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Research interests

Bounded optimality, cognitive architecture, psycholinguistics, AI and reinforcement learning, working memory, sentence processing, adaptive control, eye-movements, cognition and emotion, computational modeling, neural networks, human-computer interaction.

Education

Dec 1993 Ph.D. in Computer Science
Carnegie Mellon University
Thesis: *An Architecturally-based Theory of Human Sentence*

June 1987 Advisors: Allen Newell and Jill Lehman
B.S. in Computer Science, *Summa Cum Laude*
University of Central Florida

Academic positions

UNIVERSITY OF MICHIGAN

2007– Professor of Psychology & Professor of Linguistics
2000–2007 Associate Professor of Psychology & Associate Professor of Linguistics

THE OHIO STATE UNIVERSITY

1995–2000 Assistant Professor of Computer and Information Science
1999–2000 Assistant Professor of Linguistics (*courtesy appointment*)

UNIVERSITY OF POTSDAM, GERMANY

1999 Visiting Professor of Psychology

UNIVERSITY OF FREIBURG, GERMANY

1996 Visiting Professor, Institute of Computer Science and Social Research

PRINCETON UNIVERSITY

1994–1995 McDonnell Postdoctoral Fellow in Psychology
Advisors: George Miller & Philip Johnson-Laird

Teaching experience

Psycholinguistics, computational cognitive modeling, cognitive science, artificial intelligence, statistics for behavioral scientists, knowledge-based systems.

Publications

REFEREED ARTICLES, CHAPTERS AND VOLUMES

- Howes, A., Lewis, R. L., & Vera, A. H. (just published). Rational adaptation under task and processing constraints: Implications for testing theories of cognition and action. *Psychological Review*, 116(4), 717–751. [\[PDF\]](#)
- Vasishth, S., Suckow, K., Lewis, R. L., & Kern, S. (appearing soon). Short-term forgetting in sentence comprehension: Crosslinguistic evidence from verb-final structures. *Language and Cognitive Processes*. [\[PDF\]](#)
- 2009 Berman, M. G., Jonides, J., & Lewis, R. L. (2009). In search of decay in verbal short-term memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 35(2), 317–333. [\[PDF\]](#)
- Lustig, C. A., Lewis, R. L., Berman, M. G., Nee, D. E., Moore, K. S., & Jonides, J. (2009). Psychological and neural mechanisms of short-term memory. In G. Berntson & J. T. Cacioppo (Eds.), *Handbook of Neuroscience for the Behavioral Sciences*. Hoboken, NJ: John Wiley. [\[PDF\]](#)
- Marinier, R. P., Laird, J. E., & Lewis, R. L. (2009). A computational unification of cognitive behavior and emotion. *Cognitive Systems Research*, 10(1), 48–69. [\[PDF\]](#)
- Singh, S., Lewis, R. L., & Barto, A. G. (2009). Where do rewards come from? In *Proceedings of the Annual Conference of the Cognitive Science Society* (pp. 2601–2606). Amsterdam. [\[PDF\]](#)
- 2008 Jonides, J., Lewis, R. L., Nee, D. E., Lustig, C. A., Berman, M. G., & Moore, K. S. (2008). The mind and brain of short-term memory. *Annual Review of Psychology*, 59, 15.1–15.32. [\[PDF\]](#)
- Vasishth, S., Bruessow, S., Lewis, R. L., & Drenhaus, H. (2008). Processing polarity: How the ungrammatical intrudes on the grammatical. *Cognitive Science*, 32(4), 685–712. [\[PDF\]](#)
- 2007 Lewis, R. L., Polk, T. A., & Laird, J. E. (Eds.). (2007). *The Proceedings of the 8th International Conference on Cognitive Modeling*. New York: Psychology Press/Taylor & Francis. [% sc \[pdf\]](#)
- Chu, A., Lewis, R. L., & Howes, A. (2007). Evaluating the performance of optimizing constraint satisfaction techniques for cognitive constraint modeling. In R. Lewis, T. Polk,

- & J. Laird (Eds.), *The Proceedings of the 8th International Conference on Cognitive Modeling* (pp. 26–31). Ann Arbor, Michigan: Psychology Press/Taylor & Francis. [\[PDF\]](#)
- Howes, A., Lewis, R. L., & Vera, A. (2007). Bounding rational analysis: Constraints on asymptotic performance. In W. D. Gray (Ed.), *Integrated Models of Cognitive Systems*. New York: Oxford University Press. [\[PDF\]](#)
- Pearson, D., Gorski, N. A., Lewis, R. L., & Laird, J. E. (2007). Storm: A framework for biologically-inspired cognitive architecture research. In R. Lewis, T. Polk, & J. Laird (Eds.), *The Proceedings of the 8th International Conference on Cognitive Modeling*. Psychology Press/Taylor & Francis. [\[PDF\]](#)
- 2006 Eng, K., Lewis, R. L., Tollinger, I., Chu, A., & Howes, A. (2006). Generating automated predictions of behavior strategically adapted to specific performance objectives. In *Proceedings of the Computer-Human Interaction Conference, CHI 2006*. [\[PDF\]](#) **(Best paper nomination: top 5 per cent of submissions.)**
- Lewis, R. L., Vasishth, S., & Van Dyke, J. A. (2006). Computational principles of working memory in sentence comprehension. *Trends in Cognitive Sciences*, 10, 44–54. [\[PDF\]](#)
- Nakayama, M., Vasishth, S., & Lewis, R. L. (2006). Difficulty of certain sentence constructions in comprehension. In *Handbook of east asian psycholinguistics* (Vol. 2). Cambridge, England: Cambridge University Press. [\[PDF\]](#)
- Remington, R. W., Lewis, R. L., & Wu, S. (2006). Scheduling mental operations in a multiple-response sequence: Modeling the effects of a strategy to minimize variance in the timing of saccades. In D. Fum, F. Del Missier, & A. Stocco (Eds.), *Proceedings of the International Conference on Cognitive Modeling* (pp. 250–255). Trieste, Italy: Edizioni Goliardiche. [\[PDF\]](#)
- Ritter, F. E., Haynes, S. R., Cohen, M., Howes, A., John, B., Best, B., et al. (2006). High-level behavior representation languages revisited. In D. Fum, F. Del Missier, & A. Stocco (Eds.), *Proceedings of the International Conference on Cognitive Modeling (ICCM)*. Trieste, Italy: Edizioni Goliardiche.
- Vasishth, S., & Lewis, R. L. (2006a). Symbolic models of human sentence processing. In K. Brown (Ed.), *Encyclopedia of Language and Linguistics, 2nd edition* (Vol. 5, pp. 410–419). Elsevier. [\[PDF\]](#)
- Vasishth, S., & Lewis, R. L. (2006b). Argument-head distance and processing complexity: Explaining both locality and anti-locality effects. *Language*, 82, 767–794. [\[PDF\]](#)
- Wu, S., Remington, R. W., & Lewis, R. L. (2006). Modeling the scheduling of eye movements in performing a sequence of discrete tasks. In *Proceedings of the Cognitive Science Society*. [\[PDF\]](#)
- 2005 Howes, A., Lewis, R. L., Vera, A., & Richardson, J. (2005). Information-requirements grammar: A theory of the structure of competence for interaction. In *Proceedings of the Cognitive Science Society*. Stresa, Italy. [\[PDF\]](#)
- Lewis, R. L., & Vasishth, S. (2005). An activation-based model of sentence processing as skilled memory retrieval. *Cognitive Science*, 29, 375–419. [\[PDF\]](#)
- Nakayama, M., Lee, S.-H., & Lewis, R. L. (2005). Difficulty of processing Japanese and Korean center-embedding constructions. In M. Minami, H. Kobayashi, M. Nakayama, & H. Sirai (Eds.), *Studies in language sciences* (Vol. 4, pp. 99–118). Tokyo: Kuroosio Publishers. [\[PDF\]](#)
- Vasishth, S., Drenhaus, H., Saddy, D., & Lewis, R. L. (2005). Processing negative polarity. In *Proceedings of the CUNY Sentence Processing Conference*. University of Arizona. [\[PDF\]](#)

- Tollinger, I., Lewis, R. L., McCurdy, M., Tollinger, P., Vera, A., Howes, A., et al. (2005). Supporting efficient development of cognitive models at multiple skill levels: Exploring recent advances in constraint-based modeling. In *Proceedings of the Computer-Human Interaction Conference*. Portland, Ore.. [\[PDF\]](#) **(Best paper nomination: top 5 percent of submissions.)**
- Vannest, J., Polk, T. A., & Lewis, R. L. (2005). Dual-route processing of complex words: new fMRI evidence from derivational suffixation. *Cognitive, Affective, and Behavioral Neuroscience*, 5, 67–76. [\[PDF\]](#)
- Vera, A. H., Howes, A., Lewis, R. L., Tollinger, I., Eng, K., & Richardson, J. (2005). A constraint-based approach to understanding the composition of skill. In *Proceedings of the Human-Computer Interaction 2005 Symposium*,. Las Vegas.
- Vera, A. H., Tollinger, I., Eng, K., Lewis, R. L., & Howes, A. (2005). Architectural building blocks as the locus of adaptive behavior selection. In *Proceedings of the Cognitive Science Society*. Stresa, Italy. [\[PDF\]](#)
- 2004 Howes, A., Vera, A., Lewis, R. L., & McCurdy, M. (2004). Cognitive constraint modeling: A formal approach to supporting reasoning about behavior. In *Proceedings of the Cognitive Science Society*. Chicago. [\[PDF\]](#)
- Lewis, R. L., Vera, A., & Howes, A. (2004). A constraint-based approach to understanding the composition of skill. In *Proceedings of the International Conference on Cognitive Modeling*. [\[PDF\]](#)
- Simen, P., Polk, T. A., Lewis, R. L., & Freedman, E. (2004). A computational account of latency impairments in problem solving by parkinson’s patients. In *Proceedings of the International Conference on Cognitive Modeling*. [\[PDF\]](#)
- Vasishth, S., & Lewis, R. L. (2004). Modeling sentence processing in act-r. In *Proceedings of the Association for Computational Linguistics*. Barcelona. [\[PDF\]](#)
- Vera, A., Howes, A., McCurdy, M., & Lewis, R. L. (2004). A constraint-satisfaction approach to predicting skilled interactive cognition. In *Proceedings of the Computer-Human Interaction Conference CHI-2004*. Vienna, Austria. [\[PDF\]](#)
- 2003 Lewis, R. L. (2003). Computational psycholinguistics. In *Encyclopedia of Cognitive Science*. London: Macmillon (Nature Publishing Group). [\[PDF\]](#)
- Simen, P., Polk, T. A., & Lewis, R. L. (2003). Universal computation by networks of model cortical columns. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*. [\[PDF\]](#)
- Van Dyke, J. A., & Lewis, R. L. (2003). Distinguishing effects of structure and decay on attachment and repair: A cue-based parsing account of recovery from misanalyzed ambiguities. *Journal of Memory and Language*, 49, 285–316. [\[PDF\]](#)
- 2002 Lewis, R. L., & Nakayama, M. (2002). Syntactic and positional similarity effects in the processing of japanese embeddings. In M. Nakayama (Ed.), *Sentence Processing in East Asian Languages*. Stanford, CA: CSLI Publications. [\[PDF\]](#)
- Simen, P., Polk, T. A., Lewis, R. L., & Freedman, E. (2002a). Goal management in a recurrent neural network. In *Proceedings of the International Conference on Computational Intelligence* (pp. 566–569). [\[PDF\]](#)
- Simen, P., Polk, T. A., Lewis, R. L., & Freedman, E. (2002b). A recurrent neural network model of goal management. In *Proceedings of the International Conference on Computational Intelligence and Neuroscience* (pp. 504–508). [\[PDF\]](#)
- 2001 Lewis, R. L. (2001a). Cognitive theory, Soar. In *International Encyclopedia of the Social and*

- Behavioral Sciences* (pp. 2178–2183). Amsterdam: Pergamon (Elsevier Science). [\[PDF\]](#)
- Lewis, R. L. (2001b). Falsifying serial and parallel parsing models: Empirical conundrums and an overlooked paradigm. *Journal of Psycholinguistic Research*, 29(2), 241–248. [\[PDF\]](#)
- 2000 Lewis, R. L. (2000). Specifying architectures for language processing: Process, control, and memory in parsing and interpretation. In M. W. Crocker, M. Pickering, & C. Clifton Jr. (Eds.), *Architectures and Mechanisms for Language Processing*. Cambridge: Cambridge University Press. [\[PDF\]](#)
- Nakayama, M., & Lewis, R. L. (2000). Similarity interference and scrambling in Japanese. *Korean Journal of Cognitive Science*, 12, 39–53. [\[PDF\]](#)
- 1999 Lewis, R. L. (1999a). Accounting for the fine structure of syntactic working memory: Similarity-based interference as a unifying principle. *Behavioral and Brain Sciences*, 22, 105–106. [\[PDF\]](#)
- Lewis, R. L. (1999b). Cognitive modeling, symbolic. In R. A. Wilson & F. C. Keil (Eds.), *The MIT Encyclopedia of Cognitive Science*. Cambridge, MA: MIT Press. [\[PDF\]](#)
- Young, R., & Lewis, R. (1999). The Soar cognitive architecture and human working memory. In A. Miyake & P. Shah (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control*. New York: Cambridge University Press. [\[PDF\]](#)
- 1998 Lehman, J. F., Newell, A., & Lewis, R. L. (1998). Architectural influences on language comprehension. In Z. W. Pylyshyn (Ed.), *Constraining Cognitive Theorie: Issues and Options*. Norwood, NJ: Ablex Press.
- Lewis, R. L. (1998). Leaping off the garden path: Reanalysis and limited repair parsing. In J. Fodor & F. Ferreira (Eds.), *Reanalysis in sentence processing* (pp. 247–285). Boston: Kluwer Academic. [\[PDF\]](#)
- 1996 Lewis, R. L. (1996a). Architecture matters: What Soar has to say about modularity. In D. Steier & T. Mitchell (Eds.), *Mind Matters: Contributions to Cognitive and Computer Science in Honor of Allen Newell*. Hillsdale, NJ: Erlbaum. [\[PDF\]](#)
- Lewis, R. L. (1996b). Interference in short-term memory: The magical number two (or three) in sentence processing. *Journal of Psycholinguistic Research*, 25(1), 93–115. [\[PDF\]](#)
- Vera, A. H., & Lewis, R. L. (1996). Dissociating performance from learning: An empirical evaluation of a computational model. In *Proceedings of the Eighteenth Annual Conference of the Cognitive Science Society*.
- 1994 Lewis, R. L. (1994). Task specification language, or theory of human memory? *Behavioral and Brain Sciences*, 17(4), 67–75.
- Lewis, R. L., & Vera, A. H. (1994). Non-declarative learning in an interactive task. In *CHI '94 Research Symposium*.
- 1993 Lewis, R. L. (1993a). An architecturally-based theory of sentence comprehension. In *Proceedings of the Fifteenth Annual Conference of the Cognitive Science Society* (pp. 108–113). [\[PDF\]](#)
- Lewis, R. L. (1993b). *An architecturally-based theory of human sentence comprehension*. Unpublished doctoral dissertation, Carnegie Mellon University. [\[PDF\]](#)
- Steier, D. M., Lewis, R. L., Lehman, J. F., & Zacherl, A. L. (1993, June). Combining multiple sources of knowledge in an integrated intelligent system. *IEEE Expert*, 8(3), 3–4. [\[PDF\]](#)
- Vera, A. H., Lewis, R. L., & Lerch, F. J. (1993). Situated decision-making and recognition-based learning: Applying symbolic theories to interactive tasks. In *Proceedings of the fifteenth annual conference of the cognitive science society*. [\[PDF\]](#)

- 1991 Lehman, J. F., Lewis, R. L., & Newell, A. (1991). Integrating knowledge sources in language comprehension. In *Proceedings of the Thirteenth Annual Conference of the Cognitive Science Society* (pp. 46–66). [PDF] (Also in P. S. Rosenbloom, J. E. Laird, and A. Newell, eds., *The Soar Papers: Research on Integrated Intelligence*, MIT Press, Cambridge, MA, 1993.)
- 1990 Lewis, R. L., Huffman, S. B., John, B. E., Laird, J. E., Lehman, J. F., Newell, A., et al. (1990). Soar as a unified theory of cognition: Spring 1990. In *Proceedings of the twelfth annual conference of the cognitive science society* (pp. 103–042). [PDF] (Also in P. S. Rosenbloom, J. E. Laird, and A. Newell, eds., *The Soar Papers: Research on Integrated Intelligence*, MIT Press, Cambridge, MA, 1993.)
- 1989 Lewis, R. L., Newell, A., & Polk, T. A. (1989). Toward a Soar theory of taking instructions for immediate reasoning tasks. In *Proceedings of the Eleventh Annual Conference of the Cognitive Science Society* (pp. 514–521). [PDF] (Also in P. S. Rosenbloom, J. E. Laird, and A. Newell, eds., *The Soar Papers: Research on Integrated Intelligence*, MIT Press, Cambridge, MA, 1993.)
- Polk, T. A., Newell, A., & Lewis, R. L. (1989). Toward a unified theory of immediate reasoning in Soar. In *Proceedings of the Eleventh Annual Conference of the Cognitive Science Society* (pp. 50–13). (Also in P. S. Rosenbloom, J. E. Laird, and A. Newell, eds., *The Soar Papers: Research on Integrated Intelligence*, MIT Press, Cambridge, MA, 1993.)
- 1988 Moshell, J. M., Hughes, C. E., Lacy, L. W., Lewis, R. L., & Blower, D. (1988). Action graphics: An interactive spreadsheet-based animation system for simulation and training. In B. Clymer & V. Amico (Eds.), *Proceedings of the Simulators V Conference* (Vol. 19, pp. 47–78). The Society for Computer Simulation International.
- 1987 Moshell, J. M., Hughes, C. E., Lacy, L. W., Lewis, R. L., & Blower, D. (1987a, August). A spreadsheet-based visual language for freehand sketching of complex motions. In *Proceedings of the 1987 Workshop on Visual Languages*.
- Moshell, J. M., Hughes, C. E., Lacy, L. W., Lewis, R. L., & Blower, D. (1987b). An educational animation system based on class inheritance. In *Proceedings of the Conference of the National Computer Graphics Association* (pp. 59–62).

TECHNICAL REPORTS

- 1987 Lewis, R. L. R. L., Hughes, C. E., Lacy, L. W., & Moshell, J. M. (1987). *CFCL: Central Florida Common Lisp Object System* (Tech. Rep.). Department of Computer Science, The University of Central Florida.
- 1986 Moshell, J. M., & Lewis, R. L. (1986). *The Action Graphics freehand animation system* (Tech. Rep.). Department of Computer Science, The University of Central Florida.

Invited presentations

- 2007–2009 Short-term Memory in Language and its Adaptive Control. *Cognitive Science Conference Symposium on Language and Memory*, Amsterdam. July, 2009.
- Cognitively Bounded Rational Analysis and Optimal Control. *International Conference on Cognitive Modeling Symposium on Rational Explanations*, Manchester. July, 2009.
- Adaptive Control of Language and Action: Boundedly Rational Behavior Under Cognitive Constraint. *University of Potsdam*, Germany. January, 2009.
- The Adaptive Nature of Human Performance: Models of Boundedly Rational Control. *Air Force Research Labs*, Mesa, Arizona, December, 2008.

- The Surprising Nature of Working Memory in Language Comprehension, **Keynote Address**, COGFEST-2008, *The Ohio State University*, May, 2008.
- Deriving a Theory of Verb-final Processing: The Adaptive Control of Working Memory. *Max Planck Institute for Human Cognitive and Brain Science*, Leipzig, Germany, December, 2007.
- The Surprising Nature of Working Memory in Language Comprehension. Department of Psychology, *Rice University*, April, 2007.
- 2004–2006 The Surprising Nature of Working Memory in Language Comprehension. Department of Linguistics, *University of Maryland*, April, 2006.
- The Surprising Nature of Working Memory in Language Comprehension. **Keynote Address**, *International Conference on Cognitive Modeling*, Trieste, Italy, April, 2006.
- Explaining the Bounds on the Adaptation of Skilled Interactive Behavior. Center for Human-Machine Interaction, *Berlin Technical University*, December, 2005.
- Toonology: The New Yorker Cartoon Meets Modern Psychological Science. *General Motors Warren R&D Center*, September, 2005.
- Toonology: Modern Science meets the New Yorker Cartoon. *National Alliance for the Mentally Ill of Washtenaw County*, Annual Meeting, June 2005.
- Sentence Processing as Skilled Memory Retrieval. *University of Potsdam*, Germany. December, 2004.
- Sentence Processing as Skilled Memory Retrieval. *NASA Ames Research Center*, Cognitive Group, December, 2004.
- Sentence Processing as Skilled Memory Retrieval. Rumelhart Award Symposium, *Cognitive Science Conference*, Chicago, August, 2004.
- 2001–2003 Parsing as Working Memory Retrieval. Workshop on Computational Models of Sentence Processing, *University of the Saarland*, Germany. July, 2003.
- Scalable Cognitive Modeling Through Compositional Reuse. *Office of Naval Research Conference on Affordable Human Behavior Modeling*, Arlington, VA. With John, B. E, Lewis, R. L., Matessa, M., Remington, R., Vera, A, April, 2003.
- Learning in ACT-R: Chunking Revisited. Symposium on Advances in Cognitive Architectures, *Stanford University*, March 2003.
- Parsing as Working Memory Retrieval. Department of Cognitive Science, *Johns Hopkins University*, February, 2003.
- Parsing as Memory Retrieval. TEAP-2002 Tagung Experimental Arbeitender Psychologen, *Chemnitz*, special session on Dynamical Models of Language Processing, March 2002.
- Parsing as Memory Retrieval. Institute for Research in Cognitive Science, *University of Pennsylvania*, March, 2002.
- Toward Detailed Models of Sentence Processing Constrained by ERP Data. Workshop on Analyzing and Modelling Event-Related Brain Potentials: Cognitive and Neural Approaches. *Potsdam University*, Germany, November 2001.
- Does the Mind Need a Bottleneck? Toward a functional analysis of bottlenecks, executive processes, and control structure. *NASA Ames Research Center*, Cognitive Group, November 2001.
- ACT-R and Language Processing: Opportunities, Challenges, and the Linguistic Killer Bees. *ACT-R Post-Graduate Summer School*, July 2001.
- Building a UTC from the top-down: What cognitive architectures might have to offer theories of executive function in cognitive neuroscience. Soar Workshop 21, *University of*

- Michigan*, May 2001.
- Working Memory for Syntactic Processing: Serial Order Information and Cue-based Retrieval. Department of Psychology, *Michigan State University*, February 2001.
- 1998-2000 A Theory of Short-Term Memory Retrieval in Sentence Processing. Institute of Cognitive Science, *University of Louisiana at Lafayette*, October, 2000.
- Sentence Processing as Memory Retrieval: A Computational Model of Race-based Parsing in a Limited Working Memory. Language Technologies Institute, School of Computer Science, *Carnegie Mellon University*, February, 2000.
- A Theory of Short-Term Memory Retrieval in Sentence Processing. Department of Psychology, *Carnegie Mellon University*, February, 2000.
- Sentence Processing as Memory Retrieval: A Computational Model of Race-based Parsing in a Limited Working Memory. Department of Psychology, *University of Michigan* February, 2000.
- A Theory of Short-Term Memory Retrieval in Sentence Processing. Department of Psychology, *University of Michigan*, February, 2000.
- In Search of Fully Lexical Parsing. Department of Psychology, *Potsdam University*, December, 1999.
- Determinants of Processing Complexity in Japanese: New Theory and Data. (with Mineharu Nakayama), *International East Asian Psycholinguistics Workshop*, *Ohio State University*, July, 1999.
- Computational and Psychological Foundations of Sentence Processing. Seminar at Departments of Psychology and Linguistics, *Potsdam University*, June, 1999.
- What Will It Take to Determine Whether Human Parsing is Serial or Parallel? *The CUNY Sentence Processing Conference*, New York City, March 1999.
- Sentence Comprehension with Limited Working Resources: Cognitive and Computational Foundations. Department of Psychology, *Carnegie Mellon University*, December 9, 1998.
- Limited Repair Parsing. *Workshop on Reanalysis in Sentence Processing*, New Brunswick, NJ, March 18, 1998.
- 1995-1997 Interference in Working Memory: The Magical Number Two or Three in Sentence Comprehension. Department of Psychology and Cognitive Science Center, *Hong Kong University*, November 26, 1997.
- A Soar Perspective on Working Memory. (With Richard Young), *Symposium on Models of Working Memory*, *University of Colorado, Boulder*, July 10, 1997.
- Interference in Working Memory: The Magical Number Two in Sentence Processing. *Symposium for Computational and Neural Bases of Language*, *University of Michigan Psychology Department*, Ann Arbor, May 16, 1997.
- Computational Architectures for Human Sentence Processing. Seminar course presented at the Institute for Computer Science and Social Research, *University of Freiburg*, Germany, December 17-19, 1996.
- Identifying Cognitive Architectures and Their Programs. Department of Psychology, *University of Freiburg*, Germany, December 18, 1996.
- Uncovering the Architecture of Sentence Comprehension: Powerful Processing with Limited Working Memory. Department of Computational Linguistics, *University of the Saarland*, Germany, December 16, 1996.
- An introduction to the Soar cognitive architecture. Institute for Artificial Intelligence, *University of the Saarland*, Germany, December 16, 1996.

- Uncovering the Architecture of Sentence Comprehension: Powerful Processing with Limited Working Memory. Center for Cognitive Science, *University of Freiburg*, Germany, December 17, 1996.
- Uncovering the Architecture of Sentence Comprehension: Powerful Processing with Limited Working Memory. Department of Psychology, *University of Michigan*, Ann Arbor, November 13, 1996.
- Architectural requirements for intelligence and language processing: A Soar-based perspective. *Conference on Intelligent systems: A Semiotic Perspective, National Institute of Standards and Technology (NIST)*, Gaithersburg, MD, October 20–23, 1996.
- A Theory of the Architecture of Sentence Comprehension. Department of Electrical Engineering and Computer Science, *University of Michigan*, Ann Arbor, February 20, 1996.
- Interference in Short-term Memory: The Magical Number Two in Sentence Processing. Interdisciplinary Center for Cognitive Studies, *University of Potsdam*, Germany, October 14, 1995.
- Identifying Cognitive Architecture. Interdisciplinary Center for Cognitive Studies, *University of Potsdam*, Germany, October 13, 1995.
- A Theory of the Architecture of Sentence Comprehension. *Rutgers University Center for Cognitive Science*, New Brunswick, New Jersey, April 25, 1995.
- A Theory of the Architecture of Sentence Processing. Departments of Psychology and Linguistics, *University of Massachusetts*, Amherst, April 17, 1995.
- Simple Destructive Repair: A Theory of Revision in Parsing. Department of Linguistics, *City University of New York*, April 5, 1995.
- 1992–1994 Building psychological theories with cognitive architectures. Cognitive Architectures Workshop, Interdisciplinary Center for Cognitive Studies, *University of Potsdam*, Germany, July 8–11, 1994.
- An Architecturally-based Theory of Human Sentence Comprehension. Plenary Symposium in Honor of Allen Newell, *Fifteenth Cognitive Science Conference*, Boulder, Colorado, June 19, 1993.
- An Architecturally-based Theory of Human Sentence Comprehension. The Cognitive Science Laboratory, *Princeton University*, March 29, 1993.
- Architecture Matters. *The Mind Matters Symposium in Honor of Allen Newell, Carnegie Mellon University*, Pittsburgh, October 26, 1992.
- 1989–1991 Language Comprehension in a Continuously Learning Integrated Architecture. Computer Science Department, *University of Central Florida*, Orlando, June 24, 1991.
- NL-Soar as a Cognitive Model. *Fourth European Workshop on Soar, Twente University*, Enschede, The Netherlands, January, 1991.
- NL-Soar: Language Comprehension in Soar. *European Soar Workshop and Tutorial, The University of Groningen*, The Netherlands, June 19, 1989.

Research funding

- Affordable Cognitive Modeling for Interface Design, Workload Design, and Procedure Development: Automating the Application of Psychological Theory, \$806K, Office of Naval Research, October 2005–April 2009.
- Extending the Soar Cognitive Architecture, \$1M, DARPA, Fall 2005–Fall 2006. Co-PI with John Laird (EECS, Michigan).

- Development and Application of a Compositional Parametric Approach to Human Performance Prediction, \$371K, NASA, January 2005–December 2006.
- Toward Parametric Compositional Modeling of Heterogeneous Interactive tasks, \$167K, NASA, June 2004–June 2007.
- Toward an Applied Psychological Theory of Behavior Composition: Language Processing in Multitasking Contexts, \$297K, NASA, May 2004–July 2007.
- Scalable Cognitive Modeling Through Compositional Reuse, Office of Naval Research, \$675K total, awarded to University of Michigan (\$236K), Carnegie Mellon, and NASA Ames. November 2002—October 2005. With Bonnie John (CMU), Alonso Vera, Mike Matessa, and Roger Remington (NASA Ames).
- Computational Models and Coordinated Neuroimaging of Learning and Cognitive Function, \$1.2M, September 1998–August 2003, National Science Foundation. (with Walter Schneider, PI, University of Pittsburgh).
- Establishing Ohio State as a Major Center for Language Processing Research, Ohio State Center for Cognitive Science, Department of Linguistics, and Department of Computer and Information Science, \$100K, December 1999–December 2001. With Shari Speer, Department of Linguistics.
- Computational and Psycholinguistic Explorations of Working Memory in Japanese Sentence Comprehension, Ohio State Interdisciplinary Seed Grant, \$57K, July 1999–June 2001. With JJ Nakayama, Department of East Asian Languages and Literature, Ohio State University.
- Computational and Psycholinguistic Explorations of Ambiguity Resolution in Natural Language Processing, Ohio State Office of Research, \$18K, January 1996–July 1997.

Conference presentations (not listed above in publications)

- 2007-2009 Strohminger, N., Lewis, R.L., and Meyer D.E. (February 2009). “What Would Seinfeld Do? Divergent effects of different positive emotions on moral judgment”. *Society for Personality and Social Psychology*, Tampa, FL.
- Strohminger, N., Lewis, R.L., and Meyer D.E. (June 2008). “The Differential Effect of Positive Social Emotions on Moral Decisions: An eyetracking study”. *Social and Affective Neuroscience Society Annual Meeting*, Boston, MA.
- Strohminger, N., Lewis, R.L., and Meyer D.E. (July 2008). “Positive Emotions and Moral Decisions”. *Cognitive Science Institute: Minds and Societies*, Montreal, Canada.
- Bartek, B., Lewis, R. L., Vasishth, S., and Smith, M. (2007). “Linking Working Memory with SPR and Eyetracking Measures” In *Proceedings of the CUNY Sentence Processing Conference*. San Diego, CA.
- Fernandez-Salgueiro, G., Chen, L. Lewis, R. L., and Epstein, S. (2007). “The When and How of Positing Null Subjects (pro): The Timing and Surprising Interaction of Syntactic and Semantic Constraints.” In *Proceedings of the CUNY Sentence Processing Conference*. San Diego, CA.
- Badecker, W. and Lewis, R. L. (2007) “A New Theory and Computational Model of Working Memory in Sentence Production: Agreement Errors as Failures of Cue-based Retrievals. In *Proceedings of the CUNY Sentence Processing Conference*, San Diego, CA.
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- 1993–1997 Lewis, R. L. (1997). Reanalysis and Limited Repair Parsing. *Tenth Annual CUNY Sentence Processing Conference*, University of Southern California, Santa Monica, CA.
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- Lewis, R. L. (1993). Predicting processing breakdown on embedded constructions in an architecturally-based comprehension theory. *Sixth Annual CUNY Sentence Processing Conference*, University of Massachusetts, Amherst, MA.

Honors

Outstanding Teaching Award, Department of Computer and Information Science, Ohio State University, 1997.

McDonnell Foundation Fellow in Psychology, Princeton University, 1994–95.

National Science Foundation Graduate Fellowship, Carnegie Mellon University, 1988–91.

Professional service

CONFERENCES AND WORKSHOPS ORGANIZED

International Conference on Cognitive Modeling, July 24–27, 2007, Ann Arbor.
Workshop on Reanalysis in Sentence Processing, March 18, 1998, New Brunswick, NJ.
17th North American Soar Workshop, June 27–29, 1997, Columbus, Ohio.

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