

Erik M. Altmann

June, 2019

Psychology Building
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Employment and education

Professor, Department of Psychology, Michigan State University (2013-)

Assistant/Associate Professor, Department of Psychology, Michigan State University (2000-2013)

Post-doctoral fellow, Department of Psychology, George Mason University (1996-2000)

Supervisors: [Wayne D. Gray](#), [Deborah Boehm-Davis](#)

Ph.D., School of Computer Science, Carnegie Mellon University (1996)

Supervisors: [Allen Newell](#), [Bonnie E. John](#)

Dissertation: *Episodic memory for external information*

B.Sc., Department of Computing Science, University of Alberta (1987)

Research interests

Procedural error and task interruption

Memory, attention, cognitive control, cognitive ability, and expertise

Closed-form and simulation models of cognitive processes and methods for model testing

Research support

Altmann, E. M., Hambrick, D. Z., & Fenn, K. M. (08/01/2016 - 07/31/2019, extended to 10/31/2019). *Differential and experimental studies of procedural performance*. Office of Naval Research, \$489,308.

Hambrick, D. Z. & Altmann, E. M. (05/01/2016 - 04/30/2019). *Placekeeping ability as a cognitive control construct: Validity and malleability*. Office of Naval Research, \$599,334.

Fenn, K. M. & Altmann, E. M. (10/26/2015 - 09/01/2016). *Sleep quality and cognitive fitness*. Reverie Corporation, \$63,716.

Altmann, E. M. & Hambrick, D. Z. (01/01/2013 - 12/31/2015, extended to 06/30/2016). *Procedural error and task interruption*. Office of Naval Research, \$301,829.

Altmann, E. M. (01/01/2009 - 12/31/2011, extended to 10/31/2012). *Managing the disruptiveness of interruptions*. Office of Naval Research, \$304,764.

Altmann, E. M. (10/01/2005 - 09/30/2008). *Managing the disruptiveness of interruptions*. Office of Naval Research, \$280,122.

Altmann, E. M. (10/01/2002 - 09/30/2005). *Managing the disruptiveness of interruptions*. Office of Naval Research, \$311,583.

Journal articles

Burgoyne, A. P., Hambrick, D. Z., & Altmann, E. M. (in press). Placekeeping ability as a component of fluid intelligence: Not just working memory capacity. *American Journal of Psychology*. [PDF](#)

- Burgoyne, A. P., Hambrick, D. Z., & Altmann, E. M. (in press). Is working memory capacity a causal factor in fluid intelligence? *Psychonomic Bulletin & Review*. [PDF](#)
- Stepan, M. E., Fenn, K. M., & Altmann, E. M. (in press). Effects of sleep deprivation on procedural errors. *Journal of Experimental Psychology: General*. [PDF](#)
- Altmann, E. M. (2019). Response-cue interval effects in extended-runs task switching: Memory, or monitoring? *Psychological Research*, 83, 1007–1019. [PDF](#)
- Hambrick, D. Z., Altmann, E. M., & Burgoyne, A. P. (2018). A knowledge-activation approach to testing the circumvention-of-limits hypothesis. *American Journal of Psychology*, 131, 307-321. [PDF](#)
- Altmann, E. M. & Hambrick, D. Z. (2017). Practice increases procedural errors after task interruption. *Journal of Experimental Psychology: General*, 146, 615-620. [PDF](#)
- Altmann, E. M., Trafton, J. G., & Hambrick, D. Z. (2017). Effects of interruption length on procedural errors. *Journal of Experimental Psychology: Applied*, 23, 216-229. [PDF](#)
- Hambrick, D. Z. & Altmann, E. M. (2015). The role of placekeeping ability in fluid intelligence. *Psychonomic Bulletin & Review*, 22, 1104-1110. [PDF](#)
- Altmann, E. M. & Trafton, J. G. (2015). Brief lags in interrupted sequential performance: Evaluating a model and model evaluation method. *International Journal of Human-Computer Studies*, 79, 51-65. (Special issue: Multitasking and interruptions.) [PDF](#)
- Hambrick, D. Z., Oswald, F. L., Altmann, E. M., Meinz, E. J., Gobet, F., & Campitelli, G. (2014). Deliberate practice: Is that all it takes to become an expert? *Intelligence*, 45, 34-45. (Special issue: Acquiring expertise.) [PDF](#) of article, [PDF](#) of reply to Ericsson
- Altmann, E. M., Trafton, J. G., & Hambrick, D. Z. (2014). Momentary interruptions can derail the train of thought. *Journal of Experimental Psychology: General*, 143, 215-226. [PDF](#)
- 2017: [New York Times](#). 2016: [New York Times](#). 2015: [New York Post](#). 2014: [New York Magazine](#), [Ulterior Motives](#) blog. 2013: [Fox Business News](#), [KCBS 740 San Francisco](#) (audio), [Wall Street Journal](#), [LiveScience](#), [Futurity.org](#) (reddit front page, 1/14/13), [Psychology Today](#), [womenshealth.gov](#), [The Atlantic](#), [Salon](#), [CBSNews.com](#), [ABCNews.com](#), [Women's Health](#), [Men's Health](#), [Irish Times](#), [The Telegraph](#), [WILS 1320 Lansing](#) (audio), [Michigan Radio News](#)
- Altmann, E. M. (2013). Fine-grain episodic memory processes in cognitive control. *Zeitschrift für Psychologie*, 221, 23-32. (Special issue: Task switching.) [PDF](#)
- Schroder, H. S., Moran, T. P., Moser, J. S., & Altmann, E. M. (2012). When the rules are reversed: Action-monitoring consequences of reversing stimulus-response mappings. *Cognitive, Affective, & Behavioral Neuroscience*, 12, 629-643. [PDF](#)
- Altmann, E. M. & Schunn, C. D. (2012). Decay versus interference: A new look at an old interaction. *Psychological Science*, 23, 1435-1437. [PDF](#)
- Altmann, E. M. (2011). Testing probability matching and episodic retrieval accounts of response repetition effects in task switching. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37, 935-951. [PDF](#)
- Trafton, J. G., Altmann, E. M., & Ratwani, R. M. (2011). A memory for goals model of sequence errors. *Cognitive Systems Research*, 12, 134-143. [PDF](#)
- Patsenko, E. G. & Altmann, E. M. (2010). How playful is routine behavior? A selective-attention model of performance in the Tower of Hanoi. *Journal of Experimental Psychology: General*, 139, 95-116. [PDF](#)

- Altmann, E. M. & Gray, W. D. (2008). An integrated model of cognitive control in task switching. *Psychological Review*, *115*, 602-639. [PDF](#)
- Altmann, E. M. & Trafton, J. G. (2007). Timecourse of recovery from task interruption: Data and a model. *Psychonomic Bulletin & Review*, *14*, 1079-1084. [PDF](#)
- Altmann, E. M. (2007b). Cue-independent task-specific representations in task switching: Evidence from backward inhibition. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*, 892-899. [PDF](#)
- Altmann, E. M. (2007a). Comparing switch costs: Alternating runs and explicit cuing. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*, 475-483. [PDF](#)
- Altmann, E. M. (2006). Task switching is not cue switching. *Psychonomic Bulletin & Review*, *13*, 1016-1022. [PDF](#)
- Altmann, E. M. (2005). Repetition priming in task switching: Do the benefits dissipate? *Psychonomic Bulletin & Review*, *12*, 535-540. [PDF](#)
- Altmann, E. M. & Burns, B. D. (2005). Streak biases in decision making: Data and a memory model. *Cognitive Systems Research*, *6*, 5-16. [PDF](#)
- Altmann, E. M. (2004b). The preparation effect in task switching: Carryover of SOA. *Memory & Cognition*, *32*, 153-163. [PDF](#)
- Altmann, E. M. (2004a). Advance preparation in task switching: What work is being done? *Psychological Science*, *15*, 616-622. [PDF](#)
- Altmann, E. M. (2003). Reconstructing the serial order of events: A case study of September 11, 2001. *Applied Cognitive Psychology*, *17*, 1067-1080. [PDF](#)
- Arrington, C. M., Altmann, E. M., & Carr T. H. (2003). Tasks of a feather flock together: Similarity effects in task switching. *Memory & Cognition*, *31*, 781-789. [PDF](#)
- Trafton, J. G., Altmann, E. M., Brock, D. P., & Mintz, F. E. (2003). Preparing to resume an interrupted task: Effects of prospective goal encoding and retrospective rehearsal. *International Journal of Human-Computer Studies*, *58*, 583-603. [PDF](#)
- Altmann, E. M. (2002). Functional decay of memory for tasks. *Psychological Research*, *66*, 287-297. [PDF](#)
- Altmann, E. M. & Trafton, J. G. (2002). Memory for goals: An activation-based model. *Cognitive Science*, *26*, 39-83. [PDF](#) and [model](#)
- Altmann, E. M. & Gray, W. D. (2002). Forgetting to remember: The functional relationship of decay and interference. *Psychological Science*, *13*, 27-33. [PDF](#)
- Altmann, E. M. (2001). Near-term memory in programming: A simulation-based analysis. *International Journal of Human-Computer Studies*, *54*, 189-210. [PDF](#)
- Altmann, E. M. & John, B.E. (1999). Episodic indexing: A model of memory for attention events. *Cognitive Science*, *23*, 117-156. [PDF](#)

Other publications

- Hambrick, D. Z., Burgoyne, A. P., & Altmann, E. M. (in press). Intelligence and problem solving. In R. J. Sternberg (Ed.), *The Cambridge Handbook of Intelligence, 2nd edition*. Cambridge: Cambridge University Press.
- Zish, K., Aguiar, N., McCurry, M., Altmann, E. M., & Trafton, J. G. (July, 2018). The time course recovery of confidence judgments using interruptions. In I. Juvina, J. Houpt, & C. Myers

(Eds.), *Proceedings of the 16th international conference on cognitive modeling* (pp. 209-214). Madison, WI: University of Wisconsin. [PDF](#)

Altmann, E. M. (2018). No evidence that sleep deprivation effects and the vigilance decrement are functionally equivalent: Comment on Veksler and Gunzelmann (2017). *Cognitive Science*, *42*, 708-711. [PDF](#)

Hambrick, D. Z., Altmann, E. M., Oswald, F. L., Meinz, E. J., & Gobet, F. (2014). Facing facts about deliberate practice. *Frontiers in Psychology*. [PDF](#)

Hambrick, D. Z., Altmann, E. M., Oswald, F. L., Meinz, E. J., Gobet, F., & Campitelli, G. (2014). Accounting for expert performance: The devil is in the details. *Intelligence*, *45*, 112-114. (Special issue: Acquiring expertise; reply to Ericsson.) [PDF](#)

Altmann, E. M. (2014). The extended runs procedure and restart cost. In J. Grange and G. Houghton (Eds.), *Task switching and cognitive control* (pp. 101-116). New York: Oxford. [PDF](#)

Altmann, E. M. (2009). Evidence for temporal decay in short-term episodic memory. *Trends in Cognitive Sciences*, *13*, 279-279. [PDF](#)

Altmann, E. M. (2007). Control signals and goal-directed behavior. In W. Gray (Ed.), *Integrated models of cognitive systems* (pp. 380-387). New York: Oxford.

Altmann, E. M. & Trafton, J. G. (August, 2004). Task interruption: Resumption lag and the role of cues. *Proceedings of the 26th annual conference of the Cognitive Science Society*. [PDF](#)

Altmann, E. M. (2003). Task switching and the pied homunculus: Where are we being led? *Trends in Cognitive Sciences*, *7*, 340-341. [PDF](#)

Altmann, E. M. (2003). Think globally, ask functionally. *Behavioral & Brain Sciences*, *26*, 602-603. (Commentary.) [PDF](#) of target article.

Altmann, E. M. & Davidson, D. J. (August, 2001). An integrative approach to Stroop: Combining a language model and a unified cognitive theory. *Proceedings of the 23rd annual conference of the Cognitive Science Society* (pp. 21-26). Hillsdale, NJ: Erlbaum. [PDF and model](#)

Altmann, E. M., Cleeremans, A., Schunn, C. D., & Gray, W. D. (Eds.) (2001). *Proceedings of the 2001 fourth international conference on cognitive modeling*. Hillsdale, NJ: Erlbaum.

Altmann, E. M. (August, 2000). Memory in chains: Modeling primacy and recency effects in memory for order. *Proceedings of the 22nd annual conference of the Cognitive Science Society* (pp. 31-36). Hillsdale, NJ: Erlbaum. [PDF](#)

Altmann, E. M. (March, 2000). Memory in chains: A dual-code associative model of positional uncertainty. In N. Taatgen & J. Aasman (Eds.), *Proceedings of the 3rd international conference on cognitive modeling* (pp. 9-16). Veenendaal, The Netherlands: Universal Press.

Altmann, E. M. & Gray, W. D. (March, 2000). An integrated model of serial attention. In N. Taatgen & J. Aasman (Eds.), *Proceedings of the 3rd international conference on cognitive modeling* (pp. 17-24). Veenendaal, The Netherlands: Universal Press. [PDF](#)

Gray, W. D. & Altmann, E.M (2000). Cognitive modeling in human-computer interaction. In W. Karwowski (Ed.), *International Encyclopedia of Ergonomics and Human Factors*.

Presentations, posters, panels

Stepan, M.E., Altmann, E.M., & Fenn, K.M. (June, 2019). The role of caffeine in mitigating cognitive deficits due to sleep deprivation. Poster, 33rd annual meeting of the Associated Professional Sleep Societies (SLEEP 2019), San Antonio, TX.

- Hambrick, D. Z., Altmann, E. M., & Burgoyne, A. P. (November, 2018). Placekeeping ability is an important component of fluid intelligence. Poster, 59th annual meeting of the Psychonomic Society, New Orleans, LA.
- Stepan, M. E., Fenn, K. M., & Altmann, E. M. (November, 2018). The role of caffeine in mitigating the effect of sleep deprivation on memory maintenance. Poster, 59th annual meeting of the Psychonomic Society, New Orleans, LA.
- Stepan, M. E., Fenn, K. M., & Altmann, E. M. (June, 2018). Sleep deprivation increases placekeeping errors. Poster, 32nd annual meeting of the Associated Professional Sleep Societies (SLEEP 2018), Baltimore, MD.
- Stepan, M. E., Fenn, K. M., & Altmann, E. M. (November, 2017). The effect of sleep deprivation on placekeeping ability. Poster, 58th annual meeting of the Psychonomic Society, Vancouver, Canada.
- Burgoyne, A. P., Hambrick, D. Z., & Altmann, E. M. (May, 2017). Cognitive determinants of multitasking ability. Poster, Annual APS Convention, Boston, MA.
- Altmann, E. M. & Hambrick, D. Z. (November, 2016). Practice increases procedural errors after task interruption. Paper, 57th annual meeting of the Psychonomic Society, Boston, MA.
- Panelist, How people learn: A cognitive science perspective – A workshop for graduate students, post-docs, and faculty. (April, 2013). Center for Academic and Future Faculty Excellence, Michigan State University.
- Moran, T. P., Moser, J. S., & Altmann, E. M. (November, 2012). Electrophysiological evidence for increased response repetition. Poster, 53rd annual meeting of the Psychonomic Society, Minneapolis, Minnesota.
- Panelist, How people learn: A cognitive science perspective – A workshop for graduate students, post-docs, and faculty. (April, 2012). Center for Academic and Future Faculty Excellence, Michigan State University.
- Patsenko, E. G. & Altmann, E. M. (November, 2009). Forced choice error correction with ambiguous error feedback. Poster, 50th annual meeting of the Psychonomic Society, Boston, Massachusetts.
- Altmann, E. M. & Patsenko, E. G. (November, 2008). Is problem solving goal-directed? A selective attention model of performance in the Tower of Hanoi. Paper, 49th annual meeting of the Psychonomic Society, Chicago, IL.
- Altmann, E. M. (July, 2008). Short-term decay of production values for cognitive control. Paper, 14th annual ACTR workshop, Pittsburgh, PA.
- Pierce, G. L. & Altmann, E. M. (November, 2007). Recovery from visual disruptions in reading and scene viewing: Evidence from saccade hazard rates. Poster, OPAM (Object Perception, Attention, and Memory).
- Altmann, E. M. & Trafton, J. G. (July, 2006). Modeling the timecourse of recovery from task interruption. Paper, 13th annual ACT-R workshop, Pittsburgh, PA.
- Altmann, E. M. (November, 2005). Switch cost confusion: Validity problems in task switching research. Paper, 46th annual meeting of the Psychonomic Society, Toronto, Canada.
- Altmann, E. M. (March, 2005). Detecting goals in memory. Invited paper, Integrated Modeling of Cognitive Systems (AFOSR workshop), Saratoga Springs, NY.
- Altmann, E. M. & Trafton, J. G. (May, 2004). Task interruption: The cues we use to recover. Hot topic paper, Annual APS Convention, Chicago, IL.

- Altmann, E. M. (January, 2004). Beyond switch cost: Modeling memory processes in task switching. Psychology colloquium, The University of Michigan, Ann Arbor, MI.
- Altmann, E. M. (November, 2003). Switch cost: Much ado about (almost) nothing. Paper, 44th annual meeting of the Psychonomic Society, Vancouver, Canada.
- Altmann, E. M. (August, 2003). Beyond switch cost as a measure of cognitive control: A plug for simulation. Publication-based paper, Twenty-fifth annual conference of the Cognitive Science Society, Boston, MA.
- Altmann, E. M. (May, 2003). Switch cost: A failed measure of executive control. Invited paper, Midwestern Psychological Association, Chicago, IL.
- Altmann, E. M. & Trafton, J. G. (May, 2002). Cognitive consequences of interruption in dynamic environments. ONR Workshop on Attention, Perception and Data Visualization. Washington, DC.
- Altmann, E. M. (September, 2001). Functional decay in working memory: Subtle effects of a pervasive process. Invited paper, Workshop on Computational Models of Memory, University of Amsterdam (EPOS), Amsterdam, The Netherlands.
- Altmann, E. M. (July, 2001). The subatomic components of thought. Invited paper, ACT-R post-graduate summer school, Berkeley Springs, WV.
- Altmann, E. M. (May, 2001). A signal detection model of executive control. Invited paper, Colloquium on Control of Cognitive Processes, Royal Netherlands Academy of Arts and Sciences, Amsterdam, The Netherlands.
- Peterson, M. J. & Altmann, E. M. (August, 2000). Effects of presentation format on memory for order. *Proceedings of the 22nd annual conference of the Cognitive Science Society* (poster pp. 847-852). Hillsdale, NJ: Erlbaum.
- Altmann, E. M. & Gray, W. D. (August, 2000). Managing attention by preparing to forget. *Proceedings of the Human Factors and Ergonomics Society 44th annual meeting*.
- Altmann, E. M. (January, 2000). Functional decay: How forgetting sustains performance. Psychology colloquia, Georgia Institute of Technology (Jan. 10), The Pennsylvania State University (Jan. 14), George Mason University (Jan.17), and Michigan State University (Jan. 24).
- Altmann, E. M. (September, 1999). Applied cognitive architectures. Army-Navy Applied Cognitive Architectures Workshop, Washington, DC.
- Altmann, E. M. & Gray, W. D. (June, 1999). Managing attention by preparing to forget. Workshop on Critical Event Systems: Attention management, interruptions, and alerts. Office of Naval Research, Washington, DC.
- Altmann, E. M. (April, 1998). Mechanisms and implications of pervasive episodic memory. Keynote paper, Second European conference on cognitive modeling. Nottingham, UK.

Teaching

Undergraduate: Introduction to Psychology, Cognitive Psychology

Graduate: Basic Cognitive Processes, Higher Order Cognitive Processes

Professional service

Associate Editor, *Journal of Experimental Psychology: Learning, Memory, and Cognition* (2018-)

Associate Editor, *Memory & Cognition* (2009-2014)

Board of Reviewers, *Cognitive Science* (2015-)

Consulting Editor, *Journal of Experimental Psychology: General* (2007-)

Consulting Editor, *Journal of Experimental Psychology: Learning, Memory, and Cognition* (2004-2017)

Consulting Editor, *Psychonomic Bulletin & Review* (2007-)

Chair, Cognition and Cognitive Neuroscience program, Department of Psychology, Michigan State University (2005-2015)

NSF panelist, IGERT (1 instance), PAC (3 instances), and SciSIP (1 instance)

Program Committee member, Annual Meeting of the Cognitive Science Society: 2019 (Montreal), 2018 (Madison), 2017 (London, UK), 2016 (Philadelphia), 2015 (Pasadena), 2014 (Quebec), 2013 (Berlin), 2012 (Sapporo), 2011 (Boston), 2010 (Portland, OR), 2009 (Amsterdam), 2008 (Washington, DC), 2007 (Nashville), 2006 (Vancouver), 2005 (Stresa, Italy), 2004 (Chicago), 2003 (Boston), and 2002 (Fairfax, VA).

Program Committee member, International Conference on Cognitive Modeling: 2018 (Madison), 2017 (Warwick, UK), 2016 (State College, PA), 2015 (Groningen), 2012 (Berlin), 2010 (Philadelphia), 2009 (Manchester, UK), 2007 (Ann Arbor), and 2006 (Trieste, Italy).

Ad hoc reviewer for *ACM Transactions on Computer-Human Interaction*; *Acta Psychologica*; *American Journal of Psychology*; *Applied Cognitive Psychology*; *Attention, Perception, & Psychophysics*; *Behavior Research Methods*; *Behavioural Brain Research*; *Canadian Journal of Experimental Psychology*; *Cerebral Cortex*; *Cognition*; *Cognition and Emotion*; *Cognitive Research: Principles and Implications*; *Cognitive Science*; *Cognitive Psychology*; *Consciousness and Cognition*; *Experimental Brain Research*; *Experimental Psychology*; *European Journal of Cognitive Psychology*; *Human Factors*; *IEEE Transactions on Systems Man and Cybernetics (Part A)*; *Information Systems Research*; *International Journal of Human Computer Studies*; *International Journal of Psychology*; *Journal of Applied Social Psychology*; *Journal of Behavioral Decision Making*; *Journal of Cognitive Neuroscience*; *Journal of Cognitive Engineering and Decision Making*; *Journal of Experimental Psychology: Applied*; *Journal of Experimental Psychology: Human Perception and Performance*; *Journal of the Learning Sciences*; *Journal of Mathematical Psychology*; *Journal of the Royal Society Interface*; *Judgment and Decision Making*; *Kognitionswissenschaft*; *NeuroImage*; *Pain Management*; *PLoS ONE*; *Proceedings of the National Academy of Sciences*; *Psychological Bulletin*; *Psychological Research*; *Psychological Review*; *Psychological Science*; *Psychology and Aging*; *Quarterly Journal of Experimental Psychology*; *Topics in Cognitive Science*; *User Modeling and User-Adapted Interaction*; *Visual Cognition*; and *Zeitschrift für Psychologie*