (2016). What learning systems do intelligent agents need? Complementary learning systems theory updated. *Trends in Cognitive Sciences, 20*, 512-534. DOI: 10.1016/j.tics.2016.05.004.

- McClelland, J. L. (2016). Capturing gradience, continuous change, and quasi-regularity in sound, word, phrase, and meaning. In B. MacWhinney & W. O'Grady (Eds.), *The Handbook of Language Emergence*, Chaper 2, pp. 54-80. Hoboken, NJ: John Wiley & Sons.

- McClelland, J. L., Sadeghi, Z. & Saxe, A. M. (2016). A Critique of pure hierarchy: Uncovering cross-cutting structure in a natural dataset. *Neurocomputational Models of Cognitive Development and Processing*, pp. 51-68. World Scientific.

- Rabovsky, M., Hansen, S., & McClelland J. L. (2016). N400 amplitudes reflect change in a probabilistic representation of meaning: Evidence from a connectionist model. In Papafragou, A., Grodner, D., Mirman, D., & Trueswell, J.C. (Eds.) (2016). *Proceedings of the 38th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Scienc Society.

- Turner, B. M., Sederberg, P. B. & McClelland, J. L. (2016). Bayesian analysis of simulation-based models. *Journal of Mathematical Psychology, 72*, 191-199.

- Mickey, K. & McClelland, J. L. (2017). The unit circle as a grounded conceptual structure in pre-calculus trigonometry. In D. C. Geary, D. B. Berch, R. Ochsendorf and K. Mann Koepke (Eds.), *Acquisition of Complex Arithmetic Skills and Higher-Order Mathematics Concepts.* Elsevier/Academic Press.

- Turner, B. M., Gao, J., Koenig, S., Palfy, D., & McClelland, J. L. (2017). The dynamics of multimodal integration: The averaging diffusion model. *Psychonomic Bulletin & Review*, *24*, 1819-1843. https://doi.org/10.3758/s13423-017-1255-2.

- Kueffler, A., Kochenderfer, M. J., & McClelland, J. L., (2017). Geometric concept acquisition in a dueling deep Q-network. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. J. Davelaar (Eds*.), Proceedings of the 39th Annual Conference of the Cognitive Science Society*, pp. 2488-2493, Austin, TX: Cognitive Science Society.

- Lampinen, A., Hsu, S., & McClelland, J. L. (2017). Analogies emerge from learning dynamics in neural networks. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. J. Davelaar (Eds.), *Procedings of the 39th Annual Conference of the Cognitive Science Society*, pp. 2512-2517, Austin, TX: Cognitive Science Society.

- Kanayet, F. J., Mattarella-Micke, A., Kohler, P. J., Norcia, A. M., McCandliss, B. D., & McClelland, J. L. (2018). Distinct Representations of Magnitude and Spatial Position within Parietal Cortex during Number–Space Mapping. *Journal of Cognitive Neuroscience, 30*(2), 200-218.

- Hoffman, P., McClelland, J. L., Ralph, L., & Matthew, A. (2018). Concepts, control, and context: A connectionist account of normal and disordered semantic cognition. *Psychological Review, 125*(3), 293-328.

- Lampinen, A. K., & McClelland, J. L. (2018). Different presentations of a mathematical concept can support learning in complementary ways. *Journal of Educational Psychology, 110*(5), 664-682.

- Rabovsky, M., Hansen, S. S., & McClelland, J. L. (2018). Modelling the N400 brain potential as change in a probabilistic representation of meaning. *Nature Human Behaviour, 2*(9), 693-705.

- Chen, S., Zhou, Z., Fang, M., & McClelland, J. L. (2018). Can generic neural networks estimate numerosity like humans? In T.T. Rogers, M. Rau, X. Zhu, & C. W. Kalish (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society* (pp. 202-207). Austin, TX: Cognitive Science Society.

- Fang, M., Zhou, Z., Chen, S., & McClelland, J. L. (2018). Can a recurrent neural network learn to count things? In T.T. Rogers, M. Rau, X. Zhu, & C. W. Kalish (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society* (pp. 360-365). Austin, TX: Cognitive Science Society.

- Saxe, A. M., McClelland, J. L., & Ganguli, S. (2019). A mathematical theory of semantic development in deep neural networks. *Proceedings of the National Academy of Sciences, USA. 116(23)*, 11537-11546.

- Suri, G., Gross, J. J., & McClelland, J. L. (2019). Value-based decision making: An interactive activation perspective. *Psychological Review*, Online First, Sept. 16, 2019. doi/10.1037/rev0000164.

Selected Presentations at Scholarly Meetings

- McClelland, J. L., & Johnston, J. C. Unexpected structure in letter strings facilitates perception. Eastern Psychological Association, April, 1974.

- McClelland, J. L., & Jackson, M. D. Studying individual differences in reading. Nato International Conference on Cognitive Psychology and Instruction, Amsterdam, June, 1977.

- McClelland, J. L. On the time-relations of mental processes: Theoretical explorations of systems of processes in cascade.Psychonomic Society Meetings, November, 1978.

- Jackson, M. D., & McClelland, J. L. Components of reading ability. Invited Address, National Reading Conference, St. Petersburg, Fla., December, 1978.

- McClelland, J. L. Retrieving general and specific information from stored knowledge of specifics. Annual Meeting of the Cognitive Science Society, Berkeley, California, August, 1981.

- McClelland, J. L., & Rumelhart, D. E. An interactive activation model of perception of letters in words. Paper presented at symposium on Mathematical Models of Complex Processes, Annual Meeting of the Society for Mathematical Psychology, Santa Barbara, CA, August, 1981.

- McClelland, J. L. Interactive Activation Models of Perception and Cognition. Paper presented at a symposium on Activation Models at the Annual Meeting of the Society for Mathematical Psychology, Princeton, N. J., August, 1982.

- McClelland, J. L. Putting Knowledge in its Place: An extension of the interactive activation model to multiword displays. Invited Address, Annual Meeting of the Mathematical Psychology Association, Boulder, Colorado, August, 1983.

- Elman, J. E., & McClelland, J. L. Exploiting the lawful variability in the speech signal. Conference on Invariance and Variability in Speech Processes, Massachusetts Institute of Technology, October, 1983.

- McClelland, J. L. New approaches to human memory. Invited address, conference on Memory Dysfunctions, New York Academy of Sciences, June, 1984.

- McClelland, J. L., Chairman, The Biological Constraint. A Symposium presented at the Sixth annual meeting of the Cognitive Science Society, Boulder, Colorado, June, 1984.

- Rumelhart, D. E., & McClelland, J. L. Acquisition of past tense morphology in Parallel-Distributed Processing models. Carnegie Symposium on Cognition, May, 1985.

- McClelland, J. L. Steps toward a parallel-distributed processing model of sentence processing. Center for The Study of Language and Information, Stanford University, 1985.

- McClelland, J. L. How we use what we know in reading: An interactive activation approach. Association Lecture, Attention and Performance XII, Windsor Great Park, England, July, 1986.

- McClelland, J. L. Introduction and overview of connectionist models of cognitive processes. Invited workshop, Eighth Annual Meeting Cognitive Science Society, Amherst, MA, August, 1986.

- McClelland, J. L., Organizer, Symposium on Parallel Mechanisms in Cognitive Processes. Nineteenth Annual mathematical psychology meeting, Harvard University, August, 1986.

- McClelland, J. L., Organizer, Symposium on Connectionist models and psychological evidence, Psychonomics Society Meeting, New Orleans, LA, 1986.

- McClelland, J. L. Parallel distributed processing and role assignment constraints. Meeting on Theoretical Issues in Natural Language Understanding (TINLAP-III), Las Cruces, NM, January, 1987.

- McClelland, J. L. Developmental Implications of Connectionist Learning Models. Symposium on the Brain, University of Pittsburgh, May, 1987.

- McClelland, J. L., & Seidenberg, M. A PDP model of Reading and Learning to Read. Conference entitled From Neurons to Reading, Florence, Italy, June, 1987.

- McClelland, J. L., & Rumelhart, D. E. Parallel Distributed Processing: Implications for cognition and development. Symposium on Parallel Distributed Processing sponsored by the Experimental Psychology Society of Great Britain, Oxford, July 1, 1987.

- McClelland, J. L. Connectionist models of language processing.Symposium on Language in the Brain, Linguistics Summer Institute, Stanford, CA, July, 1987.

- McClelland, J. L. The basis of lawful behavior: Rules or connections? Invited Address, APA (Division 3), New York, August, 1987.

- McClelland, J. L. Parallel Distributed Processing: Implications for psychology and neuropsychology. Invited Address, Twenty-fifth annual meeting of the Academy of Aphasia, Phoenix, Arizona, October, 1987.

- McClelland, J. L. Parallel Distributed Processing: Implications for Cognitive Development. Carnegie Symposium on Cognition, May, 1988.

- Taraban, R. T., & McClelland, J. L. A parallel-distributed processing approach to sentence comprehension processes: Empirical and theoretical explorations. NIAS Conference on Reading Comprehension and Dyslexia, Waasenaar, Netherlands, June 1988.

- St. John, M. & McClelland, J. L. Learning and applying contextual constraints in sentence comprehension. Tenth annual meeting of the Cognitive Science Society, Montreal, Canada, August, 1988.

- McClelland, J. L., & Nystrom, L. Trace synthesis in memory: Blend errors in cued recall. Twenty-ninth annual meeting of the Psychonomics Society, Chicago, Illinois, November, 1988.

- Servan-Schreiber, D., Cleeremans, A., & McClelland, J. L. Learning sequential structure in simple recurrent networks. Second Annual Meeting on Neural Information processing systems, Denver, Colorado, November, 1988.

- McClelland, J. L. Connectionist models of psychological evidence. Invited address, Midwestern Psychological Association, May, 1989.

- McClelland, J. L. Connectionist models: Can they bridge the gap? Paper presented at the First Annual Meeting of the American Psychological Society, Washington, D.C., June, 1989.

- McClelland, J. L. Parallel Distributed Processing: Bridging the gap between human and machine intelligence. Invited Address, Second annual meeting of the Japanese Society for Artificial Intelligence, Tokyo, July, 1989.

- Rumelhart, D. E., & McClelland, J. L. Tutorial on Connectionist Models, 11th Annual Meeting of the Cognitive Science Society, Ann Arbor, August, 1989

- McClelland, J. L., Organizer and Chairman, Symposium on Connectionist models of language, 11th Annual Meeting of the Cognitive Science Society, Ann Arbor, August, 1989

- McClelland, J. L. Connections between levels of description of perception. International Joint Conference on Neural Networks, Washington, DC, January, 1990.

- McClelland, J. L. The GRAIN model of information processing. Attention and Performance XIV, Ann Arbor, July, 1990.

- Cleeremans, A., & McClelland, J. L. Learning the structure of event sequences. The 12th Annual Conference of the Cognitive Science Society, Chicago, IL, July, 1990.

- McClelland, J. L. The mechanisms of language and cognition: A parallel distributed processing approach. Nijmegen Lectures, Nijmegen, The Netherlands, December, 1991.

- McClelland, J. L. Parallel distributed processing and cognitive neuropsychology. International Neuropsychological Society 20th Annual Meeting, San Diego, CA, February, 1992.

- McClelland, J. L., Miller, K., McNaughton, B. L., & Farah, M. Roles for computational models in cognitive neuroscience. Symposium presented at the AAAS Annual Meeting, Chicago, IL, February, 1992.

- McClelland, J. L. Why do we have two memory systems? Insights from the successes and failures of connectionist models of learning and memory. The Hebb Synapse, Halifax, Nova Scotia, April, 1992.

- McClelland, J. L. Cognitive development: A parallel distributed processing approach. Keynote address at the XXVth International Congress of Psychology, Brussels, July, 1992.

- McClelland, J. L., McNaughton, B. L., O'Reilly, R., & Nadel, L. Complementary roles of hippocampus and neocortex in learning and memory. 22nd Annual Meeting Society for Neuroscience, Anaheim, CA, October, 1992.

- McClelland, J. L. Connectionist models of language comprehension. 124th Meeting of the Acoustical Society of America, New Orleans, LA, November, 1992.

- McClelland, J. L. The theory behind connectionist models: The role of processing architecture and training. Annual Meeting of the Psychonomic Society, St. Louis, MO, November, 1992.

- Plaut, D. C., McClelland, J. L., & Seidenberg, M. S. Reading exception words and pseudowords: Are two routes really necessary? Annual Meeting of the Psychonomic Society, St. Louis, MO, November, 1992.

- McClelland, J. L. Presidential Lecture to British Neuropsychology Society, England, March, 1993.

- McClelland, J. L. The Interaction of Nature and Nurture in Development: A Parallel Distributed Processing Perspective. The H. Paul Rockwood Memorial Lectureship, University of California, San Diego, May, 1993.

- McClelland, J. L. The Organization of Memory: A Parallel Distributed Processing Perspective. Charcot Conference, Paris, France, June, 1993.

- McClelland, J. L. Lectures on Connectionist Models of Cognition and Learning. Complex Systems Summer School, Santa Fe, New Mexico, June, 1993.

- McClelland, J. L. Lectures on Cognitive Development and on Memory. Connectionist Models Summer School, Boulder, Colorado, June, 1993.

- McClelland, J. L. Invited address at the 2nd Neural Computation and Psychology Workshop, University of Edinburgh, September, 1993.

- McClelland, J. L., McNaughton, B. L., & O'Reilly, R. C. Why Do We Have a Special Learning System in the Hippocampus? Annual Meeting of the Psychonomic Society, November, 1993.

- McClelland, J. L. The Promise of Functional Imaging. Annual Meeting of the Psychonomic Society, Washington, DC, November, 1993.

- Plaut, D. C., Behrmann, M., Patterson, K. E., & McClelland, J. L. Impaired Oral Reading in Surface Dyslexia: Detailed Comparison of a Patient and a Connectionist Model. Annual Meeting of the Psychonomic Society, November, 1993.

- Plaut, D. C., Seidenberg, M. S., McClelland, J. L., & McRae, K. Nonword Pronunciation and Models of Visual Word Recognition. Annual Meeting of the Psychonomic Society, November, 1993.

- McClelland, J. L. The Role of the Hippocampus in Learning and Memory. NIPS, December, 1993.

- McClelland, J. L. Connectionist Models and Mechanisms of Memory Distortion. Memory Distortion Conference. Harvard University, Cambridge, MA, May 1994.

- McClelland, J. L. Why There are Complementary Learning Systems in the Hippocampus and Neocortex: Insights from the Successes and Failures of Connectionist Models of Learning and Memory. 8th Annual Quad-L Lecture, Department of Psychology, University of New Mexico, Albuquerque, NM, November 1994.

- The PDP approach to learning and memory, Easter School on Computational Modeling in Psychology: Learning and Memory. King's College, Cambridge, England, March 1995.

- Complementary learning systems in hippocampus and neocortex. Memory and Brain, NYU Center for Neural Science Symposium, New York, NY May 1995.

- Why there are complementary learning systems in the brain: Insights from the successes and failures of connectionist models. Invited Address. 24th Annual Meeting of the International Neuropsychological Society Meeting, Chicago, IL, February, 1996.

- Parallel-distributed processing models of normal and disordered cognition. Plenary Symposium.   18th Annual Conference of the Cognitive Science Society, University of California, San Diego, LaJolla, CA, July, 1996.

- How connectionist models implement Baysean "Rational" inference and learning. Invited Address. Rational Models of Cognition Conference, University of Warwick, Coventry, UK, July 22-25, 1996.

- Why there are complementary learning systems in hippocampus and neocortex.   Annual Meeting of the Belgian Psychological Society, Brussels, Belgium, April 23-27, 1997.

- Why there are complementary learning systems in hippocampus and neocortex: Insights from the success and failures of connectionist models of learning and memory. Institute of Cognitive Neuroscience, University College London, May 6-11, 1997.

- Parallel Distributed Processing Models of Perception, Memory, Language and Thought. 105th Convention of the American Psychological Association, Chicago, IL, August 17, 1997.

- Neural dynamics from a parallel distributed perspective. Fifth Annual Dynamical Neuroscience Satellite Symposium, New Orleans, LA, October 24 & 25, 1997.

- How plasticity can prevent adaptation: Induction and remediation of perceptual consequences of early experience. 27th Annual Meeting of the Society for Neuroscience, New Orleans, LA, October 25-30, 1997.

- Braver, T. S., Cohen, J. D., & McClelland, J. L. (1997). An integrated computational model of dopamine function in reinforcement learning and working memory. *Society for Neuroscience Abstracts, 23*, 775.

- Patterson, K., Hodges, J. R., & McClelland, J. L. (1997). General versus specific information in disorders of semantic memory. 38th Annual Meeting of the Psychonomic Society, Inc., Philadelphia, PA, November 21- 23, 1997.

- A PDP Account of basic-level category effects and semantic dementia. 38th Annual Meeting of the Psychonomic Society, Inc., Philadelphia, PA, November 21-23, 1997.

- New twists on the role of the hippocampus in consolidation and learning in neocortex. Neural Information Processing Systems Workshop, Breckenridge, CO, December 4-7, 1997.

- Reopening the critical period: A Hebbian account of successes and failures in adult learning and memory. Sixty-fifth Meeting of the Neurosciences Research Program, San Diego, CA, March 15-18, 1998.

- Reopening the critical period: A Hebbian account of successes and failures in adult learning and memory. Invited symposium presentation. Cognitive Neuroscience Society 1998 Annual Meeting, San Francisco, CA, April 5-7, 1998.

- Reopening the critical period: A Hebbian account of interventions that induce change in language perception. Neural Modeling of Cognitive Disorders, College Park, MD, June 4-6, 1998.

- Revisiting the critical period: Interventions that enhance adaptation to non-native phonological contrasts in Japanese adults. 29th Carnegie Symposium on Cognition, Mechanisms of Cognitive Development: Behavioral and Neural Perspectives, Pittsburgh, PA, October 9-11, 1998.

- Eliciting adult plasticity: Both adaptive and non-adaptive training improves Japanese adults' identification of english /R/ and /L/. Society for Neuroscience Annual Meeting, Los Angeles, CA, November 7-12, 1998.

- Tracking the Human Brain: An interactive multimedia presentation. Society for Neuroscience Annual Meeting, Los Angeles, CA, November 7-12, 1998.

- Complementary Learning Systems, Hebbian Learning, and Human Amnesia. Banbury Center Conference on the Functional Organization of Thalamus and Cortex and their Interactions, Cold Spring Harbor, New York, April 7-8, 1999.

- The Role of Computational Models in Understanding Human Cognition. Centennial Symposium, University of Jena, Germany, May 12-13, 1999.

- Semantics without Categorization: A Parallel Distributed Processing Approach to the Acquisition and Use of Natural Semantic Knowledge. Cognitive Sciences for the New Millennium, University College Dublin, Ireland, May 16 -17, 1999.

- Keynote Address: Learning systems in the Brain: Insights from psychology, neurophysiology, and computation modeling. The Interamerican Society of Psychology (ISP) XXVII Congress, Caracas, Venezuela, June 28, 1999.

- Complementary Learning Systems in the Brain. INNS/IEEE Symposium, Neuronal Ensembles: Paradigm Shifts in Cognitive Modeling, Washington, DC, July 11-12, 1999.

- Origins and Remediation of Autistic Deficits: Some Preliminary Suggestions Based on Neural Network Models. Treatment for People with Autism and other Pervasive Developmental Disorders: Research Perspectives, Rockville, MD, November 8-9, 1999.

- How the Brain Learns. Smithsonian Institute, Washington, DC, March 31, 2000.

- Coherence and Synthesis of Long-Term Memories. Keynote Lecture. Neural Binding of Space and Time: Spatial and Temporal Mechanisms of Feature-object Binding, Leipzig, Germany, March 2000.

- Semantics without Categorization: A Connectionist Approach to Acquisition, Use and Disintegration of Natural Semantic Knowledge. Satellite Symposium CNS2000, Cognitive Neuroscience Society 7th Annual Meeting, San Francisco, CA, April 2000.

- Distributed Representations and Gradual Learning Processes in Cognition (five lectures) at the 7th International Summer School in Cognitive Science, New Bulgarian University, Sofia, Bulgaria, July 2000.

- How the Brain Learns. Third Anniversary Symposium, Riken Brain Science Institute, Tokyo, Japan, November 2000.

- Learning & Plasticity in the Adult Brain: From Synapses to Perception, Cognition and Behavior Symposium. AAAS Meeting, San Francisco, CA, February 2001.

- Reopening the Critical Period: Enhancing Plasticity in Adult's Speech Perception. In Learning & Plasticity Symposium, AAAS Meeting, San Francisco, CA, February 2001.

- Parallel Distributed Processing Approach to Semantic Cognition. Keynote Address, South Carolina Bicentennial Symposium on Attention, Univ. of South Carolina, Columbia, South Carolina, May 2001.

- Formal Theoretical Ideas (Connectionism). Symposium on Connectionism and Dynamical Systems Theory, Society for Research in Child Development Biennial Meeting, Minneapolis, MN, April 2001.

- Semantic Memory: A Parallel Distributed Processing Approach. Experimental Psychology Society Twenty- ninth Bartlett Lecture, University of Manchester, Manchester, UK, July 2001.

- Semantic Memory: A Parallel Distributed Processing Approach. Keynote Address at the 3rd International Conference on Memory (ICOM-3), Valencia, Spain, July 2001.

- Semantic Memory: A Parallel Distributed Processing Approach. The 3rd International Conference on Cognitive Science (ICCS2001), Beijing, China, August 2001.

- Brain Systems Underlying Language Processing: The Continuing Past Tense Debate. Cognitive Neuroscience Society Ninth Annual Meeting, San Francisco, CA, April 2002.

- Reopening the Critical Period: Understanding and Remediating Failures of Learning. NIH Behavioral and Social Science Research Lecture Series, Bethesda, MD, May 2002.

- Neuroplasticity and Recovery of Function. The Role of Neuroimaging in the Study of Aphasia Recovery and Rehabilitation: Research Needs and Opportunities. NIH NIDCD, Bethesda, MD, May 2002.

- Varieties of Distributed Representation: A Complementary Learning Systems Perspective. Localist and Distributed Representations in Perception and Cognition. Sixth International Conference on Cognitive and Neural Systems, Boston, MA, May-June 2002.

- Differentiation and Disintegration in Semantic Cognition. 8th International Conference on Functional Mapping of the Human Brain, Sendai, Japan, June 2002.

- Prediction-Error Driven Learning: The Engine of Change in Cognitive Development. The 2nd International Conference on Development and Learning (IDCL 02), MIT Cambridge, MA, June 2002.

- Semantic Cognition, Naive Domain Theories and Parallel Distributed Processing. Conceptual Knowledge: Developmental, Biological, Functional and Computational Accounts. The British Academy, London, England, June 2002.

- Differentiation and Disintegration in Semantic Cognition. Tenth Annual Dynamical Neuroscience Satellite Symposium: From Experiments & Models to Brain Theory, Orlando, FL, November 2002.

- Distributed Representation, Interactive Processing: A Perspective on Mind and Brain. Doctor Honoris Causa Ceremony, New Bulgaria University, Sofia, Bulgaria, July 2003.

- Invited presentation, Advanced Interdisciplinary Workshop on Constructive Memory: Data and Models. New Bulgarian University, Sofia, Bulgaria, July 2003.

- Representation of Semantic and Associative Memory in Temporal Neocortex. Society for Neuroscience Annual Meeting, New Orleans, LA, November 2003. (Symposium Organizer)

- A Complementary Learning Systems Approach to Semantic Memory in the Temporal Lobes. Society for Neuroscience Annual Meeting, New Orleans, LA, November 2003.

- Learning, Memory & Cognitive Development: They're All in Your Connections. APS Meeting – William James Fellow Award Lecture, Chicago, IL, May 2004.

- How Far Can You Go with Hebbian Learning, and When Does it Lead you Astray? Attention and Performance Meeting, Denver, CO, July 2004.

- Learning, Memory and Cognitive Development: They're All in Your Connections. Guest Speaker in the Center for Advanced Study Seminar: The Memory Project: An Interdisciplinary Study of Memory in the Construction of Identity and Culture, University of Illinois at Urbana-Champaign, November 2004.

- Funding for Basic Behavioral Science at NIMH and NIH: One Scientist's Perspective. Annual Meeting, Council of the Graduate Department of Psychology, Tucson, AZ, February 2005.

- Connectionist Models of Development: It's about Change over Developmental Time. Connectionist and Dynamic Systems Approaches to Development, Iowa City, IA, June 2005.

- Organization and Emergence of Semantic Knowledge: A Parallel Distributed Processing Approach. Mind and Brain Prize Lecture, Cognitive Science Society Annual Meeting, Stresa, Italy, July 2005.

- Principles of Cognitive and Neural Processing. Keynote Address, First Annual Computational Cognitive Neuroscience Conference, Washington, DC, November 2005.

- Semantic Cognition: A Parallel Distributed Processing Approach. Universite Libre de Bruxelles, Brussels, Belgium, November 2005.

- Cooperation of hippocampus and neocortex in memory for meaningful materials. Keynote Address, Fourth International Conference on Memory (ICOM-4), University of New South Wales, Sydney, Australia, July 2006.

- Graded constraint theory of the sound structure of words applied to continuous linguistic and psycholinguistic variables. Plenary Address, Society for Mathematical Psychology, August, 2006.

- Invited Symposium Presentation on Development of Conceptual Knowledge, SRCD Biennial Meeting, Boston, MA, March 30-31, 2007

- Semantic Cognition: A parallel distributed processing approach. Invited Lecture at the 'Brain Day' workshop, University of Waterloo, April 27, 2007.

- An integrated approach to lexical and semantic processes. Keynote Address, Meeting of the European Society for Cognitive Psychology, August 30, 2007.

- The Mistiness of Memory. Invited Presentation, Cold Spring Harbor Symposium on Memory: Neuroscientific and Humanistic Perspectives, October 31, 2007

- Invited Symposium Presentation: How Domain-General Mechanisms of Learning can give rise to Domain-Specific Constraints, Annual Meeting of the Psychonomics Society, November 16-18, 2007

- Frijda Lecturer, Cognitive Science Center, University of Amsterdam, June 25-27, 2008.

- Invited Lecture, Cooperation of Complementary Learning Systems in Memory, International Congress of Psychology, Berlin, Germany, July 21, 2008

- Symposium Organizer and Chair, Symposium on coherent mental activity in perception and semantic cognition, International Congress of Psychology, Berlin, Germany, July 22, 2008

- Organizer and Chair, Symposium on Bayesian and Connectionist Models in Cognitive Science, International Conference on Development and Learning, Asilomar, CA, August 9-12, 2008.

- Oral Paper Presentation, Modeling Unsupervised Perceptual Category Learning, Lake, B. Vallabha, G., & McClelland, J. L.. International Conference on Development and Learning, Asilomar, CA, August 9-12, 2008. Best Paper Award

- Invited Plenary Presentation: Cooperation of Complementary Learning Systems, Decade of the Mind IV Conference, Scandia National Laboratories, Albuquerque, NM, January 14-15, 2009

- Testimony in support of the Sciences of Mind, Brain and Behavior, House Labor, Health, and Education Subcommittee, Washington, DC March 18, 2009

- Invited symposium presentation: Semantic Knowledge: Its Nature, Its Development, and Its Neural Basis, Association for Psychological Science Annual Convention, San Francisco, CA, May 23, 2009

- The Origins of Knowledge Debate. (Debate with Susan Carey). Ohio State University, April 15, 2010

- The Emergent Structure of Semantic Knowledge, Keynote Lecture, 4th International Conference on Cognitive Science. Tomsk, Russia, June 25, 2010.

- Emergence of Semantic Structure from Experience. Rumelhart Prize Lecture, 32nd Annual Meeting of the Cognitive Science Society, Portland, Oregon, August 12, 2010.

- Cognitive Science in the 21st Century: Challenges and Opportunities. Keynote Address, Decade of the Mind VI Conference Singapore. October 18, 2010

- Decision Dynamics and Decision States in the Leaky Competing Accumulator Model. Keynote Address, SCiP, St Louis November 18, 2010

- Parallel Distributed Processing Approach to Semantic Cognition. Invited Plenary Presentation, Eighth International Conference on Complex Systems (ICCS) Boston, MA. June 27, 2011

- REMERGE: A new approach to generalization and memory-based inference. Invited Symposium Presentation, 5th International Conference on Memory. York, England. August 3, 2011

- Emergence of Semantic Knowledge form Experience: Mind Brain Institute Lecture. Michigan State University, East Lansing, MI. October 23-23, 2011.

- Context Effects in Perception: Probabilistic Computation or Interactive Activation? Talk in session on: David Rumelhart's Legacy: Interactive Activation, Language without Rules, and Learned Semantic Representations. Eastern Psychological Association Meeting, Pittsburgh, PA. March 1-4, 2012.

- 50 Years of Neural Networks (Keynote Address). Neural Computation and Psychology Workshop, (NCPW13), San Sebastian, Spain. July 12-14, 2012.

- Toward an Integrated Science of Decision Making: Bridging Levels of Analysis with the Leaky Competing Accumulator Model. International Conference on Brain and Mind. Michigan State University, East Lansing, MI. July 14-16, 2012.

- Emergence of semantic knowledge from experience. Invited talk, International symposium celebrating 50th Anniversary of the Institute for Biomaterials and Biomedical Engineering, Toronto, October 12, 2012.

- Representations of symbolic expressions: Fractions and Trigonometry. Turing Symposium, Rockefeller University, New York, December 12, 2012.

- The scientific legacy of Duncan Luce. R. Duncan Luce Memorial Service, University of California, Irvine, February 5, 2013.

- Understanding individual differences through computational modeling. Keynote Speaker, Southwestern Psychological Association Annual Conference, Fort Worth, Texas, April 6, 2013.

- Alternatives to the combinatorial paradigm in linguistics. Keynote Speaker, Japanese Society for Language Sciences, Nagasaki, Japan, June 29, 2013.

- Addressing challenges to the complementary learning systems theory. *Memory Disorders Research Society,* Toronto, CA, October, 2013.

- Emergence of mathematical abilities from experience in distribted neural networks. *Latin American School for Education, Cognitive, and Neural Sciences.* March, 2014.

- How, When, and Why Our Brains Are Quick or Slow to Integrate New Information: A Complementary Learning Systems Theory of Fast and Slow Learning in the Brain. *Jeffries Lecture, Department of Psychology, UCLA,* March, 2014.

- What's next for parallel-distributed processing? Mathematical cognition and other new directions. Keynote, *Neural Computation and Psychology Workshop,* Lancaster, UK, August, 2014.

- Complementary learning stystems: How brain systems work together to support learning and memory. DART Neuroscience Colloquium Series, Center fot the Science of Learning, University of California, San Diego, August, 2014.

- Complementary learning stystems: How brain systems work together to support learning and memory. Lecture at the University of Maastricht, Netherlands,.September, 2014.

- How experience leads to readiness to learn. Lecture at the Free University of Brussels, Belgium, September, 2015.

- What's next for parallel-distributed processing? Mathematical cognition and other new directions. University of Amsterdam, Netherlands, September, 2014.

- Interactive Activation in Perception and Cognition, Heineken Prize Lecture, Radboud University, Nijmegen, Netherlands, September, 2014.

- Are there multiple functionally-distinct, ways to learn? Invited lecture, Center for Cognition and Computational Modeling Workshop on computational Models of Learning, Birkbeck, University of

London, June, 2015.

- Incorporating rapid neocortical learning into complementary learning systems theory. Astor Lectureship, University of Oxford, June, 2015.

- A Parallel-Distributed Processing Approach to Semantic Cognition, Heineken Prize Lecture, Cognitive Science Society, July, 2015.

- Incorporating rapid neocortical learning into complementary learning systems theory. Annual Distinguished Lecture, Center for Cognitive Science, University of Buffalo, October, 2015.

- A parallel-distributed processing approach to mathematical cognition. !00th Anniversary Colloquium Speaker, Carnegie Mellon, October, 2015.

- Organizer, Tutorial Workshop on Contemporary Deep Neural Networks, Cognitive Science Society Meeting, Philadelphia, PA, August 10, 2016.

- Readiness to Learn: Development, Neurobiology, and Education. RUBIC Center, Rutgers University, Newark, J, December, 2016

- How expertise arises and how it affects new learning. Geneva-Princeton Meeting on Learning, January, 2017.

- A neural network that learns an implicit probabilistic model of sentence meaning: Implications for neural signatures of prediction in language processing, Kavli Summer Institute on Cognitive Neuroscience, June, 2017

- The neural basis of language comprehension: A computational model of the N400 Event Related brain potential. Basque Center for Cognition, Brain, and Langage, July, 2017

- Fourty years of explorations in the microstructure of cognition. Talk given as Honoree of a Symposium at Princton on the Past and Futher of Parallel Distributed Processing. September 29, 2019

- Cognitive Emergence. Keynote presentation at symposium on 'Brain and Cognitive Science' under the auspices of the Chinese Academy of Sciences, in Shenzhen, China, March 17, 2019.

- Integrating new information in menory: new insights from a complementary learning systems perspective. Invited Keynot Presentation, Royal Society Workshop on Memory Reactivation: Replaying events past, present, and future. Buckinghamshire, UK, May 20, 2019.

- Is Deep Learning Statistical Learning? Keynote presentation at the International Conference on Interdisciplinary Advances in Statistical Learning, Donostia-San Sebastian, Spain, June 28, 2019

- Co-Organizer with Ken MacRae. Symposium in Memory of Jeff Elman. COGSCI 2019, Montreal, Canada, July 26, 2016.