

Kara J. Blacker

E-mail: kblack4@gmail.com or kara.blacker.ctr@us.af.mil

Phone: office (937) 713-0788 or mobile (740) 310-7358

<http://kblack4.wix.com/karajblacker>

EDUCATION

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| 2009-2013 | Ph.D. Temple University, Brain & Cognitive Sciences
PIs: Kim Curby & Jason Chein |
| 2007-2009 | M.S. Drexel University, Psychology
PIs: James Herbert, Evan Forman, & John Kounios |
| 2003-2007 | B.A. Wheeling Jesuit University, Psychology
PI: Bryan Raudenbush |

POSITIONS

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| 2017 - present | Research Psychologist The Henry M. Jackson Foundation for the Advancement of Military Medicine, Naval Medical Research Unit - Dayton OH |
| 2013 - 2017 | Post-doctoral Fellow Johns Hopkins University, Psychological & Brain Sciences
PI: Susan Courtney |

RESEARCH FUNDING

Current Funding

- Office of Naval Research, In-house Laboratory Independent Research (Co-I, \$199,400)
"Development of a neural biomarker of hypoxia using EEG"
FY20-FY21
- Joint Program Committee-5, Aviation Mishap Prevention Working Group (Co-I, \$490,000)
"Neurocognitive Recovery from Hypoxia"
FY19-FY20

Completed Funding

- Air Force Research Laboratory (Co-I, \$194,400)
"Brain Stimulation to Boost the Effectiveness of Visual Search Training"
10/2017 - 09/2019
- Distinguished Science of Learning Institute Fellowship (PI, \$119,536)
"Behavioral and Neural Mechanisms of Effective Working Memory Training"
07/01/2015 – 06/30/2017
- Walter L. Clark Fellowship Fund Award (PI, \$1,000)
"Mechanisms of Action Video Game Players' Visual Working Memory Advantage"
01/01/2015 – 05/15/2015

AWARDS & HONORS

2016	Travel Award: Gordon Research Seminar, Neurobiology of Cognition
2011	Travel Award: College of Liberal Arts, Temple University
2010	Travel Award: College of Liberal Arts, Temple University
2009	Most Outstanding Master's Student in the Social Sciences, Drexel University Commencement Award

PUBLICATIONS

*Denotes student author

Peer-Reviewed Journal Articles

Blacker, K.J., Peltier, C., McKinley, R.A., & Biggs, A.T. (2020). What versus how in visual search: Effects of object recognition training, strategy training, and non-invasive brain stimulation on satellite image search. *Journal of Cognitive Enhancement*.

Seech, T.R., Funke, M.E., Sharp, R.F., Light, G.A., & **Blacker, K.J.** (2020). Impaired sensory processing during low-oxygen exposure: A non-invasive approach to detecting changes in cognitive states. *Frontiers in Psychiatry*.

Hinault, T., **Blacker, K.J.**, Gormley, M.*, Anderson, B.A., & Courtney, S.M. (2019). Value-driven attentional capture is modulated by the contents of working memory: An EEG study. *Cognitive, Affective, & Behavioral Neuroscience*, 19(2), 253-267.

Blacker, K.J., Hamilton, J.*, Roush, G., Pettijohn, K., & Biggs, A.T. (2019). Cognitive Training for Military Application: A Review of the Literature and Practical Guide. *Journal of Cognitive Enhancement*, 3(1), 30-51.

Peltier, C., Pettijohn, K.A., & **Blacker, K.J.** (2018). Developing the third offset: Transcranial direct current stimulation can improve the human operator. *Military Medicine*, 184(1-2), 11-13.

Blacker, K.J., Negoita, S.*, Ewen, J.B., & Courtney, S.M. (2017). N-back vs. complex span working memory training. *Journal of Cognitive Enhancement*, 1(4), 434-454.

Blacker, K.J., Weisberg, S.M., Newcombe, N.S., & Courtney, S.M. (2017). Keeping track of where we are: spatial working memory in navigation. *Visual Cognition*, 25 (7-8), 691-702.

Jones, K.T., Peterson, D.J., **Blacker, K.J.**, & Berryhill, M.E. (2017). Frontoparietal tDCS modulates working memory training benefits and oscillatory synchronization. *Brain Research*. 1667, 28-40.

Blacker, K.J. & Courtney, S.M. (2016). Distinct neural substrates for maintaining spatial locations and relations in working memory. *Frontiers in Human Neuroscience*, 10, 594.

Blacker, K.J., & Curby, K.M. (2016). The attentional blink is attenuated for objects of expertise. *Visual Cognition*, 24(2), 132-140.

Blacker, K.J., Ikkai, A., Lakshmanan, B.M., Ewen, J.B., & Courtney, S.M. (2016). The role of alpha oscillations in deriving and maintaining spatial relations in working memory. *Cognitive, Affective, and Behavioral Neuroscience*, 16(5), 888-901.

Ikkai, A., **Blacker, K.J.**, Lakshmanan, B.M., Ewen, J.B., & Courtney, S.M. (2014). Maintenance of relational information in working memory leads to suppression of the sensory cortex. *Journal of Neurophysiology*, 112(8), 1903-1915.

Blacker, K.J., Curby, K.M., Klobusicky, E., & Chein, J.M. (2014). The effects of action video game training on visual working memory. *Journal of Experimental Psychology: Human Perception & Performance*, 40(5), 1992-2004.

Zhao, K., Jiang, J., **Blacker, K.**, Lyman, B., Dalton, P., Cowart, B., & Pribitkin, E. (2014). Regional peak mucosal cooling predicts the perception of nasal patency. *The Laryngoscope*, 124(3), 589-595.

Blacker, K.J. & Curby, K.M. (2013). Enhanced visual short-term memory in action video game players. *Attention, Perception, & Psychophysics*, 75(6), 1128-1136.

Curby, K.M., Goldstein, R.R., & **Blacker, K.** (2013). Disrupting perceptual grouping of face parts impairs holistic face processing. *Attention, Perception, & Psychophysics*, 75(1), 83-91.

Blacker, K.J., Forman, E.M., Herbert, J.D., & Kounios, J. (2012). Acceptance- versus Change-based Pain Management: The Role of Psychological Acceptance. *Behavior Modification*, 36(1), 37-48.

Zhao, K., **Blacker, K.**, Luo, Y., Bryant, B., & Jiang, J. (2011). Perceiving nasal patency through mucosal cooling rather than air temperature or nasal resistance. *PLoS ONE*, 6 (10), 1-8.

Peer-Reviewed Conference Proceedings

Blacker, K.J., Peterson, D.J., Jones, K.T., & Berryhill, M.E. (2016). Visual working memory training with noninvasive neurostimulation increases low frequency phase synchrony. *Journal of Vision*, 16(12), 760.

Collins, J.A., **Blacker, K.J.**, & Curby, K.M. (2013). Learned emotional associations influence visual processing, eventually. *Journal of Vision*, 13(9), 896.

Blacker, K.J. & Curby, K.M. (2010). Perceptual expertise attenuates the attentional blink. *Visual Cognition*, 18(10), 1494-1498.

Blacker, K.J., Pribitkin, E., Luo, Y., & Zhao, K. (2009). Is perception of nasal patency a function of air temperature, humidity, mucosal heat loss, nasal resistance or trigeminal sensitivity? *Chemical Senses*, 34(7), A99-A100.

McDermott, R., Wilson, T., **Blacker, K.**, Maute, C., Ozdener, M., & Dalton, P. (2009). Functional and Inflammatory Consequences of Veterinary Gross Anatomy Lab Enrollment: Effects of Formaldehyde on Chemosensation. *Chemical Senses*, 34(7), A101-A102.

Blacker, K., Drake, R., Reed, A., Almeida, J., & Raudenbush, B. (2007). Body image satisfaction among intercollegiate female athletes using a scale of muscularity. *Appetite*, 49(1), 279.

Manuscripts In Progress

Blacker, K.J., Pettijohn, K.A., Roush, G., & Biggs, A.T. (in revision). Measuring lethal force performance in the lab: The effects of simulator realism and participant experience.

Biggs, A.T., Pistone, D.*, Riggerbach, M.*, Hamilton, J.A. & **Blacker, K.J.** (under review). Cue validity in lethal force decisions: How contextual information can create unintentionally predictive relationships during threat assessment.

Biggs, A.T. & **Blacker, K.J.** (in prep). The need for dynamic inhibitory control assessments in lethal force decision-making.

Biggs, A.T. & **Blacker, K.J.** (in prep). Talk is cheap: Self-reported marksmanship proficiency versus actual proficiency reveal a Dunning-Kruger effect in firearms use.

Blacker, K.J., Seech, T.R., Funke, M.E., & Kinney, M.J. (in prep). Visual information processing is impaired in hypoxia: Evidence from visual mismatch negativity.

INVITED TALKS

Muhlenberg College – Department of Psychology, Allentown, PA. “The Flexibility of Working Memory” Feb 2017.

Binghamton University – Department of Psychology, Binghamton, NY. “The Flexibility of Working Memory” Jan 2017.

Florida Gulf Coast University – Department of Psychology, Fort Meyers, FL. “The Flexibility of Working Memory” Jan 2017.

Radford University – Department of Psychology, Radford, VA. “The Flexibility of Working Memory” Dec 2016.

Baldwin Wallace University – Department of Psychology, Berea, OH. “The Flexibility of Working Memory” Nov 2016.

Mount St. Mary’s University – Department of Psychology, Emmittsburg, MD. “The Flexibility of Working Memory” Oct 2016.

University of Miami – Department of Psychology, Coral Gables, FL. “Working Memory: What we maintain, How we maintain it, and Can we improve it?” Oct 2015.

Army Research Laboratory – Human Research and Engineering Directorate, Aberdeen, MD. “Neural Correlates of Abstract Working Memory” Sept 2014.

CONFERENCE PRESENTATIONS

Blacker, K.J., Seech, T.R., Kinney, M.J., & Funke, M.E. *Changes in visual processing during low-oxygen exposure: Evidence from mismatch negativity and p3a*. Talk presented at the Society for Neuroscience annual meeting, Chicago, IL (October 2019).

Blacker, K.J., Seech, T.R., Light, G.A., & Funke, M.E. *Impaired sensory processing during low-oxygen exposure: A novel approach to detecting hypoxia*. Talk presented at the Aerospace Medical Association annual meeting, Las Vegas, NV (May 2019).

Biggs, A.T., Pettijohn, K.A., Roush, G., & **Blacker, K.J.** *The role of response inhibition in simulated lethal force decision-making*. Talk presented at the Psychonomic Society annual meeting, New Orleans, LA (November 2018).

Riggenbach, M.R.*, **Blacker, K.J.**, Pettijohn, K.A., & Biggs, A.T. *Gender differences in lethal force decision-making*. Poster presented at the Object Perception, Attention, and Memory annual meeting, New Orleans, LA (November 2018).

Blacker, K.J., Roush, G., McCann, M.B., Levin, C., Funke, M., & Seech, T. *The brain-based hypoxia signature: A superior predictor of performance*. Talk presented at the annual Military Health System Research Symposium, Kissimmee, FL (August 2018).

Biggs, A.T., Hamilton, J.A.*, & **Blacker, K.J.** *Going from ordinary to extraordinary: Targeted cognitive enhancement programs as a means to train special operators*. Talk presented at the Department of Defense Human Factors Engineering Technical Advisory Group meeting, Okaloosa, FL (May 2018).

Gormley, M.*, Hinault, T., **Blacker, K.J.**, Anderson, B.A., & Courtney, S.M. *Distinct influence of value-driven attentional capture when maintaining locations and spatial relations in working memory*. Poster presented at the Cognitive Neuroscience Society annual meeting, Boston, MA (March 2018).

Blacker, K.J., Negoita, S.*, Ewen, J.B., & Courtney, S.M. *N-back versus complex span working memory training*. Poster presented at the Psychonomic Society annual meeting. Boston, MA (November 2016).

Blacker, K.J., Ewen, J.B., & Courtney, S.M. *Changes in alpha oscillatory power in response to working memory training*. Poster presented at the Gordon Research Seminar/Conference on the Neurobiology of Cognition, Newry, ME (July 2016).

Blacker, K.J., Peterson, D.J., Jones, K.T. & Berryhill, M.E. *Visual working memory training with non-invasive neurostimulation increases low frequency phase synchrony*. Talk presented at Vision Sciences Society annual meeting. St. Pete, Beach FL (May 2016).

Blacker, K.J., Weisberg, S.M., Newcombe, N.S., & Courtney, S.M. *How working memory for spatial locations vs. relations predicts navigation ability*. Poster presented at the Psychonomic Society annual meeting, Chicago, IL (November 2015).

Blacker, K.J., Vergara, A., Ewen, J.B., & Courtney, S.M. *Distinct oscillatory effects of load on working memory for spatial relations vs. locations*. Nanosymposium talk presented at the Society for Neuroscience annual meeting, Chicago, IL (October 2015).

Vannorsdall, T.D., Venkatesan, A., Courtney, S.M., Hernandez, J., Van Steenberg, J., **Blacker, K.J.**, & Gordon, B. *Reducing mental fatigue and improving working memory in multiple sclerosis with transcranial direct current stimulation*. Poster presented at the American Neurological Association annual meeting, Chicago, IL (September 2015).

Blacker, K.J., Vergara, A. & Courtney, S.M. *Effects of load on maintaining spatial relations vs. locations in working memory*. Poster presented at the Organization for Human Brain Mapping annual meeting, Honolulu, HI (June 2015).

Blacker, K.J., Vergara, A., & Courtney, S.M. *Comparing working memory capacity for sensory vs. abstract information*. Poster presented at the Psychonomic Society annual meeting, Long Beach, CA (November 2014).

Blacker, K.J., Vergara, A., Cantor, N., & Courtney, S.M. *Decreased retinotopic representation during maintenance of abstract spatial relations in working memory*. Poster presented at Society for Neuroscience annual meeting, Washington, D.C. (November 2014).

Blacker, K.J., Ikkai, A., Lakshmanan, B.M., Ewen, J.B., & Courtney, S.M. *The role of alpha oscillations in deriving abstract spatial relations from sensory-based information*. Poster presented at the Gordon Research Seminar/Conference on the Neurobiology of Cognition, Newry, ME (July 2014).

Blacker, K.J., Ikkai, A., Lakshmanan, B.M., Ewen, J.B., & Courtney, S.M. *Active conversion of sensory information to abstract representation*. Poster presented at the Cognitive Neuroscience Society annual meeting, Boston, MA (April 2014).

Blacker, K.J., Curby, K.M., Klubosicky, E., & Chein, J.M. *The effects of action video game training on visual short-term memory*. Poster presented at Object Perception, Attention, and Memory annual meeting, Toronto, ON, Canada (November 2013).

Wilmer, H., **Blacker, K.J.**, Schneider, W., & Chein, J.M. *Comparative effects of two distinct cognitive training programs*. Poster presented at Psychonomic Society annual meeting, Toronto, ON, Canada (November 2013).

Collins, J.A., **Blacker, K.J.**, & Curby, K.M. *Learned emotional associations influence visual processing, eventually*. Poster presented at Vision Sciences Society annual meeting, Naples, FL (May 2013).

Blacker, K.J. & Curby, K.M. *Impaired proactive cognitive control in action video game players*. Poster presented at Object Perception, Attention, and Memory annual meeting, Minneapolis, MN (November 2012).

Blacker, K.J. & Curby, K.M. *Enhanced visual short-term memory in action video game players*. Poster presented at Object Perception, Attention, and Memory annual meeting, Seattle, WA (November 2011).

Collins, J.A., **Blacker, K.J.** & Curby, K.M. *Learned emotional associations and the attentional blink*. Poster presented at Object Perception, Attention, and Memory annual meeting, Seattle, WA (November 2011).

Curby, K.M., Goldstein, R.R., & **Blacker, K.J.** *Face perception in context: Grouping cues modulate holistic face perception*. Talk presented at Psychonomic Society annual meeting, Seattle, WA (November 2011).

Blacker, K.J. & Curby, K.M. *The attentional blink is attenuated for objects of expertise*. Talk presented at the Object Perception, Attention, and Memory annual meeting, St. Louis, MO (November 2010).

Herbert, J.D., Forman, E.M., Yuen, E., Goetter, E., England, E., Massey, J., Brandsma, L.L., **Blacker, K.**, Timko, A., & Geboy, A. *Awareness, Acceptance, Defusion, and Psychopathology: Implications of Recent Data on the Deconstruction of Mindfulness*. Talk presented at the conference of the Association of Behavioral and Cognitive Therapies, San Francisco, CA (November 2010).

Blacker, K., Herbert, J., Kounios, J., & Forman, E. *Differential Electroencephalography (EEG) Activity Exhibited in Acceptance- and Control/Distracton-based Pain Management Strategies*. Poster presented at the conference of the Association of Behavioral and Cognitive Therapies, New York, NY (November 2009).

Blacker, K., Zhao, K., & Luo, Y. *Is perception of nasal patency a function of air temperature, humidity, mucosal heat loss, nasal resistance or trigeminal sensitivity?* Poster presented at the conference of the Association for Chemosensory Sciences, Sarasota, FL (April 2009).

McDermott, R., Wilson, T., **Blacker, K.**, Maute, C., Ozdener, M., & Dalton, P. *Functional and Inflammatory Consequences of Veterinary Gross Anatomy Lab Enrollment: Effects of Formaldehyde on Chemosensation*. Poster presented at the conference of the Association for Chemosensory Sciences, Sarasota, FL (April 2009).

Zhao, K., **Blacker, K.**, Jiang, J., & Luo, Y. *Sensation of Nasal Patency through Mucosal Heat Loss rather than air temperature*. Abstract presented at Rhinology World conference, Philadelphia, PA (April 2009).

Raudenbush, B., **Blacker, K.**, Almeida, J., Drake, R., & Reed, A. *Female athlete body image satisfaction using a scale of muscularity*. Poster presented at the conference of the Eastern Psychological Association, Philadelphia, Pennsylvania (March 2007).

Raudenbush, B., **Blacker, K.**, & Drake, R. *Gender stereotyped distractions differentially influence pain perception and tolerance in males and females*. Poster presented at the conference of the Society for Psychophysiological Research, Vancouver, British Columbia, Canada (October 2006).

TEACHING EXPERIENCE

Tests & Measures: Wright State University (November 2017)

- Guest Lecturer – “Measuring Brain Activity and Intelligence”

Psychology of War & Genocide: Johns Hopkins University (January 2015)

- Guest Lecturer - “Intelligence Testing: Past and Present”

Functional Neuroimaging: Johns Hopkins University (Fall 2013 – Spring 2016)

- Primary Instructor

Fundamentals of Neuroscience: Temple University (Fall 2010 - Spring 2013)

- Teaching Assistant

History and Systems of Psychology: Temple University (Summer 2011/2012)

- Primary Instructor

LEADERSHIP/SERVICE/OUTREACH

- Invited panelist for the Cognitive Neuroscience Society Trainee Association Professional Development Panel at annual CNS meeting (Mar 2020)
- Member of the Review Committee for the Psychonomic Society (June 2018 – May 2021)
- Guest blog writer, Alliance for Excellent Education, [Debunking the Myth about Left-Brain/Right-Brain Learning Styles](#) (Dec 2016)
- Cognitive Psychology Demonstration, Western High School, Baltimore, MD (Nov 2016)
- EEG Demonstration, Patterson High School students, Baltimore, MD (Oct 2016)
- [Brain Facts and Myths Blog](#), target audience: general public (Aug 2016 – May 2017)
- Volunteer for Brain Awareness Week, Society for Neuroscience/The Franklin Institute (Mar 2012, 2013)
- Master's Program Student Representative, Drexel University (Oct 2007-Jun 2009)
- NCAA Division II Soccer, Wheeling Jesuit University (Aug 2003-Nov 2006)
- PSI CHI Member, Wheeling Jesuit University (2004-2007)

AD-HOC REVIEWER

Journal of Vision
Attention, Perception, & Psychophysics
Visual Cognition
Cognition
Cognitive Research: Principles and Implications
International Journal of Psychophysiology
Journal of Cognitive Enhancement
Cognitive, Affective, & Behavioral Neuroscience
Journal of Experimental & Theoretical Artificial Intelligence
PLoS ONE
Scientific Reports

PROFESSIONAL MEMBERSHIPS

Fellow of the Psychonomic Society
Cognitive Neuroscience Society
Society for Neuroscience

MEDIA

- National Public Radio (NPR): [In memory training smackdown, one method dominates](#) (October 2017).
- Today Show, TODAY.com: [Memory problems? This brain workout can help](#) (October 2017).
- Lifehacker: [Brain training might actually work if it's the right method](#) (October 2017).
- Johns Hopkins University HUB: [This brain training exercise boosts brain power, Johns Hopkins researchers say](#) (October 2017).
- APA Particularly Exciting Experiments in Psychology (PeePs): [Are there perceptual or cognitive benefits to playing action video games?](#) (October 2014).
- Psychology Today Media Spotlight: [Can action video games boost short-term memory?](#) (October 2014).
- MSNBC.com: [Sinus infection? It's the humidity](#) (October 2011).