

## **ALEXANDER P. BURGOYNE, Ph.D.**

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### **EMPLOYMENT**

2020 - Present      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.** & Macnamara, B. N. (under review). Reconsidering the use of the mindset assessment profile in educational contexts.

**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.

Johnson, T. L., **Burgoyne, A. P.**, Mix, K. S., Young, C. J., & Levine, S. C. (under review). Spatial and mathematics skills: Similarities and differences related to age, SES, and gender.

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

**Burgoyne, A. P.**, Mashburn, C. A., & Engle, R. W. (in press). Reducing adverse impact in high-stakes testing. *Intelligence*.

**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

- 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/pupil-size-is-a-marker-of-intelligence/>
- 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](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](http://www.scienceofexpertise.com/alex) or by contacting [burgoy4@gmail.com](mailto:burgoy4@gmail.com)

**WEB DESIGN AND MANAGEMENT**

[www.scienceofexpertise.com](http://www.scienceofexpertise.com) – Website for the Expertise Laboratory

[www.journalofexpertise.org](http://www.journalofexpertise.org) – Official website for the Journal of Expertise

**ACADEMIC POSITIONS**

2020 – Present	Post-Doctoral Researcher Attention & Working Memory Lab
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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