

RICHARD A. CARLSON

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Personal information

Born January 23, 1956, Manchester, Iowa
Married to **Lori A. Forlizzi, Ph.D.**

Education

University of Illinois, Champaign, Illinois: Ph.D., Psychology, 1984
University of Illinois, Champaign, Illinois: M.A., Psychology, 1982
Cornell College, Mount Vernon, Iowa: B.S.S., Psychology, 1978

Selected Honors

Distinction in the Social Sciences (Penn State College of Liberal Arts, 1999)
Outstanding Academic Book of 1998 for *Experienced Cognition*
(*Choice*, 1998)
Roy C. Buck Award in Social Science
(Penn State College of Liberal Arts, 1989)
University of Illinois Fellowship (Summer, 1981; 1982-1983)
Dallenbach Fellowship
(University of Illinois Psychology Department, 1979-1980)
Kathryn L. McDermott Award in Psychology (1978)
B.S.S. Magna Cum Laude

Professional experience

Professor of Psychology, Penn State University, 1997-present
Associate Professor of Psychology, Penn State University, 1991-1997.
Assistant Professor of Psychology, Penn State University, 1985-1991.
Research Associate, Learning Research and Development Center,
University of Pittsburgh, summers 1986-1989.
Associate Director, Human Attention Research Laboratory,
University of Illinois, May 1984 - August 1985.

Current research interests:

Consciousness, cognitive control, acquisition of cognitive skill, spatial reference frames, working memory, symbolic and spatial problem solving, attention, causal thinking.

Teaching:

Cognitive psychology, introductory psychology, research methods, human memory, cognitive science.

Professional activities

Director of Undergraduate Studies, Department of Psychology, Penn State (1995-present)
Coordinator, Graduate Program in Cognitive Psychology, Penn State (1989-1995; 2007-2008)
Chair, Penn State Behavioral IRB (1992-1997)
Chair, Cognitive Studies at Penn State (1988-1993)
Member, Penn State Graduate Faculty
Planning Advisory Committee, Penn State Department of Psychology (elected member, 1991-1997; appointed member 1997-present)
Penn State Faculty Senate (elected member, 2001-2005)

Professional memberships

American Psychological Association (Fellow)
American Psychological Society
Association for the Scientific Study of Consciousness
Cognitive Science Society
(Member, Cognitive Science Finance Committee, 2004-)
Eastern Psychological Association
Psychonomic Society

Editorial positions

Editorial boards
American Journal of Psychology
Behavior Research Methods
Journal of Experimental Psychology: Learning, Memory, and Cognition
Series Editorial Consultant, *Cognitive Science and Second Language Acquisition* (Lawrence Erlbaum Associates)
Series Editorial Consultant, *Advances in Cognitive Models and Cognitive Architectures* (Oxford University Press)

Ad hoc reviewer

Air Force Office of Scientific Research
Behavioral and Brain Sciences
Child Development
Cognitive Psychology
Cognitive Science
Cognitive Science Society
Consciousness and Cognition
Human Factors
Israel Science Foundation
Journal of Applied Psychology
Journal of Experimental Child Psychology
Journal of Experimental Psychology: Applied
Journal of Experimental Psychology: General
Journal of Experimental Psychology: Learning, Memory, and Cognition
Journal of Experimental Psychology: Human Perception and Performance
Journal of General Psychology
Journal of Motor Behavior
Memory & Cognition
National Science Foundation
Perception & Psychophysics
Psychological Bulletin
Psychological Science
Psychonomic Bulletin and Review
Quarterly Journal of Experimental Psychology

PUBLICATIONS

Book

Carlson, R.A. (1997). *Experienced Cognition*. Mahwah, NJ: Erlbaum.

Journal articles and chapters

Cassenti, D.N. & Carlson, R.A. (2008). Effect of pacing and working memory loads on error type patterns in a routine skill. *American Journal of Psychology*, 121, 57-81.

Carlson, R.A., Avraamides, M.N., Cary, M., & Strasberg, S. (2007). What do the hands externalize in simple arithmetic? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33, 747-756.

Bruce, A.S., Ray, W.J., Bruce, J.M., Arnett, P.A. & Carlson, R.A. (2007). The relationship between executive functioning and dissociation. *Journal of Clinical and Experimental Neuropsychology*, 29, 626-633.

Bruce, A.S., Ray, W.J., & Carlson, R.A. (2007). Understanding cognitive failures: What's dissociation got to do with it? *American Journal of Psychology*, 120, 553-563.

Carlson, R.A. (2007). Intentions, errors, and experience. In W.D. Gray (Ed.), *Integrated models of cognitive systems*, pp. 388-399. New York: Oxford University Press.

Carlson, R.A. & Cassenti, D.N. (2004). Intentional control of event counting. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30, 1235-1251.

Stevenson, L.M. & Carlson, R.A. (2003). Information acquisition strategies and the cognitive structure of arithmetic. *Memory & Cognition*, 31, 1249-1259.

Sohn, M.-H. & Carlson, R.A. (2003). Viewpoint alignment and response conflict during spatial judgment. *Psychonomic Bulletin & Review*, 10, 907-916.

Sohn, M.-H. & Carlson, R.A. (2003). Implicit temporal tuning of working memory strategy during cognitive skill acquisition. *American Journal of Psychology*, 116, 239-256.

Avraamides, M.N. & Carlson, R.A. (2003). Egocentric organization of spatial activities in imagined navigation. *Memory & Cognition*, 31, 252-261.

Carlson, R.A. (2003). Skill learning. In *The Encyclopedia of Cognitive Science*. Macmillan Reference Ltd

Carlson, R.A. (2002). Mentalism, information, and consciousness. *Behavioral and Brain Sciences*, 25, 333.

Carlson, R.A. & Stevenson, L.M. (2002). Temporal tuning in the acquisition of cognitive skill. *Psychonomic Bulletin & Review*, 9, 759-765.

Carlson, R.A. (2002). Conscious intentions in the control of skilled mental activity. In B. Ross (Ed.), *The Psychology of Learning and Motivation* (Volume 41), pp. 191-228. San Diego, CA: Academic Press.

Cary, M. & Carlson, R.A. (2001). Distributing working memory resources in problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 27, 836-848

Rosenbaum, D.A., Carlson, R.A., & Gilmore, R.A. (2001). Acquisition of intellectual and perceptual-motor skills. *Annual Review of Psychology*, 52, 453-470.

Sohn, M.-H. & Carlson, R.A. (2000). Effects of repetition and foreknowledge in task-set reconfiguration. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26, 1445-1460.

Carlson, R.A. & Sohn, M.-H. (2000). Cognitive control of multiple-step routines: Information processing and conscious intentions. In S. Monsell & J. Driver (Eds.) *Control of cognitive processes: Attention and Performance XVIII*. (pp. 443-464). Cambridge, MA: MIT Press.

Carlson, R.A. (1999). Implicit representation, mental states, and explication processes (Comment on Dienes and Perner). *Behavioral and Brain Sciences*, 22, 761-762.

Cary, M. & Carlson, R.A. (1999). External support and the development of problem solving routines. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 25, 1053-1070.

Carlson, R.A. (1999). Consciousness and agency: Explaining what and explaining who. *Behavioral and Brain Sciences*, 22, 148-149.

Sohn, M-H. & Carlson, R.A. (1998). Procedural frameworks for simple arithmetic skills. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24, 1052-1067.

Carlson, R.A. (1997). Meshing Glenberg with Piaget, Gibson, and the ecological self. *Behavioral and Brain Sciences*, 20, 21.

Wenger, J.L. & Carlson, R.A. (1996). Cognitive sequence knowledge: What is learned? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22, 599-619.

Carlson, R.A. & Shin, J.C. (1996). Practice schedules and subgoal instantiation in cascaded problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22, 157-168.

Lundy, D.H., Paquiot, J., & Carlson, R.A. (1995). Practice schedule effects and multiple working memory capacities. *American Journal of Psychology*, 108, 471-497.

Charney, D. & Carlson, R.A. (1995). Learning to write in a genre: What student writers take from model texts. *Research in the Teaching of English*, 29, 88-125.

Wenger, J.L. & Carlson, R.A. (1995). Consistency and learning in sequential coordination tasks. *Journal of Experimental Psychology: Human Perception and Performance*, 21, 170-182.

Carlson, R.A. (1994). Is implicit learning about consciousness? *Behavioral and Brain Sciences*, 15, 400.

Lundy, D.H., Wenger, J.L., Schmidt, R.J., & Carlson, R.A. (1994). Serial step learning of cognitive sequences. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20, 1183-1195.

Carlson, R.A., Wenger, J.L. & Sullivan, M.A. (1993). Coordinating information from perception and working memory. *Journal of Experimental Psychology: Human Perception and Performance*, 19, 531-548.

Carlson, R.A. & Detweiler, M. (1992). A unified theory for psychologists? *Behavioral and Brain Sciences*, 15, 440.

Carlson, R.A. (1992). Starting with consciousness. *American Journal of Psychology*, 105, 598-604.

Carlson, R.A., Lundy, D.H., & Schneider, W. (1992). Strategy guidance and memory aiding in learning a problem solving skill. *Human Factors*, 32, 129-145.

Carlson, R.A. & Lundy, D.H. (1992). Consistency and restructuring in learning cognitive procedural sequences. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18, 127-141.

Carlson, R.A., Lundy, D.H., & Yaure, R.G. (1992). Syllogistic inference chains in meaningful text. *American Journal of Psychology*, 105, 75-99.

Carlson, R.A. (1991). Consciousness and content in learning: Missing or misconceived? *Behavioral and Brain Sciences*, 14, 673-674.

Carlson, R.A. (1990). Conscious mental episodes and skill acquisition. *Behavioral and Brain Sciences*, 13, 599.

Carlson, R.A., Khoo, B.H., & Elliott, R.G. II. (1990). Component practice and exposure to a problem solving context. *Human Factors*, 32, 267-286.

Carlson, R.A., Khoo, B.H., Yaure, R.G., & Schneider, W. (1990). Working memory and skill acquisition: A reply to Halpern. *Journal of Experimental Psychology: General*, 119, 333-334.

Carlson, R.A., Khoo, B.H., Yaure, R.G., & Schneider, W. (1990). Acquisition of a problem solving skill: Levels of organization and use of working memory. *Journal of Experimental Psychology: General*, 119, 193-214.

Carlson, R.A. & Yaure, R.G. (1990). Practice schedules and the use of component skills in problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 16, 484-496.

Carlson, R.A., Sullivan, M.A., & Schneider, W. (1989). Component fluency in a problem solving context. *Human Factors*, 31, 489-502.

Carlson, R.A. & Schneider, W. (1989). Acquisition context and the use of causal rules. *Memory & Cognition*, 17, 240-248.

Carlson, R.A. (1989). Processing nonlinguistic negation. *American Journal of Psychology*, 102, 211-224.

Carlson, R.A. & Schneider, W. (1989). Practice effects and composition: A reply to Anderson. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15, 531-533.

Carlson, R.A., Sullivan, M.A., & Schneider, W. (1989). Practice and working memory effects in building procedural skill. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 15, 517-526.

Carlson, R.A. & Dulany, D.E. (1988). Diagnostic reasoning with circumstantial evidence. *Cognitive Psychology*, 20, 463-492.

Dulany, D.E. & Carlson, R.A. (1985). Syntactical judgments and rules: A computer simulation for the separation of guessing of rules from control by rules. *Psychological Documents*, 15, #2710.

Carlson, R.A. & Dulany, D.E. (1985). Conscious attention and abstraction in concept learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11, 45-58.

Dulany, D.E., Carlson, R.A., & Dewey, G.I. (1985). On consciousness in syntactic learning and judgment: A reply to Reber, Allen, and Regan. *Journal of Experimental Psychology: General*, 114, 25-32.

Dulany, D.E., Carlson, R.A., & Dewey, G.I. (1984). A case of syntactical learning and judgment: How conscious and how abstract? *Journal of Experimental Psychology: General*, 113, 541-555.

Book reviews

Carlson, R.A. (2000). Are there common principles of learning? Review of *Learning: Rule Extraction and Representation*, Edited by Angela D. Friederici and Randolph Menzel. *Contemporary Psychology*, 45, 630-632.

Carlson, R.A. (1993). Review of J.A. Michon & A. Akyurek (Eds.), *Soar: A cognitive architecture in perspective*. *Contemporary Psychology*, 38, 867.

Carlson, R.A. (1988). Review of D.G. MacKay, *The Organization of Perception and Action: A Theory for Language and Other Cognitive Skills*. *Child Development Abstracts and Bibliography*, 62, 329-330.

Talks and conference presentations

Carlson, R.A. (2008). Extrinsic Action and Skilled Problem Solving. Paper presented at the 20th annual convention of the Association for Psychological Science, Chicago, May 2008 (invited).

Aderhold, L.A. & Carlson, R.A. (2007). Exploring undetected errors in skilled cognitive activity. Poster presented at the 48th annual meeting of the Psychonomic Society, Long Beach, CA, November 2007.

Carlson, R.A. (2007). Streamlined control, immediate interactive behavior, and temporal coordination. Paper presented at the 29th annual conference of the Cognitive Science Society, Nashville, August 2007 (invited).

Carlson, R.A., Avraamides, M.N., Cary, M., & Strasberg, S. (2006). What do the hands externalize in simple arithmetic? Paper presented at the 47th annual meeting of the Psychonomic Society, Houston, November 2006.

Carlson, R.A. & Smith, R.E. (2005). Counting on emotion. Paper presented at the 46th annual meeting of the Psychonomic Society, Toronto, November 11, 2005.

Cassenti, D.N. & Carlson, R.A. (2005). Interval length and event-counting errors. Paper presented at the 46th annual meeting of the Psychonomic Society, Toronto, November 11, 2005.

Carlson, R.A. (2005). Intentions, errors, and experience. Invited paper presented at Air Force sponsored workshop *Integrated Models of Cognitive Systems*, Saratoga Springs, NY, March 5, 2005.

Stevenson, L.M. & Carlson, R.A. (2004). Seeing what to do: Operator preview in cognitive tasks. Paper presented at the 45th annual meeting of the Psychonomic Society, Minneapolis, November 19, 2004.

Carlson, R.A., Cassenti, D.N., & Stevenson, L.M. (2004). Representation of intentions in routine skills. Poster presented at the 26th annual conference of the Cognitive Science Society, Chicago, August 6, 2004.

Cassenti, D.N. & Carlson, R.A. (2003). Temporal dynamics of deliberate control. Poster presented at the 44th annual meeting of the Psychonomic Society, Vancouver, November 8, 2003.

Carlson, R.A. (2003). Emotion and the experience of action. Opening Plenary, The Conference on Designing Pleasurable Products and Interfaces, June 23, 2003, Carnegie-Mellon University, Pittsburgh, PA.

Cassenti, D.N. & Carlson, R.A. (2003). Placekeeping in counting tasks. Paper presented at the 2003 annual meeting of the Eastern Psychological Association, Baltimore, March 14, 2003.

Avraamides, M.N. & Carlson, R.A. (2002). Updating self-to-object relations in spaces learned from text. Paper presented at the 43rd annual meeting of the Psychonomic Society, Kansas City, October 22, 2002.

Carlson, R.A., Stevenson, L.M., Avraamides, M.N., & Cassenti, D.N. (2002). The information-processing function of conscious intentions. Paper presented at the 24th annual conference of the Cognitive Science Society, Fairfax, Virginia, August 8, 2002.

Carlson, R.A. (2002). Multiple perspectives on consciousness for cognitive science. Tutorial presented at the 24th annual conference of the Cognitive Science Society, Fairfax, Virginia, August 7, 2002.

Stevenson, L.M. & Carlson, R.A. (2002). The procedural frame and strategy selection in simple arithmetic. Paper presented at the 73rd annual meeting of the Eastern Psychological Association, Boston, March 8, 2002.

Carlson, R.A. (2000). Conscious control of skilled mental activity. Poster presented at the 41st annual meeting of the Psychonomic Society, New Orleans, November 18, 2000.

Carlson, R.A. & Stevenson, L.M. (2000). Temporal tuning in the acquisition of cognitive skill. Poster presented at the 22nd Annual Meeting of the Cognitive Science Society, Philadelphia, August 13, 2000.

Cary, M. & Carlson, R.A. (1999). Distributing working memory resources in problem solving. Poster presented at the 40th annual meeting of the Psychonomic Society, Los Angeles, November 20, 1999.

Carlson, R.A. (1999). Cospecification and conscious agency: Instantiated goals and the specification of self. Presented at the third annual conference of the Association for the Scientific Study of Consciousness, London, Ontario, June 6, 1999.

Peck, A.C. & Carlson, R.A. (1999). Microstrategies and macroskill: Investigating processing strategies for concurrent-task performance. Presented at the 40th annual meeting of the Psychonomic Society, Los Angeles, November 20, 1999.

Liben, L.S., Carlson, R.A., Szechter, L.E., & Marrara, M.T. (1999). Understanding geographic images. Presented at the annual meeting of the American Psychological Association, August 1999.

Sohn, M.H. & Carlson, R.A. (1998). Coordinative modes and the transfer of mental skill. Presented at the 39th annual meeting of the Psychonomic Society, Dallas, November 20, 1998.

Carlson, R.A. & Sohn, M.H. (1997). Operators and directions: Processing similarities in arithmetic and spatial reasoning. Presented at the 38th annual meeting of the Psychonomic Society, Philadelphia, November 21, 1997.

Sohn, M-H. & Carlson, R.A. (1997). Establishing a viewpoint in spatial judgment. Presented at the Annual meeting of the Eastern Psychological Association, Washington, D.C., April 11, 1997.

Sohn, M-H. & Carlson, R.A. (1996). Procedural frameworks for spatial judgment. Poster presented at the 37th annual meeting of the Psychonomic Society, Chicago, October 31, 1996.

Carlson, R.A. & Sohn, M-H. (1995). Rule-application skills have internal structure. Presented at the 36th annual meeting of the Psychonomic Society, Los Angeles, November 11, 1995.

Carlson, R.A., Shin, J.C., & Wenger, J.L. (1994). Timing and the Control of Fluent Cognitive Sequences. Presented at the 35th annual meeting of the Psychonomic Society, St. Louis, November 12, 1994.

Carlson, R.A. & Cary, M. (1993). Working memory and calculation strategies in running addition. Presented at the 34th annual meeting of the Psychonomic Society, Washington, D.C., November 6, 1993.

Carlson, R.A. & Shin, J.C. (1992). Component skills and problem solving: Acquisition context and transfer demands. Presented at the 33rd annual meeting of the Psychonomic Society, St. Louis, November 15, 1992.

Carlson, R.A. (1992). Skill in sequential cognitive tasks. Invited symposium paper, presented at the annual meeting of the North American Society for the Psychology of Sport and Physical Activity, Pittsburgh, PA, June 12, 1992.

Carlson, R.A. (1991). Learning and performing fluent cognitive sequences. Presented at the annual meeting of the Psychonomic Society, San Francisco, California, November 22, 1991.

Carlson, R.A. & Wenger, J.L. (1990). Reporting information from memory and perception: Switching, access, or coordination? Presented at the annual meeting of the Psychonomic Society, New Orleans, Louisiana, November 1990.

Carlson, R.A. & Lundy, D.H. (1990). Assembling and learning procedural sequences. Presented at the annual meeting of the Southern Society for Philosophy and Psychology, Louisville, April 12, 1990.

Carlson, R.A. & Lundy, D.H. (1989). Conditions for restructuring procedural sequences. Presented at the annual meeting of the Psychonomic Society, Atlanta, November 16, 1989.

Khoo, B.H. & Carlson, R.A. (1989). Search strategies and instructed goals in the acquisition of problem solving skill. Presented at the annual meeting of the Midwestern Psychological Association, Chicago, May 1989.

Carlson, R.A. & Yaure, R.G. (1988). Random access of component skills in acquisition and problem solving. Presented at the annual meeting of the Psychonomic Society, Chicago, November 1988.

Carlson, R.A. & Schneider, W. (1987). Failure of knowledge composition and use of working memory in procedural skill. Presented at the annual meeting of the Psychonomic Society, Seattle, November 1987.

Carlson, R.A., Sullivan, M.A., & Schneider, W. (1987). Working memory and expertise in using rules. Presented at the annual meeting of the Midwestern Psychological Association, Chicago, May 1987.

Dulany, D.E. & Carlson, R.A. (1983). Consciousness in the structure of causal reasoning. Presented at the annual meeting of the Psychonomic Society, San Diego, November 1983.

Carlson, R.A. & Dulany, D.E. (1983). Conscious attention and abstraction in concept learning. Presented at the annual meeting of the Midwestern Psychological Association, Chicago, May 1983.

Carlson, R.A. & Tatum, B.C. (1978). Verbal and visual recognition measures of awareness in concept learning. Presented at the annual meeting of the Rocky Mountain Psychological Association, Denver, May 1978.

Graduate theses supervised

Anderson, R.B. (1988). Causal and statistical judgment schemas in probability estimation and choice. Master's thesis, Penn State.

Anderson, R.B. (1992). Spreading de-activation and general response inhibition in negative semantic priming. Doctoral dissertation, Penn State.

Avraamides, M. (1999). Performatory strategies for spatial working memory. Masters thesis, Penn State.

Avraamides, M. (2002). Spatial updating in described environments. Doctoral dissertation, Penn State.

Cary, M. (1993). Goals in skill acquisition and transfer. Masters thesis, Penn State.

Cary, M. (1996). External support and the development of problem- solving strategies. Doctoral dissertation, Penn State.

Cassenti, D.N. (2004). When more time hurts performance: A temporal analysis of errors in event counting. Doctoral Dissertation, Penn State.

Khoo, B.H. (1990). Mental representations resulting from different computer interfaces. Doctoral dissertation, Penn State.

Lundy, D.H. (1992). Central processing of verbal and spatial information in a dual task. Doctoral dissertation, Penn State.

Peck, A. (1998). Using a part-task technique to encourage holistic strategies and performance benefits: Training concurrent sequential tasks. Doctoral dissertation, Penn State.

Shin, J.C. (1993). Demands on working memory in adjusting to external timing constraints of a mental task. Masters thesis, Penn State.

Sohn, M.-H. (1998). Dissociation of disengagement and engagement processes in task switching. Doctoral dissertation, Penn State.

Stevenson, L.M. (2000). Goals and temporal tuning in cognitive control. Masters thesis, Penn State.

Sullivan, M.A. (1987). Attention switching between memory and perceptual information. Doctoral dissertation, Penn State.

Wenger, J.L. (1991). Coordinating information from memory and perception: An explanation for the performance costs when switching attention. Masters thesis, Penn State.

Wenger, J.L. (1994). Cognitive sequence knowledge: What is learned? Doctoral dissertation, Penn State.