

Dan R. Johnson

Department of Cognitive and Behavioral Science
Washington and Lee University
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Current Position

Associate Professor of Cognitive and Behavioral Science, Washington and Lee University 2015-present
Program Head, Data Science
Neuroscience Program Faculty Member

Education

Ph.D. University of Oklahoma, Psychology 2009
B.A. Luther College, Majors in Psychology and Biology 2003

Grants, Awards, and Honors

Lenfest Research Grant 2010-2020
Annual amount awarded: \$6,500
Funded by: Washington and Lee University
Purpose: Collaborative research with students

Howard Hughes Medical Institute Curriculum Development Grant 2015
Amount awarded: \$500
Funded by: Washington and Lee University
Purpose: Innovation in pedagogical methods

Teaching Innovation Grant 2009-2020
Annual amount awarded: \$750
Funded by: Washington and Lee University

Howard Hughes Medical Institute Research Grant 2012-2013
Amount awarded: \$3,750
Funded by: Washington and Lee University
Purpose: Collaborative research with students, focus on quantitative skills

Charles Gettys Graduate Student Career Research Award 2008
Amount awarded: \$500
Funded by: University of Oklahoma

Foundation Fellowship 2003 – 2008
Total award: \$25,000
Funded by: University of Oklahoma

Research Interests

The Computational Cognition and Creativity Lab uses computational models and empirical data to investigate the mechanisms underlying creativity processes like the generation and selection of novel ideas. We are particularly interested in automating creativity assessment and making it widely and freely accessible to researchers and educators. We employ diverse methodologies like distributional semantic modeling and experimentation via Qualtrics and Amazon's Mechanical Turk. We use the statistical and graphics platform, *R*, for modeling and data work. Other topics we explore include metacognition and the role of reading narrative fiction in the development of empathy, theory of mind, and inferential abilities.

Publications

****student co-authors**

Johnson, D. R., & Hass, R. W. (under review). Semantic context search in creative idea generation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*.

Beaty, R. E., & Johnson, D. R. (2020). Automating creativity assessment with SemDis: An open platform for computing semantic distance. *Behavior Research Methods*. Advanced Online Publication.

Johnson, D. R., & Sopcak, P. (accepted book chapter). How to harness the narrative's power to influence: Potential causal mechanisms. In D. Kuiken, A. Jacobs (Eds.), *Handbook of Empirical Literary Studies*. DeGruyter.

Gavaler, C., & Johnson, D. R. (2019). The literary genre effect: A one-word science fiction (vs. realism) manipulation reveals intrinsic text properties outweigh extrinsic expectations of literary quality. *Scientific Study of Literature*, 9, 34 - 52.

Johnson, D. R., ****Cuthbert, A. S., & **Tynan, M. E.** (2019). The neglect of idea diversity in idea generation and evaluation. *Psychology of Aesthetics, Creativity, and the Arts*. Advanced publication online.

Vervoort, T., Kai, K., Johnson, D., Stefan, S., & Dimitri, D. (2019). Parental emotion and pain control behavior when faced with child's pain: The emotion regulatory role of parental-related attention-set shifting and heart rate variability. *PAIN*, 160, 322-333.

****Shuman, E.,** Johnson, D., Saguy, T., & Halperin, E. (2018). Threat to the group's image can motivate high identifiers to take action against in-group transgressions. *Personality and Social Psychology Bulletin*, 44, 1523-1544.

Johnson, D. R., ****Tynan, M. E., **Cuthbert, A. S., & **Q'Quinn, J. K.** (2018). Metacognition in argument generation: The misperceived relationship between emotional investment and argument quality. *Cognition and Emotion*, 32, 566-578.

****Heinen, D. J.,** & Johnson, D. R. (2018). Semantic distance: An automated measure of creativity that is novel and appropriate. *Psychology of Aesthetics, Creativity, and the Arts*, 12, 144-156.

Gavaler, C., & Johnson, D. R. (2017). The genre effect: A science fiction (vs. realism) manipulation decreases inference effort, reading comprehension, and perception of literary merit. *Scientific Study of Literature*, 7, 79-108.

Johnson, D. R. (2017). Improving skeptics' reasoning when evaluating climate change material: A cognitive intervention. *Ecopsychology*, 9, 130-142.

Johnson, D. R. (2017). Bridging the political divide: Highlighting explanatory power mitigates biased evaluation of climate arguments. *Journal of Environmental Psychology*, 51, 248-255.

- Johnson, D. R., **Murphy, M.**, & **Messer, R.** (2016). Reflecting on explanatory ability: Detecting gaps in causal knowledge. *Journal of Experimental Psychology: General*, *145*, 573-588.
- Callinan, S., Johnson, D. R., & Wells, A. (2015). A randomised controlled study of the effects of the attention training technique on traumatic stress symptoms, emotional attention set shifting, and flexibility. *Cognitive Therapy and Research*, *39*, 4-13.
- Stirling, B.**, **Greskovich, M.**, & Johnson, D.R. (2014). Response bias toward fearful stimuli increases as stimulus noise increases. *Psi Chi Journal of Psychological Research*, *19*, 37-42.
- Johnson, D. R., **Huffman, B.**, & **Jasper, D.** (2014). Changing race boundary perception by reading narrative fiction. *Basic and Applied Social Psychology*, *36*, 83-90.
- Johnson, D. R., **Jasper, D. M.**, **Griffin, S.**, & **Huffman, B.** (2013). Reading narrative fiction reduces Arab-Muslim prejudice and offers a safe haven from intergroup anxiety. *Social Cognition*, *31*, 578-598.
- Roebuck-Spencer, T., Vincent, A., Gilliland, K., Johnson, D. R., & Cooper, D. B. (2013). Initial clinical validation of an embedded performance validity measure within the Automated Neuropsychological Metrics (ANAM). *Archives of Clinical Neuropsychology*, *28*, 700-710.
- Johnson, D. R., **Cushman, G.**, **Borden, L.**, & **McCune, M.** (2013). Potentiating empathic growth: Generating imagery while reading fiction increases empathy and prosocial behavior. *The Psychology of Aesthetics, Creativity, and the Arts*, *7*, 306-312.
- Johnson, D. R. (2013). Transportation into literary fiction reduces prejudice against and increases empathy for Arab-Muslims. *Scientific Study of Literature*, *3*, 77-92.
- Johnson, D. R., & Whiting, W. L. (2013). Detecting subtle expressions: Older adults demonstrate automatic and controlled positive response bias in emotional perception. *Psychology and Aging*, *28*, 172-178.
- Johnson, D. R., & **Borden, L. A.** (2012). Participants at your fingertips: Using Amazon's Mechanical Turk to increase student-faculty collaborative research. *Teaching of Psychology*, *39*, 245-251.
- Johnson, D. R. (2012). Transportation into a story increases empathy, prosocial behavior, and perceptual bias toward fearful expressions. *Personality and Individual Differences*, *52*, 150-155.
- Johnson, D. R. (2009). Emotional attention set-shifting and its relationship to anxiety and emotion regulation. *Emotion*, *9*, 681-690.
- Johnson, D. R. (2009). Attentional control capacity for emotion: An individual-difference measure of internal controlled attention. *Cognition and Emotion*, *23*, 1516-1536.
- Johnson, D. R. (2009). Goal-directed attentional deployment to emotional faces and individual differences in emotional regulation. *Journal of Research in Personality*, *43*, 8-13.
- Johnson, D. R., & Gronlund, S. D. (2009). Individuals lower in working memory capacity are particularly vulnerable to anxiety's disruptive effect on performance. *Anxiety, Stress, and Coping*, *22*, 201-213.
- Johnson, D. R., Vincent, A. S., Johnson, A. E., Gilliland, K., & Schlegel, R. E. (2008). Reliability and construct validity of the Automated Neuropsychological Assessment Metrics (ANAM) Mood Scale. *Archives of Clinical Neuropsychology*, *23*, 73-85.
- Johnson, D. R. (2008). A multi-level model of individual differences in speed/accuracy tradeoff (SATin). *Multivariate Behavioral Research*, *43*(4) (Abstract).

Njus, D., & Johnson, D. R. (2008). Need for cognition as a predictor of psychosocial identity development. *Journal of Psychology, 142*, 645-655.

Presentations

****bolded** names are student co-authors

Johnson, D. R., ****Hurst, J., ** & **Dolwick, A.** (2019). *Corpus-based assessment of novelty and diversity in creativity*. Poster presented at the annual meeting Midwestern Psychological Association, Chicago, IL.

Johnson, D. R. (2018). *Enhancing creativity using polysemy*. Invited talk was given at the annual meeting Midwestern Psychological Association, Chicago, IL.

Johnson, D. R., ****Tynan, M. E., **Cuthbert, A. S., & **Q'Quinn, J. K.** (2017). *Metacognition in argument generation: The misperceived relationship between emotional investment and argument quality*. Poster presented at the annual meeting Midwestern Psychological Association, Chicago, IL.

Johnson, D. R., ****Magee, C., **Epelbaum, M., & **Lane, L.** (2015). *Coherence-seeking increases memory for false details*. Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Johnson, D. R., ****Shuman, E., **Roberts, M., **Huffman, B.** (2014). *Self-generated stories enhance long-term retention of textbook material*. Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Johnson, D. R., ****Jasper, D., **Griffin, S., & **Huffman, B.** (2013). *Reading narrative fiction reduces Arab-Muslim prejudice and offers a safe haven from intergroup anxiety*. Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Whiting, W., Johnson, D. R., ****Strong, R., **Fletcher, K.** (2012). *Detecting subtle expressions: Older adults demonstrate automatic and controlled positive response bias in emotional perception*. Presented at the annual meeting of the Society for Psychology and Aging.

Johnson, D. R., ****Cushman, G., **Borden, L., & **McCune, M.** (2012, May). *Transportation into a story increases empathy and prosocial behavior*. Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Johnson, D. R. (2011, July). *Trait worry and individual differences in valence-specific enhancement and hindrance of executive set-shifting processing*. Poster presented at the bi-annual meeting of the International Society for the Study of Individual Differences. London, England.

Johnson, D. R., ****Cushman, G., **Tipton, L. A., & **Blackburn, K.** (2011, March). *Attentional deployment in emotion regulation: A measure of thought switching ability*. Poster presented at the annual meeting of the Eastern Psychological Association, Boston, MA.

Johnson, D. R. (2010, May). *Threatening faces have opposing effects on full and residual switch cost*. Poster presented at the annual meeting of the Association for Psychological Science, Boston, MA.

Johnson, D. R., Gilliland, K., & Vincent, A. (2009, November). *Automated Neuropsychological Assessment Metrics (ANAM)'s Measure of Invalid Responding (AMIS): A Simulator Study*. Poster presented at the 29th annual meeting of the National Academy of Neuropsychology, New Orleans, LA.

Johnson, D. R., Beasley, W., & Baird, D. (2008, September). *A multi-level model of individual differences in speed/accuracy tradeoff*. Paper to be presented at the bi-annual meeting of the Society for Multivariate Experimental Psychology. Montreal, Canada.

- Johnson, D. R. (2008, May). *Attentional control capacity for emotion: A mechanism for emotion regulation*. Poster session presented at the annual meeting of the Association for Psychological Science, Chicago, IL.
- Johnson, D.R. (2007, July). Defensive Repressor Identification: Scale Matters. *Abstracts from the International Society for the Study of Individual Differences, Giessen, Germany, 1*, 151.
- Johnson, D.R. (2007, May). *Defensive Repressor Identification: Scale Matters*. Poster session presented at the annual meeting of the Association for Psychological Science, Washington, D.C.
- Johnson, D.R. (2006, December) Invited guest lecture. "Computer-based cognitive tests: Application to Neuropsychological Screening" – Senior Capstone Course, University of Oklahoma
- Johnson, D.R., & Gilliland, K. (2006, May). *Processing efficiency theory: An investigation in to the role of defensiveness*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.
- Johnson, D.R., & Gronlund, S. (2006, May). *Working memory capacity: The relative contributions of anxiety and executive functions*. Poster presented at the annual meeting of the Association for Psychological Science, New York, NY.
- Johnson, D.R., & Gronlund, S. (2005, July). *Individual differences in working memory capacity: A dual-efficiency hypothesis*. Poster presented at the International Society for the Study of Individual Differences, Adelaide, Australia.

Popular Press Coverage

The Guardian - June, 2019

"The science of influencing people: six ways to win an argument" By David Robson

<https://www.theguardian.com/science/2019/jun/30/the-science-of-influencing-people-six-ways-to-win-an-argument>

The Guardian – November 23, 2017

"Science fiction triggers 'poorer reading', study finds?" by Alison Flood

<https://www.theguardian.com/books/2017/nov/23/science-fiction-triggers-poorer-reading-study-finds>

Garrison Institute – March 31, 2017

"Does reading fiction make you a better person?" by Alex Tzelnic

<https://www.garrisoninstitute.org/blog/reading-fiction-make-better-person/>

The Boston Globe – April 29, 2012

"Why fiction is good for you," By Jonathan Gottschall

<http://bostonglobe.com/ideas/2012/04/28/why-fiction-good-for-you-how-fiction-changes-your-world/nubDy1P3viDj2PuwGwb3KO/story.html>

The Chicago Tribune - December 12, 2012

"Better living through reading" By John Warner

http://articles.chicagotribune.com/2012-12-07/news/ct-prj-1209-biblioracle-20121207_1_empathy-gap-suicide-attempt-college-students

Pacific Standard – March 10, 2014

"Reading Literary Fiction Can Make You Less Racist" By Tom Jacobs

<http://www.psmag.com/navigation/books-and-culture/reading-literary-fiction-can-make-less-racist-76155/>

Huffington Post - May 7, 2014

“Does Literary Fiction Challenge Racial Stereotypes?” By Jalees Rehman

http://www.huffingtonpost.com/jalees-rehman/does-literary-fiction-cha_b_5227418.html?utm_hp_ref=books

APS Observer - September, 2014

“Literary character: Researchers test fiction as a foundation for empathy and social skills?” By Scott Sleek

<http://www.psychologicalscience.org/index.php/publications/observer/2014/september-14/literary-character.html>

The Atlantic - November, 2014

“The Psychological Comforts of Storytelling” By Cody Delistraty

<http://www.theatlantic.com/health/archive/2014/11/the-psychological-comforts-of-storytelling/381964/2/>

Teaching

Courses

- Cognition (CBSC 112)
- Social Psychology (CBSC 114)
- Psychology Mythbusters (CBSC 118)
- Introduction to Data Science: Mind Analytics (CBSC 240)
- Cognition and Emotion (CBSC 259)
- Advanced Research Methods in Cognition and Emotion (CBSC 359)
- Research Design and Analysis Lab (CBSC 250 Lecture and Lab)
- Senior and Honor's Thesis (CBSC 413, NEUR 423)
- Introduction to Psychology, Behavioral Statistics, Personality Psychology (University of Oklahoma)

Skills for Integrating Teaching and Research

E-Prime Software

- E-Prime is a computerized experiment management system that can be used to create sophisticated psychology experiments that collect survey data, accuracy, and millisecond response time data. It can also be used for research and teaching demonstrations where data is collected and analyzed in real time.

Amazon's Mechanical Turk (MTurk)

- MTurk is an online participant pool and program for generation of unique experiments including surveys, pictures, and video presentation. Diverse participants can be collected efficiently and inexpensively for use in research courses, senior theses, and student-faculty collaborative research.

Qualtrics

- Qualtrics is an experiment-delivery software that can be used to perform varied designs, including survey and experimental. It can be used in conjunction with MTurk to assist in student-faculty collaborative research.

Statistics Programs

- Expertise using R, SAS, and SPSS for data management, analysis, and visualization for undergraduate research courses and student-faculty collaborative research.

Professional Affiliations/Honor Societies

- Association for Psychological Science
- Midwestern Psychological Association
- National Academy of Neuropsychology

- International Society for the Study of Individual Differences
- Phi Beta Kappa (inducted 2003)
- Phi Kappa Phi (inducted 2005)

Professional Development, Departmental Service, and Volunteer Work

- Appointed Head of the *Data Science Program* 2019
- Elected to *General Education Review Committee* 2019
- Elected to the *University Board of Appeals* 2019
- Presented at Faculty Training Academy 2017, 2018
 - “Re-examining the General Education Curriculum
- Invited and paid workshop leader for National Endowment of the Humanities 2016
- Regular speaker for faculty academy on teaching and advising (Fall and Winter terms) 2011-present
- Annual Getting into Graduate School Talk 2009-present
- Qualtrics Software Administrator 2015-present
- Workshop Leader for *LEAD*, student-led leadership organization 2014-present
- Appointed to *Future of STEM Teaching Committee* 2015-2016
- Elected to *Committee to Consider Faculty Handbook Revisions for Undergraduate Tenure and Promotion* 2012-2015
- Interviewed and posted video on summer research at W&L 2014
- Interviewed and video created for capital campaign donors 2014
- Invited to present at Faculty Training Academy 2012
 - Washington and Lee University
 - "Active Teaching Strategies"
- Community Discussion With First-Years 2012-2013
- Concussion Assessment Volunteer for Rockbridge High School athletes 2012
 - administered cognitive assessments for concussion baseline testing
- Member, Institutional Review Board 2011-present
 - Washington and Lee University
- Appointed as Alumni Ambassador by Alumni Affairs 2010-present
 - Washington and Lee University
- Invited to present at Faculty Training Academy 2011
 - Washington and Lee University
 - "How to survive and thrive in the Spring Term"
- Interviewed and posted story by W&L on Spring Term course 2011
 - Psychology Mythbusters
- Interviewed and posted story by W&L media on research program 2010
- Interviewed and posted story by W&L media on 2010
 - Robert E. Lee Research student experience
- Served as Interviewer for Johnson Scholar applicants 2009- 2012
 - Washington and Lee University
- Gave talks to W&L students entitled, “Getting into Graduate School” 2009, 2011
- Reviewer for *Psychological Science; Psychology of Aesthetics, Creativity, and the Arts; Creativity Research Journal; Journal of Environmental Psychology, Journal of Media Psychology; Discourse Processes; Poetics; Trends in Cognitive; Psychology and Aging; Emotion; Aging, Neuropsychology, and Cognition; British Journal of Social Psychology; Personality and Individual Differences; Anxiety, Stress, and Coping; Journal of Personality; Teaching of Psychology*