

ALEXANDER P. BURGOYNE, Ph.D.

School of Psychology, Georgia Institute of Technology

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EMPLOYMENT

- 2021 – Present Research Scientist II
Attention & Working Memory Lab
Georgia Institute of Technology, School of Psychology
Principal Investigator: Randy Engle, Ph.D.
- 2020 – 2021 Post-Doctoral Research Fellow
Attention & Working Memory Lab
Georgia Institute of Technology, School of Psychology
Principal Investigator: Randy Engle, Ph.D.

EDUCATION

- 2019 Doctor of Philosophy
Cognition and Cognitive Neuroscience
Michigan State University, Department of Psychology
Advisor: D. Zach Hambrick, Ph.D.
- 2018 Master's Degree
Cognition and Cognitive Neuroscience
Michigan State University, Department of Psychology
Advisor: D. Zach Hambrick, Ph.D.
- 2014 Bachelor of Arts in Psychology
Michigan State University, College of Social Science

SUBMITTED ARTICLES

Burgoyne, A. P., Mashburn, C. A., Tsukahara, J. S., & Engle, R. W. (under review). Attention control and process overlap theory: searching for cognitive processes underpinning the positive manifold.

Burgoyne, A. P., Mashburn, C. A., Tsukahara, J. S., Hambrick, D. Z., & Engle, R. W. (under review). Understanding the relationship between rationality and intelligence: A latent-variable approach.

Burgoyne, A. P., Sadiya, S., Harris, L. J., Becker, M. W., Brascamp, J. W., & Hambrick, D. Z. (under review). Revisiting the self-generation effect in proofreading.

Hambrick, D. Z., **Burgoyne, A. P.**, Oswald, F. L. (under review). Does the validity of g as a predictor of job-specific performance vary with job experience? A test in 31 military occupations.

Hambrick, D. Z., **Burgoyne, A. P.**, Stec, K., Fenn, K. M. (under review). The ACT predicts academic performance, but why? The mystery remains.

Hambrick, D. Z., **Burgoyne, A. P.**, & Katsumata, D. S. (under review). Accelerating the acquisition of expertise.

JOURNAL ARTICLES

Johnson, T. L., **Burgoyne, A. P.**, Mix, K. S., Young, C. J., & Levine, S. C. (2021). Spatial and mathematics skills: Similarities and differences related to age, SES, and gender. *Cognition*, 218. DOI: 10.1016/j.cognition.2021.104918

Burgoyne, A. P., Mashburn, C. A., & Engle, R. W. (2021). Reducing adverse impact in high-stakes testing. *Intelligence*, 87, 101561. DOI: 10.1016/j.intell.2021.101561

Burgoyne, A. P. & Macnamara, B. N. (2021). Reconsidering the use of the mindset assessment profile in educational contexts. *Journal of Intelligence*, 9, 39. DOI: 10.3390/jintelligence9030039

- Burgoyne, A. P.** & Engle, R. W. (2020). Attention control: A cornerstone of higher-order cognition. *Current Directions in Psychological Science*, 29, 624-630. DOI: 10.1177/0963721420969371
- Burgoyne, A. P.**, Carroll, S., Clark, D. A., Hambrick, D. Z., Plaisance K. S., Klump, K. L., & Burt, S. A. (2020). Can a brief intervention alter genetic and environmental influences on psychological traits? An experimental behavioral genetics approach. *Learning & Motivation*, 72. DOI: 10.1016/j.lmot.2020.101683
- Burgoyne, A. P.**, Tsukahara, J. S., Draheim, C., & Engle, R. W. (2020). Differential and experimental approaches to studying intelligence in humans and non-human animals. *Learning & Motivation*, 72. DOI: 10.1016/j.lmot.2020.101689
- Burgoyne, A. P.**, Hambrick, D. Z., & Altmann, E. M. (2020). Incremental validity of placekeeping as a predictor of multitasking. *Psychological Research*. DOI: 10.1007/s00426-020-01348-7
- Burgoyne, A. P.**, Hambrick, D. Z., & Macnamara, B. N. (2020). How firm are the foundations of mindset theory? The claims appear stronger than the evidence. *Psychological Science*, 31, 258-267. DOI: 10.1177/0956797619897588
- Burgoyne, A. P.**, Hambrick, D. Z., & Altmann, E. M. (2019). Placekeeping ability as a component of fluid intelligence: Not just working memory capacity. *American Journal of Psychology*, 132, 439-449. DOI: 10.5406/amerjpsyc.132.4.0439
- Burgoyne, A. P.**, Harris, L. J., & Hambrick, D. Z. (2019). Predicting skill acquisition in music: The role of general intelligence, music aptitude, and mindset. *Intelligence*, 76. DOI: 10.1016/j.intell.2019.101383
- Burgoyne, A. P.**, Hambrick, D. Z., & Altmann, E. M. (2019). Is working memory a causal factor in fluid intelligence? *Psychonomic Bulletin & Review*, 26, 1333-1339. DOI: 10.3758/s13423-019-01606-9
- Burgoyne, A. P.**, Nye, C. D., Macnamara, B. N., Charness, N., & Hambrick, D. Z. (2019). The impact of domain-specific experience on chess skill: Re-analysis of a key study. *American Journal of Psychology*, 132, 27-38. DOI: 10.5406/amerjpsyc.132.1.0027
- Burgoyne, A. P.**, Hambrick, D. Z., Moser, J. S., & Burt, S. A. (2018). Analysis of a mindset intervention. *Journal of Research in Personality*, 77, 21-30. DOI: 10.1016/j.jrp.2018.09.004

- Mix, K., Hambrick, D. Z., Satyam, V. R., **Burgoyne, A. P.**, & Levine, S. C. (2018). The latent structure of spatial skill: A test of the 2 x 2 typology. *Cognition*, *180*, 268-278. DOI: 10.1016/j.cognition.2018.07.012
- Hambrick, D. Z., Altmann, E., & **Burgoyne, A. P.** (2018). A knowledge-activation approach to testing the circumvention-of-limits hypothesis. *American Journal of Psychology*, *131*, 307-321. DOI: 10.5406/amerjpsyc.132.4.0439
- Sisk, V., **Burgoyne, A. P.**, Sun, J., Butler, J. L., & Macnamara, B. N. (2018). To what extent and under which circumstances are growth mindsets important to academic achievement? Two Meta-analyses. *Psychological Science*, *29*, 549-571. DOI: 10.1177/0956797617739704
- Hambrick, D. Z., **Burgoyne, A. P.**, Macnamara, B. N., & Ullén, F. (2018). Toward a multifactorial model of expertise: Beyond born versus made. *The New York Academy of Sciences*, *1423*, 284-295. DOI: 10.1111/nyas.13586
- Sala, G., **Burgoyne, A. P.**, Macnamara, B. N., Hambrick, D. Z., Campitelli, G., & Gobet, F. (2017). Checking the “academic selection” argument. Chess players outperform non-chess players in cognitive skills related to intelligence: A meta-analysis. *Intelligence*, *61*, 130-139. DOI: 10.1016/j.intell.2017.01.013
- Burgoyne, A. P.**, Sala, G., Gobet, F., Macnamara, B. N., Campitelli, G., & Hambrick, D. Z. (2016). The relationship between cognitive ability and chess skill: A comprehensive meta-analysis. *Intelligence*, *59*, 72-83. DOI: 10.1016/j.intell.2016.08.002

REVIEWS AND COMMENTARIES

- Burgoyne, A. P.**, & Engle, R. W. (2020). Mitochondrial functioning and its relation to higher-order cognitive processes: Commentary on Geary (2018). *Journal of Intelligence*, *8*, 14. DOI: 10.3390/jintelligence8020014
- Hambrick, D. Z., & **Burgoyne, A. P.** (2019). Beyond nature vs. nurture in expertise research – comment on J. Baker and N. Wattie. *Current Issues in Sport Science*, *4*, 104. DOI: 10.15203/CISS_2019.104

CHAPTERS

- Burgoyne, A. P.**, Harris, L. J., & Hambrick, D. Z. (in press). "The origins of musical expertise." In G. McPherson (Ed.), *The Oxford Handbook of Music Performance*. Oxford, UK: Oxford University Press.
- Burgoyne, A. P.**, Martin, J. D., Mashburn, C. A., Tsukahara, J. S., Draheim, C., & Engle, R. W. (in press). "Measuring individual differences in working memory capacity and attention control and their contribution to language comprehension." In J. W. Schwieter & W. Zhisheng (Eds.), *The Cambridge Handbook of Working Memory & Language*. Cambridge, UK: Cambridge University Press.
- Hambrick, D. Z., **Burgoyne, A. P.**, & Araujo, D. (2020). "Working memory and expertise: An ecological perspective." In R. Logie, V. Camos, & N. Cowan (Eds.), *Working Memory: State of the Science (The Oxford Handbook of Working Memory)*. Oxford, UK: Oxford University Press.
- Hambrick, D. Z., **Burgoyne, A. P.**, & Altmann, E. M. (2020) "Problem solving and intelligence." In R. J. Sternberg (Ed.), *Thinking and Problem Solving (Handbook of Perception and Cognition), Volume 3*. Academic Press.
- Hambrick, D. Z., **Burgoyne, A. P.**, & Oswald, F. L. (2019) "The role of interests in the development of expertise: A multifactorial perspective." In C. D. Nye & J. Rounds (Eds.), *Vocational Interests in the Workplace: Rethinking Behavior at Work*. Routledge.
- Hambrick, D. Z., **Burgoyne, A. P.**, & Oswald, F. L. (2019). "Domain-general models of expertise: The role of cognitive ability." In P. Ward, J. M. Schraagen, J. Gore, & E. Roth (Eds.), *The Oxford Handbook of Expertise*. Oxford, UK: Oxford University Press.
- Hambrick, D. Z., **Burgoyne, A. P.**, Campitelli, G., & Macnamara, B. N. (2018). "Working memory, thinking, and expertise." In L. J. Ball & V. A. Thompson (Eds.), *International Handbook of Thinking and Reasoning*. Psychology Press.
- Macnamara, B. N., Hambrick, D. Z., Frank, D. J., King, M. J., **Burgoyne, A. P.**, & Meinz, E. J. (2018). "The deliberate practice view: An evaluation of definitions, claims, and empirical evidence." In D. Z. Hambrick, G. Campitelli, & B. N. Macnamara (Eds.), *The Science of Expertise*. Psychology Press.

POPULAR WRITING

Burgoyne, A. P., & Hambrick, D. Z. (2021, August 31). Sometimes Mindlessness Is Better Than Mindfulness, *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/pupil-size-is-a-marker-of-intelligence/>

Tsukahara, J. T., **Burgoyne, A. P.**, & Engle, R. W. (2021, June 2). Pupil Size Is a Marker of Intelligence, *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/sometimes-mindlessness-is-better-than-mindfulness/>

Hambrick, D. Z. & **Burgoyne, A. P.** (2019, May 29). Looks Matter, but So Do Smarts, *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/looks-matters-but-so-does-smarts/>

Burgoyne, A. P. & Hambrick, D. Z. (2017, January 12). Intelligence and the DNA Revolution, *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/intelligence-and-the-dna-revolution/>

Burgoyne, A. P. & Hambrick, D. Z. (2017, August 22). Flagging Fake News or Bad Sources Won't Work, *Slate*. Retrieved from http://www.slate.com/articles/health_and_science/science/2017/01/educating_people_about_sources_won_t_stop_fake_news.html

Hambrick, D. Z. & **Burgoyne, A. P.** (2016, September 18). The Difference Between Rationality and Intelligence, *New York Times*, p. SR12.

PRESENTATIONS AND SYMPOSIA

Hambrick, D. Z., **Burgoyne, A. P.**, & Altmann, E. M. (2019, June). *Placekeeping Ability as a Cognitive Control Construct: Validity and Malleability*. Presentation at the annual Office of Naval Research Program Review (Hawkins ONR 341), Arlington, D.C.

Burgoyne, A. P., Hambrick, D. Z., & Macnamara, B. N. (2019, April). *How Firm Are the Foundations of Mindset Theory?* Presentation at the annual conference of the Midwestern Psychological Association, Chicago, IL.

- Burgoyne, A. P.,** & Hambrick, D. Z. (2018, November). *Placekeeping Ability, Working Memory, and Fluid Intelligence*. Presentation at Rice University's Industrial/Organizational Psychology Department's Brown Bag Series. Houston, TX.
- Burgoyne, A. P.,** Altmann, E. M., & Hambrick, D. Z. (2018, November). *Placekeeping Ability as a Component of Fluid Intelligence*. Poster presented at the annual Psychonomics convention, New Orleans, LA.
- Macnamara, B. N. & **Burgoyne, A. P.** (2018, May). *How Important Are Growth Mindsets for Learning and Achievement?* Symposium at the annual convention of the Association for Psychological Science, San Francisco, CA.
- Burgoyne, A. P.,** Hambrick, D. Z., & Harris, L. J. (2018, May). *The Role of Cognitive Ability, Music Aptitude, and Mindset in Acquiring Musical Skill*. Presentation at the annual convention of the Association for Psychological Science, San Francisco, CA.
- Burgoyne, A. P.,** Burt, S. A., Moser, J., Yeager, D., Plaisance, K., & Hambrick, D. Z. (2018, April). *Altering Mindsets with a Brief Online Intervention*. Presentation at the annual conference of the Midwestern Psychological Association, Chicago, IL.
- Burgoyne, A. P.,** Altmann, E. M., & Hambrick, D. Z. (2017, May). *Cognitive Determinants of Multitasking Ability*. Poster presented at the annual convention of the Association for Psychological Science, Boston, MA.
- Burgoyne, A. P.,** Nye, C. D., Macnamara, B. N., Charness, N., Hambrick, D. Z. (2017, April). *The Impact of Domain-Specific Experience on Chess Skill: Re-Analysis of a Key Study*. Presentation at the annual conference of the Midwestern Psychological Association, Chicago, IL.
- Burgoyne, A. P.,** Harris, L. J., & Hambrick, D. Z. (2016, May). *Acquiring Skill in Music*. Poster presented at the annual conference of the Midwestern Psychological Association, Chicago, IL.
- Burgoyne, A. P.,** Sala, G., Gobet, F., Macnamara, B. N., Campitelli, G., Hambrick, D. Z. (2016, May). *The Relationship Between Intelligence and Expertise in Chess: A Meta-Analysis*. Presentation at the annual conference of the Midwestern Psychological Association, Chicago, IL.

GRANTS, HONORS, AND AWARDS

2020 Defense University Research Instrumentation Program Grant: \$146,400

Physiological Underpinnings of Attention Control, Working Memory Capacity, and Fluid Intelligence: The Role of the Locus Coeruleus. Grant application written by Alexander P. Burgoyne and Randall W. Engle; awarded to Randall W. Engle.

2018 Research Scholars Award: \$3,500

The Nature and Nurture of Skilled Performance: Understanding the Role of Basic Abilities and Training on Complex Task Performance.

2018 Thompson Endowment Fellowship: \$1,000

The Nature and Nurture of Skilled Performance: Understanding the Role of Basic Abilities and Training on Complex Task Performance.

2018 Future Academic Scholars in Teaching Fellowship: \$2,000

Cognitive Processes Underlying Undergraduate Writing and Proofreading.

2018 Research Enhancement Award: \$1,000

Circumvention of Limits in Chess.

2018 Travel Award: \$1,100

Funding for APS and MPA annual conventions.

2017 Summer Fellowship Award: \$600

2015 Rasmussen Fellowship Award: \$5,000

COGNITIVE ABILITY TESTING SOFTWARE

2020	Stroop Squared (E-Prime, E-prime Go)
2020	Auditory Flanker – Adaptive Difficulty (E-Prime, E-prime Go)
2020	Auditory Stroop – Adaptive Difficulty (E-Prime, E-prime Go)
2020	Auditory Simon – Adaptive Difficulty (E-Prime, E-prime Go)
2020	Melody Memory (E-Prime, E-prime Go)
2020	Attending to Speech in Noise (E-Prime, E-prime Go)
2020	Multiple Object Tracking (Open Sesame)
2017	Visual Arrays Task (E-Prime)
2017	Choose-A-Move Chess Test (E-Prime)
2017	Chess Knowledge Test (E-Prime)

2017 Typing Speed Test (E-Prime)
 2016 Reading Comprehension Test (E-Prime)
 2016 Pattern Comparison Test (E-Prime)
 All programs are free to download at www.scienceofexpertise.com/alex or by contacting
burgoyne4@gmail.com

WEB DESIGN AND MANAGEMENT

www.scienceofexpertise.com – Website for the Expertise Laboratory
www.journalofexpertise.org – Official website for the Journal of Expertise

ACADEMIC POSITIONS

2021 – Present Research Scientist II
 Attention & Working Memory Lab
 Georgia Institute of Technology, School of Psychology
 Principal Investigator: Randy Engle, Ph.D.

2020 – 2021 Post-Doctoral Researcher
 Attention & Working Memory Lab
 Georgia Institute of Technology, School of Psychology
 Principal Investigator: Randy Engle, Ph.D.

2015 – 2019 Graduate Research Assistant/Laboratory Manager
 Expertise Laboratory
 Michigan State University, Department of Psychology
 Supervisor: D. Zach Hambrick, Ph.D.

2016 Teaching Assistant
 Psychology 402(W): Sensation and Perception
 Michigan State University, Department of Psychology
 Professor: Mark Becker, Ph.D.

2015 Teaching Assistant
 Psychology 244: Developmental Psychology: Infancy through
 Childhood
 Michigan State University, Department of Psychology
 Professor: Lauren J. Harris, Ph.D.

- 2014 – 2015 Professional Aide
Michigan Twins Project, Michigan State University
Principal Investigators: Kelly Klump, Ph.D., Alex Burt, Ph.D.
- 2013 Teaching Assistant
Psychology 200: Introduction to Cognitive Psychology
Michigan State University, Department of Psychology
Professor: Mark Becker, Ph.D.
- 2012 – 2013 Research Assistant
Michigan Twins Project, Michigan State University
Principal Investigators: Kelly Klump, Ph.D., Alex Burt, Ph.D.

PROFESSIONAL SERVICE

- 2017 – Present Reviewer for the following journals: *Journal of Experimental Psychology: General, Journal of Experimental Psychology: Learning, Memory, and Cognition, Journal of Behavioral Decision Making, Clinical Psychological Science, Intelligence, Military Psychology, Music Perception, Journal of Expertise, Advances in Cognitive Psychology, Organizational Behavior and Human Decision Processes, Learning and Individual Differences, Frontiers in Psychology.*
- 2016 Reviewer for the Association for Psychological Science Student Grant Competition
- 2016 Student Representative, *Quantitative Genetics Faculty Search Committee*, Psychology Department, Michigan State University East Lansing, MI

TECHNICAL SKILLS

Structural equation modeling (*R, Amos, MPlus*)
Meta-analysis (*R, Comprehensive Meta-Analysis*)
Multi-level modeling (*R, SPSS*)
Power analysis (*G*Power*)

Experiment program development (*E-Basic, Open Sesame*)

Web design (*HTML, CSS*)

Website management and graphic design (*Adobe Dreamweaver, Photoshop, Illustrator*)

PROFESSIONAL DEVELOPMENT

Fall	2018	Future Academic Scholars in Teaching Fellow
Spring	2017	Leadership Academy at Michigan State University
Summer	2016	Certification in College Teaching Institute
Summer	2016	Introductory & Intermediate Structural Equation Modeling Workshop
Summer	2015	Teaching Assistant Institute at Michigan State University