Michael D. Byrne
Curriculum Vitæ
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Contact information
Department of Psychological Sciences
Rice University
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Education
- Ph.D. in Experimental Psychology with Cognitive Science certificate, Georgia Institute of Technology, 1996. Dissertation title: *A computational theory of working memory: Speed, parallelism, activation, and noise*.
- M.S. in Computer Science, Georgia Institute of Technology, 1995.
- M.S. in Experimental Psychology, Georgia Institute of Technology, 1993. Thesis title: *Systematic procedural error as a result of interaction between working memory demand and task structure*.
- B.S. in Engineering (Magna Cum Laude), University of Michigan, 1991.
- B.A. in Psychology (High Distinction), University of Michigan, 1991.

Professional Affiliations
- Member, Human Factors and Ergonomics Society (HFES)
- Member, Cognitive Science Society
- Member, Association for Computing Machinery (ACM) SIGCHI
- Member, Psychonomic Society
- Member, Association for Psychological Science

Awards and Honors
- Kavli Fellow, National Academy of Science, Fall 2009
- Jack A. Kraft Innovator Award, Human Factors and Ergonomics Society, 2020
- Science Policy Fellow, Human Factors and Ergonomics Society, 2020–present
- Fellow, Human Factors and Ergonomics Society
- Fellow, Association for Psychological Science
- Fellow, Psychonomic Society
- Full Member, Sigma Xi Scientific Research Honor Society
- NIMH Postdoctoral Fellow
- National Science Foundation Graduate Fellow
- Tau Beta Pi (National Engineering Honor Society)
- Psi Chi (National Psychology Honor Society)
- Outstanding Associate for 2001–2002, Mary Gibbs Jones residential college, Rice University

• Distinguished Faculty Associate for 2003–2004, 2004–2005, 2005–2006, and 2006–2007, Mary Gibbs Jones residential college, Rice University

Research Interests
Human factors/human-computer interaction, computational models of cognition and performance, integration of cognition with perception and action, systematic human error, visual search and attention, working memory, judgment/decision-making, ecological psychology/ situated action, cognitive aging, educational technology, statistical methodology.

Teaching Interests
Human factors/human-computer interaction, computational modeling, statistics, cognition, decision-making, memory.

Courses Taught
Advanced Psychological Statistics I; Computational Modeling of Human Cognitive Processes; Foundations of Human Factors/Engineering Psychology; Reasoning, Decision Making, and Problem Solving; Introduction to Cognitive Psychology; Election Systems (interdisciplinary course with Computer Science and Political Science); Human-Computer Interaction; Human Factors and Ergonomics; Research Methods; Foundations of Cognitive Psychology

External Funding
• National Science Foundation Grant #2033923, "RAPID: Optimizing vote-by-mail implementations on consumer grade equipment." Co-PI, $200,000 from 07/01/20 to 06/30/21.

• National Science Foundation Grant #IIS-1920513, "Protecting Election Integrity Via Automated Ballot Usability Evaluation" Sole PI, $499,994 from 10/01/19 to 09/30/22.

• MIT/William & Flora Hewlett Foundation, "Voter Detection of Anomalies on BMD Ballots" Co-PI, $3500 from 06/01/19 to 05/30/21.

• National Science Foundation Grant #IIS-1638073, "NRI: Guiding with touch: Haptic cueing of surgical techniques on virtual and robotic platforms." Co-PI, $1,095,440 from 1/1/2017 to 12/31/2019.

• National Science Foundation grant #CNS-12550936, "EAGER: Protecting Election Integrity Via Automated Ballot Usability Evaluation." Sole PI, $299,996 from 10/01/15 to 09/30/19.

• National Aeronautics and Space Administration (through Wyle Laboratories), #T72332, "Literature Review on Modeling and Simulation for Habitat/Vehicle Design and Assessment." Sole PI, $28,132 from 11/15/12 to 04/30/13.

• National Institute of Standards and Technology grant #70NANB12H215, "Extending ACT-R for Typing on Mobile Devices." Sole PI, $118,787 from 10/1/2012 to 12/31/2014.

• National Institute of Standards and Technology grant #60NANB12D249, "Usability Assessment of e2e Voting Systems." Co-PI. $198,296 from 09/01/12 to 08/31/15.

• National Institute of Standards and Technology contract #SB1341-11-RQ-0557, "Voting Systems: Analysis of Auditory Ballot Interfaces." Co-PI. $81,939. 10/1/2011–6/25/2013.

- National Aeronautics and Space Administration, "3X-TREAM: 3X Transparent Research Environment for Aviation Modeling." Co-PI. Rice portion: $398,362 over three years. 5/1/2009–4/30/2012.
- National Science Foundation grant #IIS-0812569, "Cognitive Modeling of Human Motor Skill Acquisition." Co-PI. $430,993, from 8/1/2008 to 7/31/2011.
- National Science Foundation grant #CNS-0524211, "A Center for Correct, Usable, Reliable, Auditable, and Transparent Elections." Co-PI. $9M total funding, $964,944 allocated to Byrne, from 10/1/2005 to 9/30/2012.
- Office of Naval Research grant #N00014-06-1-0056, "Systematic Error and Slowdown in the Execution of Routine Procedures." Sole PI. $238,638 from 10/1/2005 to 9/30/2008.
- Office of Naval Research grant #N00014-03-1-0094, "Systematic Procedural Error." Sole PI. $192,598, from 10/22/2002 to 9/31/2005.
- National Aeronautics and Space Administration grant #NDD2-1321, "Integrated Modeling of Cognition and the Information Environment." Sole PI. $273,578, from 03/01/2002 to 12/31/2005.
- National Aeronautics and Space Administration grant #NCC2-1219, "Integrated Modeling of Cognition and the Information Environment." PIs: Michael D. Byrne and Alex Kirlik. $95,591, from 03/01/2001 to 12/01/2001.

Total external funding over $5 million

Service

- Associate Editor for the journal *Human Factors*, 2012–2014; editorial board, 2004–2011; also co-editor of 2003 special section: "Quantitative Formal Models of Human Performance"
- Editorial board for the journal *Cognitive Engineering and Decision Making,* 2011–present
- Associate Editor of the journal *Cognitive Science*, 2007–2010
- Editorial board for the journal *Journal of Experimental Psychology: Applied,* 2007–2010
- Member, Los Angeles County Voting System Assessment Project Technical Advisory Committee, 2013–present
- Panelist for National Academy of Science/National Research Council review panel on Soldier Systems, 2007–2013
- Chair, Human Performance Modeling technical group, Human Factors and Ergonomics Society, Fall 2008–Fall 2012
- Grant review panel member, NSF program on Information and Intelligent Systems 2009, 2010, 2013, 2015, 2019; NSF program on Secure and Trustworthy Cyberspace, 2018
- Grant review panel member, NASA Space Human Factors Program, August 2003
- Ad-hoc grant reviewer for NSF, AFOSR, EPSRC (U.K. scientific funding agency), NWO (Dutch scientific funding agency), Research Grants Council (RGC) of Hong Kong
- Ad-hoc reviewer for the following journals: *Psychological Review, Cognition*, *Psychology and Aging, Human-Computer Interaction*, *ACM Transactions on Computer-Human Interaction* (ToCHI), *International Journal of Human-Computer Studies*, *Trends in Cognitive Sciences*, *American Journal of Political Science, Memory and Cognition*, *IEEE Transactions on Systems, Man, and Cybernetics, International Journal of Human-Computer Interaction*, *American Journal of Political Science*, *Journal of Biomedical Informatics, Journal of the Learning*

Sciences, IEEE Transactions on Security & Privacy, Applied Ergonomics, IEEE Transactions on Computers, Information and Software Technology, Data and Knowledge Engineering, Cognitive Psychology, Ecological Modeling, IEEE Transactions on Human-Machine Systems, Human Factors and Ergonomics in Manufacturing & Service Industries

- Reviewer for Conference of the Cognitive Science Society 1994, 1996-7, 1999-2000, 2002–2005, 2007, 2008, 2014
- Reviewer for ACM-SIGCHI, 1997–2004, 2006–2008, 2010, 2011–2017, 2019
- Reviewer for International Conference on Cognitive Modeling 2004, 2006, 2007, 2010, 2012, 2015–2018
- Associate Program Chair for Papers, ACM-SIGCHI 2012
- Steering committee for the 1995 ACM-SIGCHI Research Symposium
- Steering committee for the 1994 Conference of the Cognitive Science Society
- Co-chair for Student Volunteers ACM-SIGCHI 1998
- CHIKids volunteer, ACM-SIGCHI 1999
- Student volunteer, ACM-SIGCHI 1994–1996
- Conference committees: HCI International 2005, Cognitive Science 2002
- Director of Cognitive Sciences undergraduate major, Rice University, July 2015–June 2018
- Undergraduate advisor for the Cognitive Sciences major, Rice University, Fall 2003–Spring 2007, Fall 2008–present
- Undergraduate divisional advisor, Rice University, Fall 2001–Fall 2012
- Residential college associate, Mary Gibbs Jones college, Rice University, 1999–present

Work Experience

Summer 2012–present
Professor, Rice University Department of Psychological Sciences (chair of Human Factors/HCI research group and member of Cognitive research group) and Department of Computer Science.

Summer 2006 – Summer 2012
Associate Professor, Rice University Department of Psychology (Human Factors/HCI research group and Cognitive research group) and Department of Computer Science.

Summer 1999 – Summer 2006
Assistant Professor, Rice University Department of Psychology, Human Factors/HCI track within the Cognitive program.

Fall 1996 – Summer 1999
Postdoctoral Research Associate, Carnegie Mellon University. Primary project involved integration of production system model of cognition with theories of perception and action.

1994 – 1996
Graduate Research Assistant. Worked on multiple projects under the supervision of different faculty members in the College of Computing and School of Psychology at Georgia Tech.

1992 – 1994
Teaching Assistant for the graduate statistics sequence under the direction of Professor Christopher Hertzog, School of Psychology, Georgia Institute of Technology. Responsibilities included preparing a weekly 2.5-hour lecture/problem solving session for first-year graduate students, as well as generating and grading laboratory assignments and exams.

Summer 1991
HyperCard Engineer, Claris Corporation. Santa Clara, CA. Primary duties included development of HyperCard tools and external commands.

1990 – 1991
Tool Developer and Support Engineer, Apple Computer, Inc. Campbell, CA and Ann Arbor, MI. Primary project was Compatibility Checker 1.0, a software tool for evaluating the compatibility of applications and extensions with System 7.0.

Ph.D. Dissertations Supervised

Howie, N. H. (2015). The Generalizability of Cognitive Modeling Parameters for Older Adults. Doctoral dissertation, Rice University, Houston, TX.

Gallagher, M. A. (2015). Modeling Password Entry on Mobile Devices: Please Check Your Password and Try Again. Doctoral dissertation, Rice University, Houston, TX.

Stanley, C. (2014). Comparing Vector-Based And ACT-R Memory Models Using Large-Scale Datasets: User-Customized Hashtag And Tag Prediction On Twitter And Stackoverflow. Doctoral dissertation, Rice University, Houston, TX.

Zemla, J. C. (2014). Factors Influencing Speed-Accuracy Tradeoffs In Decision Making. Doctoral dissertation, Rice University, Houston, TX.

Campbell, B. A. (2013). The Usability Implications of Long Ballot Content for Paper, Electronic, and Mobile Voting Systems. Doctoral dissertation, Rice University, Houston, TX.

Piner, G. E. (2013). CHILVote: The Design and Assessment of an Accessible Audio Voting System. Doctoral dissertation, Rice University, Houston, TX.

Greene, K. K. (2010). Effects of Multiple Races and Header Highlighting on Undervotes in the 2006 Sarasota General Election: A Usability Study and Cognitive Modeling Assessment. Doctoral dissertation, Rice University, Houston, TX.

Tamborello, F. P. (2009). A Computational Model of Routine Procedural Memory. Doctoral dissertation, Rice University, Houston, TX.

Everett, S. P. (2007). The Usability of Electronic Voting Machines and How Votes Can Be Changed Without Detection. Doctoral dissertation, Rice University, Houston, TX.

Fick, C. (2007). Flying Under the Radar: Studying Inattentional Blindness in a Dynamic Task. Doctoral Dissertation, Rice University, Houston, TX.

Chung, P. H. (2006). Changing the Interface with Minimal Disruption: The Roles of Layout and Labels. Doctoral dissertation, Rice University, Houston, TX.

Fleetwood, M. D. (2005). Refining Theoretical Models of Visual Sampling in Supervisory Control Tasks: Examining the Influence of Alarm Frequency, Effort, Value, and Salience. Doctoral dissertation, Rice University, Houston, TX.

Katz, M. A. (2001). Searching and Browsing on E-commerce Sites: Frequency, Efficiency and Rationale. Doctoral dissertation, Rice University, Houston, TX.

Serig, E. M. (2001). Evaluating Organizational Response to a Cognitive Problem: A Human Factors Approach. Doctoral dissertation, Rice University, Houston, TX.

Master's Theses Supervised

Wang, X. (2020). Computational Modeling Reveals How Navigation Strategy and Ballot Layout Lead to Voter Error. Master's thesis, Rice University, Houston, TX.

Howie, N. T. (2013). The Effect of Response Modality on Task Performance When Using an Interactive Voice Response System for Older and Younger Adults. Master's thesis, Rice University, Houston, TX.

Gallagher, M. A. (2013). Modeling Curved Movement. Master's thesis, Rice University, Houston, TX.

Zemla, J. C. (2011). A Computational Model of Jetliner Taxiing. Master's thesis, Rice University, Houston, TX.

Piner, G. E. (2011). A Usability and Real World Perspective on Accessible Voting. Master's thesis, Rice University, Houston, TX.

Campbell, B. A. (2011). Assessing the usability of the straight-party voting ballot option for paper, punch card, and electronic voting systems. Master's thesis, Rice University, Houston, TX.

Stanley, C. (2009). Visual Displays: Developing a Computational Model Explaining the Global Effect. Master's thesis, Rice University, Houston, TX.

Greene, K. K. (2008). Usability of Electronic Voting Interfaces: Sequential Versus Direct Access. Master's thesis, Rice University, Houston, TX.

Tamborello, F. P. (2006). Visual Displays: The Continuing Investigations of the Highlighting Paradox. Master's thesis, Rice University, Houston, TX.

Everett, S. P. (2005). Varying Icon Spacing Changes Users' Visual Search Strategy: Evidence From Experimental Data, Cognitive Modeling, and Eye-Tracking. Master's thesis, Rice University, Houston, TX.

Chung, P. H. (2004). Visual Cueing to Reduce Error in Computer-based Tasks. Master's thesis, Rice University, Houston, TX.

Fick, C. S. (2003). Attention Capture by Visual Onsets and the Mediating Power of Attentional Set. Master's thesis, Rice University, Houston, TX.

Fleetwood, M. D. (2001). Computational Modeling of Icon Search. Master's thesis, Rice University, Houston, TX.

Publications and Presentations

* Papers preceded by an asterisk have over 100 citations according to Google Scholar.
Two asterisks indicate over 1,000 citations.

Refereed Journals

Murali, B., Belvroy, V. M., Pandey, S., Bismuth, J., Byrne, M. D., & O'Malley, M. K. (in press). Velocity-domain motion quality measures for surgical performance evaluation and feedback. To appear in *Journal of Medical Devices*.

Kortum, P., Byrne, M. D., & Whitmore, J. (in press). Voter verification of BMD ballots is a two-part question: Can they? Mostly, they can. Do they? Mostly, they don't. To appear in *Election Law Journal*.

O'Malley, M. K., Byrne, M. D., Estrada, S., Duran, C., Schultz, D., & Bismuth, J. (2019). Expert surgeons can smoothly control robotic tools with a discrete control interface. *IEEE Transactions on Human-Machine Systems, 49,* 388-394.

Acemyan, C. Z., Kortum, P., Byrne, M. D., & Wallach, D. S. (2018). Summative usability assessments of STAR-Vote—A cryptographically secure e2e voting system that has been empirically proven to be easy to use. *Human Factors*.

Byrne, M. D. (2017). Improving voting systems' user-friendliness, reliability, & security. *Behavioral Science & Policy, 3,* 15–24.

Kortum, P., & Byrne, M. D. (2016). The importance of psychological science in a voter's ability to cast a vote. *Current Directions in Psychological Science, 25,* 467–473.

Stanley, C., & Byrne, M. D. (2016). Comparing vector-based and Bayesian memory models using large-scale datasets: User-generated hashtag and tag prediction on Twitter and StackOverflow. *Psychological Methods, 21,* 542–565.

Estrada, S., Duran, C., Schulz, D., Bismuth, J., Byrne, M. D., & O'Malley, M. K. (2016). Smoothness of surgical tool tip motion correlates to skill in endovascular tasks. *IEEE Transactions on Human-Machine Systems, 46*, 647–659.

Acemyan, C. Z., Kortum, P., Byrne, M. D., & Wallach, D. S. (2015). From error to error: Why voters could not cast a ballot and verify their vote with Helios, Prêt à Voter, and Scantegrity II. *Journal of Election Technology and Systems, 3*, 1–25.

Zemla, J. C., Tossell, C. C., Kortum, P., & Byrne, M. D. (2015). A Bayesian approach to predicting website revisitation on mobile phones. *International Journal of Human-Computer Studies, 83*, 43–50.

Acemyan, C. Z., Kortum, P., Byrne, M. D., & Wallach, D. S. (2014). Usability of voter verifiable end-to-end voting systems: Baseline data for Helios, Prêt à Voter, and Scantegrity II. *Journal of Election Technology and Systems, 2,* 26–56.

Campbell, B. A., Tossell, C. C., Byrne, M. D., & Kortum, P. (2014). Towards more usable electronic voting: Testing the usability of a smartphone voting system. *Human Factors, 56,* 973–985.

O'Malley, M. K., Purkayastha, N., Howie, N., & Byrne, M. D. (2014). Identifying successful motor task completion via motion-based performance metrics. *IEEE Transactions on Human-Machine Systems, 44,* 139–145.

Purkayastha, N., Byrne, M. D., & O'Malley, M. K. (2013). Human-scale motion capture with an accelerometer-based gaming controller. *Journal of Robotics and Mechatronics, 25,* 458–465.

Bell, S., Benaloh, J., Byrne, M. D., DeBeauvior, D., Eakin, B., Fisher, G., Kortum, P., McBurnett, N., Montoya, J., Parker, M., Pereira, O., Stark, P. B., Wallach, D. S., & Winn, M. (2013). STAR-Vote: A secure, transparent, auditable, and reliable voting system. *Journal of Election Technology and Systems*, *1*, 18–37.

Greene, K. K., Byrne, M. D., & Goggin, S. N. (2013). How to build an undervoting machine: Lessons from an alternative ballot design. *Journal of Election Technology and Systems*, *1*, 38–52.

Byrne, M. D. (2012). Unified theories of cognition. *Wiley Interdisciplinary Reviews: Cognitive Science, 4*, 431–438.

Goggin, S. N., Byrne, M. D., & Gilbert, J. (2012). Post-election auditing: Effects of procedure and ballot type on manual counting accuracy, efficiency, and auditor satisfaction and confidence. *Election Law Journal: Rules, Politics, and Policy, 11*, 36–51.

Campbell, B. A., & Byrne, M. D. (2009). Straight party voting: What do voters think? *IEEE Transactions on Information Forensics and Security, 4*(4), 718–728.

Gunzelmann, G., Byrne, M. D., Gluck, K. A., & Moore, L. R. (2009). Using computational cognitive modeling to predict dual-task performance with sleep deprivation. *Human Factors, 51*, 251–260.

Stein, R. M., Vonnahme, G., Byrne, M., & Wallach, D. (2008). Voting technology, election administration, and voter performance. *Election Law Journal: Rules, Politics, and Policy*, 7, 123–135.

Chung, P. H., & Byrne, M. D. (2008). Cue effectiveness in mitigating postcompletion errors in a routine procedural task. *International Journal of Human-Computer Studies, 66*, 217–232.

Tamborello, F. P., & Byrne, M. D. (2007). Adaptive but non-optimal visual search behavior in highlighted displays. *Journal of Cognitive Systems Research*, *8*, 182–191.

Byrne, M. D., & Davis, E. M. (2006). Task structure and postcompletion error in the execution of a routine procedure. *Human Factors, 48,* 627–638.

Martin, R. C., & Byrne, M. D. (2006). Why opening a door is as easy as eating an apple: A reply to Thompson-Schill & Botvinick (2006). *Psychonomic Bulletin & Review, 13*, 402–408.

*Fleetwood, M. D., & Byrne, M. D. (2006). Modeling the visual search of displays: A revised ACT-R model of icon search based on eye-tracking data. *Human-Computer Interaction, 21*, 153–198.

*Anderson, J. R., Taatgen, N. A., & Byrne, M. D. (2005). Learning to achieve perfect time sharing: Architectural implications of Hazeltine, Teague, & Ivry (2002). *Journal of Experimental Psychology: Human Perception and Performance, 31,* 749–761.

*Byrne, M. D., & Kirlik, A. (2005). Using computational cognitive modeling to diagnose possible sources of aviation error. *International Journal of Aviation Psychology, 15,* 135–155.

**Anderson, J. R., Bothell, D., Byrne, M. D., Douglass, S., Lebiere, C., & Quin, Y. (2004). An integrated theory of the mind. *Psychological Review, 111,* 1036–1060.

*Katz, M. A., & Byrne, M. D. (2003). Effects of scent and breadth on use of site-specific search on e-commerce Web sites. *ACM Transactions on Human-Computer Interaction, 10,* 198–220.

Byrne, M. D., & Gray, W. D. (2003). Returning human factors to an engineering discipline: Expanding the science base through a new generation of quantitative methods—preface to the special section. *Human Factors, 45,* 1–4.

Fleetwood, M. D., & Byrne, M. D. (2002). Modeling icon search in ACT-R/PM. *Journal of Cognitive Systems Research, 3,* 25–33.

*Byrne, M. D., & Anderson, J. R. (2001). Serial modules in parallel: The psychological refractory period and perfect time-sharing. *Psychological Review, 108,* 847–869.

*Byrne, M. D. (2001). ACT-R/PM and menu selection: Applying a cognitive architecture to HCI. *International Journal of Human-Computer Studies, 55,* 41–84.

*Byrne, M. D., Catrambone, R., & Stasko, J. T. (1999). Evaluating animations as student aids in learning computer algorithms. *Computers and Education, 33*, 253–278.

Byrne, M. D. (1998). Taking a computational approach to aging: The SPAN theory of working memory. *Psychology and Aging, 13,* 309–322.

*Byrne, M. D., & Bovair, S. (1997). A working memory model of a common procedural error. *Cognitive Science, 21,* 31–61.

Refereed Journals Invited Revisions

Sullivan, J., Pandey, S., Byrne, M. D., & O'Malley, M. K. (2019). Haptic feedback based on movement smoothness improves performance in a perceptual-motor task. Revision invited by *IEEE Transactions on Haptics*.

Agarwal, P., Byrne, M. D., Jantscher, W. H., Pandey, S., & O'Malley, M. K. (2018). Describing skill acquisition with a non-monotonic dynamical model: An alternative to traditional power law and exponential approaches. Revision invited by *Journal of Experimental Psychology: Human Perception and Performance*.

Book Chapters

Kirlik, A., & Byrne, M. D. (2019). Computational models of expertise. In Ward, P., Schraagen, J. M., Gore, J., & Roth, E. (Eds.) *The Oxford handbook of expertise: Research & application*. New York: Oxford University Pres.

Byrne, M. D. (2015). Human performance modeling. In D. Boehm-Davis, F. Durso, & J. Lee (Eds.), *APA handbook of human-systems integration* (pp. 345–358). Washington, DC: American Psychological Association.

O'Malley, M. K., Celik, O., Huegel, J. C., Byrne, M. D., Bismuth, J., Dunkin, B., Goh, A. & Miles, B. (2014). Robotics as a tool for training and assessment of surgical skill. In M. Garbey, B. L. Bass, S. Berceli, C. Collet, & P. Cerveri (Eds.) *Computational surgery and dual training: Computing, robotics, and imaging* (pp. 365-375). New York: Springer.

Byrne, M. D. (2013). Computational cognitive modeling of interactive performance. In J. D. Lee & A. Kirlik (Eds.), *The Oxford handbook of cognitive engineering*. New York: Oxford University Press.

Byrne, M. D., & Pew, R. W. (2009). A history and primer of human performance modeling. In F. Durso (Ed.) *Reviews of human factors and ergonomics, vol 5* (pp. 225–263). Santa Monica, CA: Human Factors and Ergonomics Society.

Foyle, D. C., Hooey, B. L., Byrne, M. D., Kirlik, A., Lebiere, C., Archer, R., Corker, K. M., Deutsch, S. E., Pew, R. W., Wickens, C. D., & McCarley, J. S. (2008). Human performance modeling: Virtual roundtable discussion. In D. C. Foyle & B. L. Hooey (Eds.) *Human performance modeling in aviation* (pp. 285–320). Boca Raton, FL: CRC Press.

Byrne, M. D., Kirlik, A., & Fleetwood, M. D. (2008). An ACT-R approach to closing the loop on computational cognitive modeling: Describing the dynamics of interactive decision making and attention allocation. In D. C. Foyle & B. L. Hooey (Eds.) *Human performance modeling in aviation* (pp. 77–104). Boca Raton, FL: CRC Press.

Leiden, K., Byrne, M. D., Corker, K. M., Deutsch, S. E., Lebiere, C., & Wickens, C. D. (2008). Overview of human performance modeling tools. In D. C. Foyle & B. L. Hooey (Eds.) *Human performance modeling in aviation* (pp. 67–76). Boca Raton, FL: CRC Press.

*Byrne, M. D. (2007). Cognitive architectures. In A. Sears & J. Jacko (Eds.), *The human-computer interaction handbook* (2nd ed.), pp. 93–113. Mahwah, NJ: Erlbaum.

Byrne, M. D. (2007). Local theories vs. comprehensive architectures: The cognitive science jigsaw puzzle. In W. Gray (Ed.) *Integrated models of cognitive systems* (pp. 431–444). New York: Oxford University Press.

Byrne, M. D., Kirlik, A., & Fick, C. S. (2006). Kilograms matter: Rational analysis, ecological rationality, and computational cognitive modeling of dynamic system control. In A. Kirlik (Ed.) *Adaptive perspectives on human-technology interaction: Models and methods for cognitive engineering and human-computer interaction* (pp 267–284). New York: Oxford University Press.

Byrne, M. (2006). The cafeteria deep fryer is not a toy. In A. Brown & C. Logan (Eds.) *D'oh!: The psychology of the Simpsons* (pp. 95–106). Dallas, TX: BenBella Books.

Byrne, M. (2005). Beware of the leopard. In G. Yeffeth, (Ed.) *The anthology at the end of the universe* (pp. 1-10). Dallas, TX: BenBella Books.

Byrne, M. D. (2003). Cognitive architecture. In J. A. Jacko & A. Sears (Eds.), *The human-computer interaction handbook: Fundamentals, evolving technologies and emerging applications* (pp. 97–117). Mahwah, NJ: Lawrence Erlbaum.

*Byrne, M. D. & Anderson, J. R. (1998). Perception and action. In J. R. Anderson & C. Lebiere (Eds.) *Atomic components of thought* (pp. 167–200). Mahwah, NJ: Lawrence Erlbaum.

Refereed Conference Proceedings

Murali, B., Belvroy, V. M., Pandey, S., Byrne, M. D., Bismuth, J., & O'Malley, M. (in press). Toward automated performance assessment using velocity-based motion quality metrics. *Proceedings of the IEEE International Symposium on Medical Robotics*.

Engels, J., Wang, X., & Byrne, M. D., (2020). Missed One! How ballot layout and visual task strategy can interact to produce voting errors. *Proceedings of the 18th International Conference on Cognitive Modeling*.

Pandey, S., Taffese, T., Huang, M., & Byrne, M. D. (2019). Human performance in Google's two-factor authentication setup process. In *Proceedings of the Human Factors and Ergonomics Society 63rd Annual Meeting*. Santa Monica, CA: Human Factors and Ergonomics Society.

Wang, X., Lindstedt, J. K., & Byrne, M. D. (2019). The model that knew too much: The interaction between strategy and memory as a source of voting error. *Proceedings of the 17th International Conference on Cognitive Modeling*.

Lindstedt, J. K., & Byrne, M. D. (2018). Simple agglomerative visual grouping for ACT-R. In I. Juvina, J. Houpt, & C. Myers (Eds.), *Proceedings of the 16th International Conference on Cognitive Modeling* (pp. 68–73). Madison, WI: University of Wisconsin.

Jantscher, W. H., Pandey, S., Agarwal, P., Richardson, S. H., Lin, B. R., Byrne, M.D., & O'Malley, M. K. (2018). Toward improved surgical training: Delivering smoothness feedback using haptic cues. In *Proceedings of the IEEE Haptics Symposium*. San Francisco, CA.

Pandey, S., Byrne, M. D., Jantscher, W. H., O'Malley, M. K., & Agarwal, P. (2017). Toward training surgeons with motion-based feedback: Initial validation of smoothness as a measure of motor learning. In *Proceedings of the Human Factors and Ergonomics Society 61st Annual Meeting* (pp. 1531–1535). Santa Monica, CA: Human Factors and Ergonomics Society.

Gallagher, M. A., & Byrne, M. D. (2015). Modeling password entry on a mobile device. In *The 13th International Conference on Cognitive Modeling*. Groningen, Netherlands.

Gallagher, M. A., & Byrne, M. D. (2013). The devil is in the distribution: Refining an ACT-R model of a continuous motor task. In *The 12th International Conference on Cognitive Modeling* (pp. 342–347). Ottawa, Canada.

Stanley, C., & Byrne, M. D. (2013). Predicting tags for StackOverflow posts. In *The 12th International Conference on Cognitive Modeling* (pp. 414–419). Ottawa, Canada.

Byrne, M. D. (2013). How many times should a stochastic model be run? An approach based on confidence intervals. In *The 12th International Conference on Cognitive Modeling* (pp. 445–450). Ottawa, Canada.

Purkayastha, N., Byrne, M. D., & O'Malley, M. K. (2012). On the correlation between motion data captured from low-cost gaming controllers and high precision encoders. In *34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*.

Riddle, K., Kirlik, A., Talleur, D., Carbonari, R., Zhang, Y., Holbrook, J., Byrne, M., Bauer, D., & Beard, B. (2012). A comparison of visualization and command-based decision aiding in a simulated aircraft departure sequencing and timing task. In *Proceedings of the Human Factors and Ergonomics Society 56th Annual Meeting* (pp. 233–237). Santa Monica, CA: Human Factors and Ergonomics Society.

Campbell, B. A., Tossell, C. C., Byrne, M. D., & Kortum, P. (2011). Voting on a smartphone: Evaluating the usability of an optimized voting system for handheld mobile devices. In *Proceedings of the Human Factors and Ergonomics Society 55th Annual Meeting,* (pp. 1100–1104). Santa Monica, CA: Human Factors and Ergonomics Society.

Zemla, J. C., Ustun, V., Byrne, M. D., Kirlik, A., Riddle, K., & Alexander, A. L. (2011). An ACT-R model of commercial jetliner taxiing. In *Proceedings of the Human Factors and Ergonomics Society 55th Annual Meeting,* (pp. 831–835). Santa Monica, CA: Human Factors and Ergonomics Society.

Piner, G. E., & Byrne, M. D. (2011). The experience of accessible voting: Results of a survey among legally blind users. In *Proceedings of the Human Factors and Ergonomics Society 55th Annual Meeting,* (pp. 1686–1690). Santa Monica, CA: Human Factors and Ergonomics Society.

Piner, G. E., & Byrne, M. D. (2011). Accessible polling places for the visually impaired: A compilation of survey results. In *Proceedings of the 2011 USENIX/ACCURATE Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE)*.

Howie, N., Purkayastha, S. N., Byrne, M. D., & O'Malley, M. K. (2011). Motor skill acquisition in a virtual gaming environment. In *Proceedings of the Human Factors and Ergonomics Society 55th Annual Meeting,* (pp. 2148–2152). Santa Monica, CA: Human Factors and Ergonomics Society.

Byrne, M. D., Zemla, J. C., Kirlik, A., Riddle, K., & Alexander, A. L. (2011). A human performance model of jetliner taxiing. In *Proceedings of the 16th International Symposium on Aviation Psychology* (pp. 209–214). May. Dayton, OH.

Byrne, M. D., O'Malley, M. K., Gallagher, M. A., Purkayastha, S. H., Howie, N., & Huegel, J. C. (2010). A Preliminary ACT-R model of a continuous motor task. In *Proceedings of the Human Factors and Ergonomics Society 54th Annual Meeting* (pp. 1037–1041). Santa Monica, CA: Human Factors and Ergonomics Society.

Piner, G. E., & Byrne, M. D. (2010). Baseline usability data for a non-electronic approach to accessible voting. In *Proceedings of the 2010 USENIX/ACCURATE Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE)*.

Purkayastha, S. N., Eckenstein, N., Byrne, M. D., O'Malley, M. (2010) Analysis and comparison of low cost gaming controllers for motion analysis. *Proceedings of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Montreal, CA, July 6-9.

Campbell, B. A., & Byrne, M. D., (2009). Now do voters notice review screen anomalies? A look at voting system usability. In *Proceedings of the 2009 USENIX/ACCURATE Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE)*.

Stanley, C. T., Byrne, M. D., & Ramos, K. R. (2008). Effects of frequency sorting: Toward finding optimal organizations of hierarchical file structures. In *Proceedings of the Human Factors and Ergonomics Society 52nd Annual Meeting* (pp. 945–950). Santa Monica, CA: Human Factors and Ergonomics Society.

Campbell, B. A., O'Brien, K. R., Byrne, M. D., & Bachman, B. J. (2008). Fitts' Law predictions with an alternative pointing device (Wiimote). In *Proceedings of the Human Factors and Ergonomics Society 52nd Annual Meeting* (pp. 1321–1325). Santa Monica, CA: Human Factors and Ergonomics Society.

Byrne, M. D. (2008). Preventing postcompletion errors: How much cue is enough? In *Proceedings of the Thirtieth Annual Conference of the Cognitive Science Society* (pp. 351–356). Austin, TX: Cognitive Science Society.

Goggin, S. N., Byrne, M. D., Gilbert, J. E., Rogers, G., & McClendon, J. (2008). Comparing the auditability of optical scan, voter verified paper audit trail (VVPAT) and video (VVVAT) ballot systems. In *Proceedings of the 2008 USENIX/ACCURATE Electronic Voting Technology Workshop*.

Everett, S. P., Greene, K. K., Byrne, M. D., Wallach, D. S., Derr, K., Sandler, D., & Torous, T. (2008). Electronic voting machines versus traditional methods: Improved preference, similar performance. In *Human Factors in Computing Systems: Proceedings of CHI 2008* (pp. 883–892). New York: ACM.

Tsai, J., & Byrne, M. D. (2007). Evaluating systematic error predictions in a routine procedural task. In *Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting* (pp. 817–821). Santa Monica, CA: Human Factors and Ergonomics Society.

Goggin, S., & Byrne, M. D. (2007). An examination of the auditability of voter verified paper audit trail (VVPAT) ballots. In *Proceedings of the 2007 USENIX/ACCURATE Electronic Voting Technology Workshop*.

Tamborello, F. P., & Byrne, M. D. (2007). Fast learning in a simple probabilistic visual environment: A comparison of ACT-R's old PG-C and new reinforcement learning algorithms. In *Proceedings of the Eighth International Conference on Cognitive Modeling*.

*Byrne, M. D., Greene, K. K., & Everett, S. P. (2007). Usability of voting systems: Baseline data for paper, punch cards, and lever machines. *Human Factors in Computing Systems: Proceedings of CHI 2007* (pp. 171–180). New York: ACM.

Greene, K. K., Byrne, M. D., & Everett, S. P. (2006). A comparison of usability between voting methods. *Proceedings of the 2006 USENIX/ACCURATE Electronic Voting Technology Workshop*.

Everett, S. P., Byrne, M. D., & Greene, K. K. (2006). Measuring the usability of paper ballots: Efficiency, effectiveness, and satisfaction. *Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting* (pp. 2547–2551). Santa Monica, CA: Human Factors and Ergonomics Society.

Tamborello, F. P., & Byrne, M. D. (2006). Adaptive but non-optimal visual search behavior in highlighted displays. In D. Fum, F. Del Missier, & A. Stocco (Eds.), *Proceedings of the Seventh International Conference on Cognitive Modeling* (pp. 316–321). Trieste, Italy: Edizioni Goliardiche.

Foyle, D. C., Hooey, B. L., Byrne, M. D., Corker, K. M., Deutsch, S., Lebiere, C., Leiden, K., & Wickens, C. (2005). Human performance models of pilot behavior. *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting* (pp. 1109–1113). Santa Monica, CA: Human Factors and Ergonomics Society.

Byrne, M. D. (2005). Cognitive architectures in HCI: Present work and future directions. In *Proceedings of Human-Computer International 2005*. Mahwah, NJ: Erlbaum.

Fotta, M. E., Byrne, M. D., & Luther, M. S. (2005). Developing a human error modeling architecture (HEMA). In *Proceedings of Human-Computer International 2005*. Mahwah, NJ: Erlbaum.

Tamborello, F. P., & Byrne, M. D. (2005). Information search: The intersection of visual and semantic space. *CHI 2005 Extended Abstracts on Human Factors in Computing Systems* (pp. 1821–1824). New York: ACM.

Byrne, M. D., Kirlik, A., Fleetwood, M. D., Huss, D. G., Kosorukoff, A., Lin, R., & Fick, C. S. (2004). A closed-loop, ACT-R approach to modeling approach and landing with and without synthetic vision system (SVS) technology. *Proceedings of the Human Factors and Ergonomics Society 48th Annual Meeting* (pp. 2111–2115). Santa Monica, CA: Human Factors and Ergonomics Society.

Chung, P. H., & Byrne, M. D. (2004). Visual cues to reduce errors in a routine procedural task. *Proceedings of the Twenty-Sixth Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Byrne, M. D., Maurier, D., Fick, C. S., & Chung, P. H. (2004). Routine procedural isomorphs and cognitive control structures. In C. D. Schunn, M. C. Lovett, C. Lebiere & P. Munro (Eds.), *Proceedings of the Sixth International Conference on Cognitive Modeling* (pp. 52-57). Mahwah, NJ: Erlbaum.

Everett, S. P., & Byrne, M. D. (2004). Unintended effects: Varying icon spacing changes users' visual search strategy. *Human Factors in Computing Systems: Proceedings of CHI 2004* (pp. 695-702). New York: ACM.

Byrne, M. D. (2003). A mechanism-based framework for predicting routine procedural errors. In R. Alterman & D. Kirsh (Eds.) *Proceedings of the Twenty-Fifth Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Huss, D. G., & Byrne, M. D. (2003). An ACT-R/PM model of the articulatory loop. In F. Detje, D. Dörner, & H. Schaub (Eds.) *Proceedings of the Fifth International Conference on Cognitive Modeling* (pp. 135–140). Bamberg, Germany: Universitas-Verlag Bamberg.

Fick, C. S., & Byrne, M. D. (2003) Capture of visual attention by abrupt onsets: A model of contingent orienting. In F. Detje, D. Dörner, & H. Schaub (Eds.) *Proceedings of the Fifth International Conference on Cognitive Modeling* (pp. 81–86). Bamberg, Germany: Universitas-Verlag Bamberg.

Fleetwood, M. D. & Byrne, M. D. (2003). Modeling the visual search of displays: A revised ACT-R/PM model of icon search based on eye-tracking and experimental data. In F. Detje, D. Dörner, & H. Schaub (Eds.) *Proceedings of the Fifth International Conference on Cognitive Modeling* (pp. 87–92). Bamberg, Germany: Universitas-Verlag Bamberg.

Byrne, M. D. (2002). Reading vertical text: Rotated vs. marquee. *Proceedings of the Human Factors and Ergonomics Society 46th Annual Meeting* (pp. 1633–1635). Santa Monica, CA: Human Factors and Ergonomics Society.

Fleetwood, M. D., Byrne, M. D., Centgraf, P., Dudziak, K., Lin, B., & Mogilev, D. (2002). An analysis of text-entry in Palm OS—Graffiti and the Virtual Keyboard. *Proceedings of the Human Factors and Ergonomics Society 46th Annual Meeting* (pp. 617–621). Santa Monica, CA: Human Factors and Ergonomics Society.

Fleetwood, M. D., & Byrne, M. D. (2001). Modeling icon search in ACT-R/PM. In E. M. Altmann, A. Cleermans, C. D. Schunn, & W. D. Gray (Eds.), *Proceedings of the Fourth International Conference on Cognitive Modeling*(pp. 17–22). Mahwah, NJ: Erlbaum.

Byrne, M. D. (2000). The ACT-R/PM project. *AAAI Fall 200 Symposium: Simulating Human Agents*. November 2000, Cape Cod, MA.

Byrne, M. D. (2000). Are retrievals from long-term memory interruptible? In L. R. Gleitman & A. K. Joshi (Eds.), *Proceedings of the Twenty-Second Annual Conference of the Cognitive Science Society* (pp. 71-76). Mahwah, NJ: Lawrence Erlbaum.

Baumeister, L. K., John, B. E., & Byrne, M. D. (2000). A comparison of tools for building GOMS models. *Human Factors in Computing Systems: Proceedings of CHI 2000* (pp. 502-509). Reading, MA: Addison Wesley.

Hudson, S. E., John, B. E., Knudsen, K., & Byrne, M. D. (1999). A tool for creating predictive performance models from user interface demonstrations. *Proceedings of the ACM Symposium on User Interface Software and Technology,* 99–103.

*Byrne, M. D., Anderson, J. R., Douglass, S., & Matessa, M. (1999). Eye tracking the visual search of click-down menus. *Human Factors in Computing Systems: Proceedings of CHI 99* (pp. 402-409). Reading, MA: Addison Wesley.

*Byrne, M. D., John, B. E., Wehrle, N. S., & Crow, D. C. (1999). The tangled web we wove: A taskonomy of WWW use. *Human Factors in Computing Systems: Proceedings of CHI 99* (pp. 544–551). Reading, MA: Addison Wesley.

Griffith, T. W., & Byrne, M. D. (1996). Qualia: The hard problem. In G. W. Cotrell, (Ed.) *Proceedings of the Eighteenth Annual Conference of the Cognitive Science Society*, 76–79. Mahwah, NJ: Lawrence Erlbaum.

Byrne, M., Guzdial, M., Ram, P., Catrambone, R., Ram, A., Stasko, J., Shippey, G., & Albrecht, F. (1996). The role of student tasks in accessing cognitive media types. In D. C. Edelson & E. A. Domeshek (Eds.), *International Conference on the Learning Sciences* (pp. 114-119). Northwestern University: Evanston, IL: Association for the Advancement of Computing in Education (AACE).

Shippey, G., Guzdial, M., Ram, A., Catrambone, R., Albrecht, F., Byrne, M., Roberts, J., & Stasko, J. (1996). Exploring interface options in multimedia educational environments. In D. C. Edelson & E. Domeshek (Eds.), *International Conference of the Learning Sciences* (pp. 496-501). Evanston, IL: AACE.

Byrne, M. D. (1995). The convergence of explanatory coherence and the story model: A case study in juror decision. In J. D. Moore & J. F. Lehman (Eds.) *Proceedings of Seventeenth Annual Conference of the Cognitive Science Society* (pp. 539–543). Mahwah, NJ: Lawrence Erlbaum.

Byrne, M. D. (1994). Integrating, not debating, situated action and computational models: Taking the environment seriously. In A. Ram & K. Eiselt (Eds.) *Proceedings of the Sixteenth Annual Conference of the Cognitive Science Society* (pp. 118–123). Hillsdale, NJ: Lawrence Erlbaum.

*Byrne, M. D., Wood, S. D., Sukaviriya, N., Foley, J. D., & Kieras, D. E. (1994). Automating interface evaluation. *Human Factors in Computing Systems: Proceedings of CHI'94* (pp. 232–237). Reading, MA: Addison-Wesley.

Byrne, M. D. (1993). A better tool for the Cognitive Scientist's toolbox: Randomization statistics. *Proceedings of the Fifteenth Annual Conference of the Cognitive Science Society* (pp. 289–2930. Hillsdale, NJ: Lawrence Erlbaum.

*Byrne, M. D. (1993). Using icons to find documents: Simplicity is critical. *Human Factors in Computing Systems: Proceedings of INTERCHI'93* (pp. 446–453). Reading, MA: Addison-Wesley.

Magazine/Media Articles

Byrne, M. D., & Kortum, P. (2020). Candidates: Here's how to legally steal an election. Op-ed. https://thehill.com/opinion/campaign/523826-candidates-heres-how-to-legally-steal-an-election

Kortum, P., & Byrne, M. D. (2020). Making votes count: Why it's psychology (and ballot design) as much as security. *APS Observer*.

Byrne, M. (2017). Designing Better Ballots. https://theconversation.com/designing-better-ballots-82414

Neumann, P. G., & Byrne, M. D. (2005). Disability-related risks. *Communications of the ACM, 48*(8), 144.

Invited Talks

Byrne, M. D. (2014). The butterfly legacy: How badly-designed voting systems threaten election integrity. Invited webinar, Human Factors and Ergonomics Society. December 2014.

Byrne, M. D. (2014). Models of human decision making and some potential applications in medicine. Invited colloquium, University of Texas Medical Branch, Galveston, TX, May 2014.

Byrne, M. D. (2013). Why Johnny can't vote: How usability compromises election integrity. Invited address, Houston Property Rights Association, Houston, TX, August 2013.

Byrne, M. D. (2013). Why Johnny can't vote: How usability compromises election integrity. Invited colloquium, University of Mary Washington, March 2013.

Byrne, M. D. (2012). Why Johnny can't vote: How usability compromises election integrity. Invited colloquium, University of Hawaii, December 2012.

Byrne, M. D. (2012). Now do voters notice review screen anomalies? Invited panelist, National Science Foundation First Secure and Trustworthy Computing PI Meeting, National Harbor, MD, November 2012.

Byrne, M. D. (2012). Why Johnny can't vote: How usability compromises election integrity. Invited colloquium, University of Illinois Urbana-Champaign, February 2012.

Byrne, M. D. (2011). An ACT-R model of commercial jetliner taxiing. Invited lecture, NASA Ames Research Center, Moffet Field, CA, August 2011.

Byrne, M. D. (2011). Why Johnny can't vote: How usability compromises election integrity. Invited keynote lecture, Houston chapter of Human Factors and Ergonomics Society, Houston, TX, February 2011.

Byrne, M. D., & Kortum, P. T. (2009). He should have taken the BLUE pill: A human factors perspective on medical error. Invited keynote lecture, Center for Professional Excellence, the Methodist Hospital, Houston, TX, August, 2009.

Byrne, M. D., & Stanley, C. T (2009). An information theoretic approach to visual salience in ACT-R. Invited colloquium, Naval Research Laboratory, Washington, DC, March 2009.

Byrne, M. D., & Stanley, C. T (2009). An information theoretic approach to visual salience in ACT-R. Invited colloquium, Department of Cognitive Science, Rensselaer Polytechnic Institute, Troy, NY, March 2009.

Byrne, M. D. (2008). Human error and cognitive architecture. Invited presentation, Workshop on Developing and Understanding Computational Models of Macrocognition. Havre De Grace, MD, June 2008.

Byrne, M. D. (2008). Set phasers on stun: What errors and slowdowns tell us about human representation of routine procedures. Invited colloquium, Interaction Centre, University College London, London, England, February 2008.

Byrne, M. D. (2007). Usability of voting systems: Problems old and new. Invited colloquium, Graphics, Visualization, and Usability Center, College of Computing, Georgia Institute of Technology, Atlanta, GA, October 2007.

Byrne, M. D. (2007). Set phasers on stun: What errors and slowdowns tell us about human representation of routine procedures. Invited colloquium, School of Psychology, Georgia Institute of Technology, Atlanta, GA, October 2007.

Byrne, M. D. (2005). Local theories vs. comprehensive architectures: The cognitive science jigsaw puzzle. Invited talk, AFOSR workshop on Integrated Models of Cognitive Systems. Saratoga Springs, NY, March, 2005.

Byrne, M. D. (2003). A human factors perspective on medical error. Invited keynote lecture, Center for Professional Excellence, the Methodist Hospital, Houston, TX, August, 2003.

Byrne, M. D. (2003). Computational modeling of attention allocation. Invited colloquium, Institute of Aviation, University of Illinois at Urbana-Champaign, Urbana, IL, May, 2003.

Wood, S. D., & Byrne, M. D. (2002). A Cognitive Approach to Designing Human Error Tolerant Interfaces. Tutorial presented at the 24th Annual Meeting of the Cognitive Science Society, Fairfax, VA, August, 2002.

Byrne, M. D., & Kirlik, A. (2001). Modeling Errors in Taxiing of Commercial Aircraft. Invited colloquium, department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI. October, 2001.

Conference Poster Presentations

Byrne, M. D., Chung, P. H., Fick, C., & Maurier, D. (2004). Mitigating errors in the execution of routine procedures. Poster presented at the 2004 meeting of the Human Factors and Ergonomics Society Houston Chapter, Houston, TX, April 2004.

Byrne, M. D. (2001). The Interruptibility of Simple Retrievals from Long-Term Memory. Poster presented at the Annual Conference of the Psychonomic Society, Orlando, FL.

Byrne, M. D., & Anderson, J. R. (1997). Enhancing ACT-R's Perceptual-Motor Abilities. Poster presented at the Nineteenth Annual Conference of the Cognitive Science society, Palo Alto, CA.

Byrne, M. D., & Rettinger, D. M. (1993). A lens analysis of the effects of memory load and time pressure on static judgment. Poster presented at Judgment and Decision-Making annual conference, Washington, D.C.

Byrne, M. D. (1991). The misunderstood picture: A study of icon recognition. Poster presented at CHI'91, New Orleans, LA.

Technical Reports

Miller, S., Kirlik, A., Kosorukuff. A., & Byrne, M. D. (2004). Ecological Validity as a Mediator of Visual Attention Allocation in Human-Machine Systems. Technical Report AHFD-04-17/ NASA-04-06). Savoy, IL: University of Illinois, Human Factors Division.

Byrne, M. D., & Kirlik, A. (2004). Integrated modeling of cognition and the information environment: a multilevel investigation (process and product modeling) of attention allocation to visual displays. Technical Report AHFD-04-14/NASA-04-4. Savoy, IL: Aviation Human Factors Division, University of Illinois at Urbana-Champaign.

Byrne, M. D., & Kirlik, A. (2003). Using computational cognitive modeling to diagnose possible sources of aviation error. Technical Report AHFD-03-14/NASA-03-4. Savoy, IL: Aviation Human Factors Division, University of Illinois at Urbana-Champaign.

Byrne, M. D., & Kirlik, A. (2003). Integrated Modeling of Cognition and the Information Environment: A Closed-Loop, ACT-R Approach to Modeling Approach and Landing With and Without Synthetic Vision System (SVS) Technology. Technical Report AHFD-03-4/ NASA-03-3. Savoy, IL: Aviation Human Factors Division, University of Illinois at Urbana-Champaign.

Byrne, M. D., & Kirlik, A. (2002). Integrated modeling of cognition and the information environment: Closed-loop, ACT-R modeling of aviation taxi errors and performance. Technical report AHFD-02-19/NASA-02-10. Savoy, IL: Aviation Human Factors Division, University of Illinois at Urbana-Champaign.

Byrne, M. D., Catrambone, R., & Stasko, J. T. (1996). Do Algorithm Animations Aid Learning? Technical Report GIT-GVU-96-18. Graphics, Visualization, and Usability Center, Georgia Institute of Technology, Atlanta, GA.

Byrne, M. D., & Bovair, S. (1995). A Working Memory Model of a Common Procedural Error. Technical Report GIT-COGSCI-95-06. Georgia Institute of Technology, Atlanta, GA.

Byrne, M. D. (1994). The Convergence of Explanatory Coherence and the Story Model: A Case Study in Juror Decision. Technical Report GIT-COGSCI-94-18. Georgia Institute of Technology, Atlanta, GA.

Workshop/Symposia Presentations

Stanley, C., & Byrne, M. D. (2015). Comparing vector-based and ACT-R memory models using large-scale datasets: User-customized hashtag and tag prediction on Twitter and StackOverflow. Presented at the Twenty-Second Annual ACT-R Workshop, Pittsburgh, PA, July 2015.

Byrne, M. D. (2013). STAR-Vote and the Los Angeles County Voting System. Presented at EVT/WOTE Workshop, Washington, DC, August 2013.

Byrne, M. D. (2012). ACT-R as a Usability Tool for Ballot Design. Presented at the Nineteenth Annual ACT-R Workshop, Pittsburgh, PA, July 2012.

Byrne, M. D. (2011). Interfacing ACT-R and the X-Plane Flight Simulator. Presented at the Eighteenth Annual ACT-R Workshop, North Conway, NH, July 2011.

Byrne, M. D. (2011). Teaching ACT-R. Presented at the Eighteenth Annual ACT-R Workshop, North Conway, NH, July 2011.

Byrne, M. D. (2010). I Want to Be Really Sure to Vote for Phil... So I'll Abstain. Presented at the EVT/WOTE Workshop, Washington, DC, August 2010.

Byrne, M. D., & Stanley, C. T., (2009). An Information Theoretic Approach to Visual Salience in ACT-R. Presented at the 2009 National Academy of Science Kavli Workshop, Irvine, CA, November 2009.

Byrne, M. D., & Stanley, C. T. (2009). A visual salience system for ACT-R. Symposium "Diagrammatic Representations and Cognitive Architectures" at BRIMS 2009, Sundance, UT, March 2009.

Byrne, M. D. (2008). Putting the "integrated" into integrated cognitive architectures. Panel "Models of Motor Control and Performance" at Human Factors and Ergonomics Society 52nd Annual Meeting, New York, NY, September 2008.

Kirlik, A., Foyle, D. C., Hooey, B. L., & Byrne, M. (2008). The NASA human performance modeling project: Implications for future modeling efforts and a concrete modeling example. Presented at Human Factors and NextGen: The Future of Aviation, Arlington, TX, May 2008.

Byrne, M. D. (2007). How people represent routine procedures, and how to disrupt said representations. ONR Workshop on Attention, Perception, and Modeling for Complex Displays. Arlington, VA. May 2007.

Byrne, M. D. (2006). A theory of visual salience computation in ACT-R. Presented at the Thirteenth Annual ACT-R Workshop, Pittsburgh, PA, July 2006.

Byrne, M. D. (2006). An ACT-R timing module based on the attentional gate model. Presented at the Thirteenth Annual ACT-R Workshop, Pittsburgh, PA, July 2006.

Nicholson, S., Byrne, M. D., & Fotta, M. E. (2006). Modifying ACT-R for visual search of complex displays. Presented at the Thirteenth Annual ACT-R Workshop, Pittsburgh, PA, July 2006.

Nicholson, S., Fotta, M. E., St. Amant, R., & Byrne, M. D. (2006). SegMan & HEMA-SI. Presented at the Thirteenth Annual ACT-R Workshop, Pittsburgh, PA, July 2006.

Byrne, M. D. (2006). On the mental representation of routine procedures. ONR Workshop on Attention, Perception, and Modeling for Complex Displays. Arlington, VA, March 2006.

Byrne, M., Everett, S., & Greene, K. (2006). Human factors in voting systems: First results. ACCURATE Center Workshop. Menlo Park, CA, February 2006.

Byrne, M. D. (2006). Rational analysis of visual search and salience. ACT-R meeting on Biologically-inspired Cognitive Architectures. Chandler, AZ, February 2006.

Peres, S. C., & Byrne, M. D. (2005). The interactive behavior triad and auditory graphs: Suggestions for an organizing framework, International Conference on Auditory Displays—Auditory Graph Symposium (p. 4). Limerick, Ireland.

Byrne, M. D. (2005). Execution of isomorphic routine procedures: Errors and models. ONR Workshop on Attention, Perception, and Modeling for Complex Displays, Arlington, VA, May 2005.

Byrne, M. D., Chung, P. H., & Fick, C. S. (2004). Mitigating errors in the execution of routine procedures. ONR Workshop on Attention, Perception, and Modeling for Complex Displays, Newport, RI, May 2004.

Byrne, M. D., Kirlik, A., Fleetwood, M. D., Huss, D. G., Kosorukoff, A., Lin, R., & Zheng, X. (2004). A Closed-Loop, ACT-R Approach to Modeling Approach and Landing With and Without Synthetic Vision System (SVS) Technology. 2004 meeting of the Human Factors and Ergonomics Society Houston Chapter, Houston, TX, April 2004.

Byrne, M. D. (2003). Systematic procedural error. ONR Workshop on Attention, Perception, and Modeling for Complex Displays, Troy, NY, June 2003.

Byrne, M. D. (2002). ACT-R as a Framework for Modeling Human Error. Presented at the Ninth Annual ACT-R Workshop, Pittsburgh, PA, August 2002.

Byrne, M. D., Maurier, D., & Fick, C. (2002). Reaping the Rewards of Teaching ACT-R: Class Projects Spring 2002. Presented at the Ninth Annual ACT-R Workshop, Pittsburgh, PA, August 2002.

Byrne, M. D. (2002). RPM update. Presented at the Ninth Annual ACT-R Workshop, Pittsburgh, PA, August 2002.

Byrne, M. D. (2002). Life on the edge: The boundary between central and visual attention. Presented at ONR Workshop on Attention, Perception and Data Visualization. George Mason University, Fairfax, VA, May 2002.

Byrne, M. D., & Kirlik, A. (2002). Modeling Errors in Taxiing of Commercial Aircraft. Presented at AFRL Worshop on ACT-R Models of Human-System Interaction. Mesa, AZ, January 2002.

Byrne, M. D. (2001). ACT-R 5.0 and ACT-R/PM. Presented at the Eighth Annual ACT-R Workshop. Berkeley Springs, WV, July 2001.

Byrne, M. D. (2001). A Quantitative Simulation Framework for Human Factors Engineering: ACT-R/PM. Presented at Human.Systems 2001. Houston, TX, June 2001.

Byrne, M. D. (2000). ACT-R/PM version 2.0. Presented at the Seventh Annual ACT-R Workshop. Carnegie Mellon University, Pittsburgh, PA, August 2000.

Byrne, M. D., & Fleetwood, M. D. (2000). Modeling Search of Computer Displays in ACT-R/PM. Presented at the Seventh Annual ACT-R Workshop. Carnegie Mellon University, Pittsburgh, PA, August 2000.

Byrne, M. D. (2000). Space Human Factors and Habitability at Rice University. NSBRI Workshop on Space Human Factors and Habitability. Houston, TX, April 2000.

Byrne, M. D. (2000). Integrating Action, Perception, and Cognition. Presented at Acoustic Ecology: Listeners and Their Relationships to Sound Environments. University of British Columbia, Vancouver, BC, Canada, February 2000.

Byrne, M. D., & Anderson, J. R. (1999). A New Model of Menu Selection. Presented at the Sixth Annual ACT-R Workshop. George Mason University, August 1999.

Gluck, K., Anderson, J., Douglass, S. & Byrne, M. (1999). Progress Towards an ACT-R/PM Model of Algebra Symbolization. Presented at the Sixth Annual ACT-R Workshop. George Mason University, August 1999.

Lee, F., & Byrne, M. (1999). Modelling Dynamic Tasks: Implications for ACT-R/PM. Presented at the Sixth Annual ACT-R Workshop. George Mason University, August 1999.

Byrne, M. D. (1999). Serial Modules in Parallel: ACT-R Perceptual-Motor. Presented at "Integrated Models of Perception, Cognition, and Action" symposium at the 21st annual meeting of the Cognitive Science Society, August 1999, Vancouver, BC, Canada.

Byrne, M. D. (1998). Central Parallelism and the PRP Effect. Presented at the Fifth Annual ACT-R Workshop, July, Pittsburgh, PA.

Byrne, M. D. (1997). ACT-R/Perceptual-Motor. Presented at the Fourth Annual ACT-R Workshop, August, Pittsburgh, PA.

Byrne, M. D., & Anderson, J. R. (1997). An ACT-R model of a "complex" PRP task. Presented at the Fourth Annual ACT-R Workshop, August, Pittsburgh, PA.

Byrne, M. D. (1996). A computational theory of working memory. Presented at the Doctoral Consortium of CHI'96 Human Factors in Computing Systems Conference, April, Vancouver, BC, Canada.

Catrambone, R., Stasko, J., & Byrne, M. (1996). Do algorithm animations help students learn? Paper presented at the Basic Research Symposium of the CHI Human Factors in Computing Systems Conference, April, Vancouver, BC, Canada.

Guzdial, M., Catrambone, R., Byrne, M., Shippey, G., Albrecht, F., Ram, A., Stasko, J., Ram, P., & Roberts, J. (1996) Task and interface issues in accessing cognitive media. Presented at the ONR Workshop on Issues in Interactive Multimedia, February 1996, Las Cruces, NM.

Byrne, M. D. (1995). An introduction to CAPS/A CAPS model of the ATM Scenario. Presented at the CHI'95 Cognitive Architectures and HCI Workshop, Denver, CO.

Rieman, J., Byrne, M. D., & Polson, P. G. (1994). Goal Formation and the Unselected Window Problem. Presented at CHI'94 Research Symposium, Boston, MA.

Kirlik, A., & Byrne, M. D. (1994). Identifying Environmental Contributions to Skilled Interaction. Presented at the NASA Ames Cognitive Modeling Workshop, February 23, 1994.