

# Lee A. Baugh, PhD

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**DATE OF BIRTH:** December 18, 1980

**NATIONALITY:** Canadian

## **EDUCATION:**

Ph.D.	(Brain and Cognitive Science)	University of Manitoba	2010
M.A.	(Brain and Cognitive Science)	University of Manitoba	2005
B.A. (Hons.)	(Psychology)	University of Waterloo	2003

## **PROFESSIONAL EXPERIENCE:**

Associate Professor	Sanford School of Medicine University of South Dakota Vermillion, SD	July 2017- Present
Director	Human Functional Imaging Core Sanford School of Medicine University of South Dakota Vermillion, SD	May 2015- Present
Research Scientist	Veterans Administration Sioux Falls, SD	July 2012 – Present
Assistant Professor	Sanford School of Medicine University of South Dakota Vermillion, SD	Dec. 2011- April 2017
Postdoctoral Research Fellow	Centre for Neuroscience Studies Queen's University Kingston, ON	Sept. 1, 2009 - Nov. 30, 2011
Sessional Instructor Introduction to Psychology	Department of Psychology University of Manitoba Winnipeg, MB	Sept. 4, 2006- Aug. 30, 2009
Teaching Assistant Statistics, Research Methods,	Department of Psychology University of Manitoba	Sept. 5, 2003- Aug. 31, 2006

**SCHOLARLY AND PROFESSIONAL ACTIVITIES**

- Ad Hoc Reviewer: National Science Foundation, National Institutes of Health, Neurology and Therapy, Experimental Brain Research, Brain Research Bulletin, Cortex, European Journal of Neuroscience, Journal of Neurophysiology, PLoS One, Journal of Neuroscience, Journal of Vision, Vision Research, Journal of Experimental Psychology: Human Perception and Performance, Acta Psychologica, Psychological Science, Quarterly Journal of Experimental Psychology, Neuroscience and Biobehavioral Reviews, Attention, Perception, & Psychophysics, Scientific Reports, Consciousness and Cognition, Pearson Education; IEEE Transaction on Haptics; Cognition
- Learned Societies: Society for Neuroscience, Vision Sciences Society, Canadian Society for Brain and Cognitive Sciences, Society for the Neural Control of Movement, American Heart Association

**INVESTIGATOR-INITIATED RESEARCH GRANTS:**

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|--|-------------------------|
| NSF Major Research Instrumentation Grant<br><i>MRI: Acquisition of Transcranial Magnetic Stimulation<br/>Instrumentation to Advance Understanding of the Brain</i><br>Role: Co-Principal Investigator  | (\$148,387) 2017        |
| South Dakota Governor's Office of Economic Development<br><i>Center for Genetics and Behavioral Health</i><br>Role: <i>Co-Investigator</i>   | (\$3,466,300) 2017-2022 |
| NSF MRI: Acquisition of the Lawrence Supercomputer to Advance<br>Multidisciplinary Research in South Dakota<br><i>Supporting high-powered computing requirements for the next generation<br/>of functional neuroimaging analyses.</i><br>Role: <i>Supporting Personnel</i> | (\$504,911) 2016-2019   |
| Center for Brain and Behavior Research Collaborative Grant<br><i>Development of a hybrid controlled novel bci aac user interface sensitive<br/>to cognitive engagement metrics</i><br>Role: <i>Principal Investigator</i>  | (\$20,000) 2016-2017    |
| South Dakota's Governor's Research Team Development Program<br><i>Consortium for Genetic Influences on Behavioral Health in South Dakota</i><br>Role: <i>Co-Investigator</i>   | (\$65,000) 2016-2017    |

Center for Brain and Behavior Research Collaborative Grant <i>Brain Signatures of Triphasic Delay Discounting: An fMRI Study.</i> Role: Principal Investigator	(\$20,000)	2015- 2016
Center for Brain and Behavior Research Collaborative Grant <i>Scholastic, Mental Health and Addiction Issues in College Students of Alcoholic Parents: Neural, Cognitive and Psychological Mediators</i>	(\$20,000)	2014- 2015
USD Collaborative Research Grants Program <i>Counseling and Psychology in Education and Medicine Collaborate on Study of Historical Trauma and Neuroscience</i>	(\$20,000)	2013- 2015
USD Collaborative Research Grants Program <i>Intertemporal Choice, Delay Discounting and Impulsivity: From Metabolic to Neural Mechanisms</i>	(\$11,000)	2013- 2014
Biomedical Research Infrastructure Network Pilot Grant <i>Virtual Tool Use: Neurological Correlates and the Role of Haptic Information.</i>	(\$45,000)	2012- 2013
Occupational Therapy Internal Research Grant <i>The Effect of Participation in Meaningful Occupations On Brain Activity as Observed on Function Magnetic Resonance Imaging.</i>	(\$10,000)	2012- 2013

## SCHOLARSHIPS AND AWARDS

NSERC CREATE Postdoctoral Funding	2010- 2011
Canadian Psychological Association Certificate of Academic Excellence for a Doctoral Thesis	2010
Post Doctoral Travel Award	2010
Faculty of Arts Teaching Excellence Award	2009
Manitoba Health Research Council Scholarship	2008- 2009
Manitoba Health Research Council Scholarship	2007- 2008

Nominee for University 1 Professor of the Year	2007
Faculty of Arts Conference Travel Award	2007
Faculty of Graduate Studies Travel Award	2007
Esther and Samuel Milmot Scholarship (University of Manitoba Centre on Aging)	2006- 2007
Canadian Psychological Association Certificate of Academic Excellence for a Masters Thesis	2006
Faculty of Arts Conference Travel Award	2006
Faculty of Graduate Studies Travel Award	2006
Graduate Students Association Travel Award	2006

## **WORKSHOPS ATTENDED**

New Mexico Clinical Neurostimulation Workshop	2017
Computational Sensory-Motor Neuroscience (CoSMo)	2011
Harvard CME - Advanced Neuroimaging Techniques	2008
Statistical Analysis of Neuronal Data 4 (SAND4)	2008
MGH/Harvard Visiting Fellowship in fMRI	2006

## **JOURNAL ARTICLES**

- Bosch, T., Fercho, K. A., Hanna, T.J., Rallis, A., **Baugh, L.A.** (*In Review*). Left anterior supramarginal gyrus activation following extensive tool use training.
- Rallis, A., Fercho, K.A, Bosch, T., **Baugh, L. A.** (2018). Getting a handle on virtual tools: An examination of the neuronal activity associated with virtual tool use. *Neuropsychologia*, 109, 208-221.
- Wang, X.T., Huangfu, G., **Baugh, L. A.**, Fercho, K. A. (2018). Resource Forecasting and Intertemporal Decision Making: Signaling Effects of Blood Glucose on Delay Discounting and Impulsivity. *Appetite*, 121, 101-110.
- Brown-Rice, K., Scholl, J., Fercho, K.A., Pearson, K., Kallsen, N., Davies, G., Ehli, E., Olson, S., Schweinle, A., **Baugh, L.A.**, Forster, G. (2018). Neural and psychological

characteristics of college students with alcoholic parents differ depending on current alcohol use. *Progress in Neuropsychopharmacology & Biological Psychiatry*, 81, 284-296.

Gallivan, J. P., Stewart, B. M., **Baugh, L. A.**, Wolpert, D. M., Flanagan, J. R. (2017). Rapid Automatic Encoding of Competing Reach Options. *Cell Reports*, 18, 1619-1626.

**Baugh, L. A.**, Yak, A., Johansson, R.S., Flanagan, J. R. (2016). Representing multiple object weights: competing priors and sensorimotor memories. *Journal of Neurophysiology*, 116, 1615-1625.

Simons, R. M., Simons, J. S., Olson, D., **Baugh, L.A.**, Magnotta, V., Forster, G. (2016). PTSD and Alcohol Use Among Veterans: Amygdala and Anterior Cingulate fMRI Activation to Emotional Cues. *Psychology of Addictive Behaviors*, 30, 720.

Fercho, K., **Baugh, L.A.** (2016). Cognitive attribution of the source of an error in object lifting results in differences in motor generalization. *Experimental Brain Research*, 234, 2667-2676.

Fercho, K., **Baugh, L.A.\***, Hanson, E\*. (2015). Effects of alphabet-supplemented speech on brain activity of listeners: An fMRI study. *Journal of Speech, Language, and Hearing Research*, 58, 1452-1463.

\*Co-senior authorship

Stuart, B. M., Gallivan, J., **Baugh, L. A.**, Flanagan, J. R. (2014). Motor, not visual, encoding of potential reach targets, *Current Biology*, 24, R953-954.

Fercho, K., **Baugh, L.A.** (2014). It's too quick to blame myself – the effects of fast and slow rates of change on credit assignment during object lifting. *Frontiers in Neuroscience*, 8, 554.

Stuart, B. M., **Baugh, L. A.**, Gallivan, J., Flanagan, J. R. (2013). Simultaneous encoding of the direction and orientation of potential targets during reach planning: evidence of multiple competing reach plans. *Journal of Neurophysiology*, 110, 807-816.

Reichelt, A., Ash, A., **Baugh, L. A.**, Johansson, R. S., Flanagan, J. R. (2013). Adaptation of lift forces in object manipulation through action observation. *Experimental Brain Research*, 228, 221-234.

Lawrence, J. M., **Baugh, L. A.**, Marotta, J. J. (2012). Behavioural distinction between strategic control and spatial realignment during visuomotor adaptation in a Viewing Window task. *PLoS One*, 7(11): e48759. Doi:10.371/journal.pone.0048759.

- Baugh, L.A.,** Hoe, E., Flanagan, J. R. (2012). Hand-held tools with complex kinematics are efficiently incorporated into movement planning and on-line control. *Journal of Neurophysiology* 108, 1954-1964.
- Baugh, L.A.,** Kao, M., Johansson, R., Flanagan, J.R. (2012). Material Evidence: Interaction of well-learned priors and sensorimotor memory when lifting objects. *Journal of Neurophysiology*, 108, 1262-1269.
- Baugh, L.A. & Flanagan, J.R.** (2012). Motor Memory: When plans speak louder than actions. *Current Biology* 22: R155-157.
- Baugh, L.A.,** Lawrence, J. M. & Marotta, J.J. (2011). Novel insular cortex activation observed during a visuomotor adaptation task using a viewing window paradigm, *Behavioural Brain Research*, 223, 395-402.
- Baugh, L.A. & Flanagan, J. R.,** (2011). Motor Memory: A declaration of non-independence. *Current Biology* 21: R70-72.
- Lawrence, J. M., Abhari, K., Prime, S.L., Meek, B.P., Desanghere, L., **Baugh, L.A.,** & Marotta, J.J. (2011). Novel integrative method for analyzing eye and hand behaviour during grasping in an MRI environment. *Behavior Research Methods*, 43, 399-408.
- Baugh, L. A. & Marotta, J.J.,** (2009). When what's left is right: Visuomotor transformations in an Aged Population. *PLoS ONE*, 4(5): e5484 doi:10.1371/journal.pone.0005484.
- Baugh, L.A. & Marotta, J.J.,** (2007). A new window into the interactions between perception and action. *Journal of Neuroscience Methods*, 160, 128-134.

## MANUSCRIPTS IN PREPARATION

- Baugh, L. A.,** Markovik, S., Johansson, R. S., Flanagan, J. R. (*In Preparation*). Rapid, intelligent, adaptation of reactive force control when lifting objects.
- Fercho, K., KC, B., **Baugh, L. A.** (*In Preparation*). Differential effects of left and right hemisphere stroke on a precision grip force task.
- Fercho, K., **Baugh, L. A.** (*In Preparation*). Frictional information obtained by sliding an object increases weight prediction abilities in a novel lifting task.
- Fercho, K., Ladd, A., **Baugh, L. A.** (*In Preparation*). P3 or Not P3: Assessing the occurrence of the P300 event-related potential during sensorimotor memory updating during an object lifting task.

Fercho, K., **Baugh, L. A.** (*In Preparation*). A Rested Development: Effort regulation strategy protects task performance and affects event-related potentials associated with task-induced cognitive fatigue.

Fercho, K., Burnison, E., Zylstra, H., **Baugh, L.A.** (*In Preparation*). Addition of pupil diameter measurements increases brain computer interface (BCI) performance in a P300-based speller.

## **BOOKS AND BOOK CHAPTERS**

Das, M., **Baugh, L. A.**, (Under Contract). *Neuroscience Test Prep*. Thieme Medical Publishers.

Forster, G. L., Simons, R. M., **Baugh, L. A.** (2017). Revisiting the Role of the Amygdala in Posttraumatic Stress Disorder. In *Amygdala*. InTech: Rijeka.

**Baugh, L.A.**, Desanghere, L., Marotta, J.J. Agnosia. In Reference Module in Neuroscience and Biobehavioral Psychology, Elsevier, 2017. ISBN 9780128093245

**Baugh, L.A.**, Desanghere, L., & Marotta, J. J. Agnosia. In George Koob, Richard F. Thomson, Michael LeMoal (Eds.), *Encyclopedia of Behavioral Neuroscience* (vol. 1 pp. 27-33). London Oxford, UK: Academic Press, Elsevier Science. (*Invited*)

## **PATENTS AND INTELLECTUAL PROPERTY RIGHTS:**

**Baugh, L.A.**, Marotta, J. J. Provisional Patent #61/084,662. Method of diagnosis and rehabilitation for stroke, parkinson's disease, alzheimer's disease, pre-alzheimer's disease, optic ataxia, and brain injury.

## **REFEREED ABSTRACTS**

Linmin, K., Haley, E., Zhang, M., Jorgensen, L., Gallun, F., Jedlicka, D., Dann, S., **Baugh, L.A.**, Fercho, K. A., Sommers, S., SmithSeemiller, L., Rasario, B., McNeil, M., Wargo, M., Pratt, S. (2017). Tinnitus in Veterans with a history of blast-exposure and normal hearing. Poster presented at the annual conference of the National Center for Rehabilitative Auditory Research. Portland, OR.

Johnson, A., Fercho, K.A., Brown-Rice, K.A., **Baugh, L.A.** (2017). Historical Trauma and Neuroscience in Relation to an American Indian Population. Poster presented at the Annual Meeting of the Collaborative Research Center for Indian Health. Sioux Falls, SD.

Fercho, K.A., Bosch, T.J., Niederbaumer, S.O., Brenner, C., **Baugh, L.A.** (2017). It's not mu, it's me: Sensorimotor rhythm desynchronization during action observation is not synonymous with skilled motor performance. Poster presented at the Society for the Neural Control of Movement, Dublin, Ireland.

- Fercho, K.A., Peterson, D., **Baugh, L.A.** (2016). A Rested Development: Effort Regulation Strategy Protects Task Performance and Affects Event-Related Potentials Associated with Task-Induced Cognitive Fatigue. Paper presented at the 2016 HFES Annual Meeting, Washington, DC.
- Fercho, K., **Baugh, L. A.** (2015). P3 or Not P3: Assessing the occurrence of the P300 event-related potential during sensorimotor memory updating during an object lifting task. Talk presented at the Society for the Neural Control of Movement, Charleston, SC.
- Hanson, E. K., **Baugh, L. A.**, Fercho, K. (2014). Listener perception of alphabet-supplemented speech: A brain imaging study. Poster presented at the Motor Speech Conference, Sarasota, FL.
- Fercho, K., Neilson, M.N., Wang, X. T., **Baugh, L.A.**, (2014). The Science of Sweet: The effects of glucose on the neural mechanisms involved in impulsivity. School of Health Sciences Research Conference, Sanford School of Medicine, University of South Dakota, SD.
- Ikiugu, M.N., Fercho, K., **Baugh, L.A.**, Hoyme, A., Mueller, B., Reinke, R. (2014). Identifying Meaningful and Psychologically Rewarding Occupations: A Pilot Study. School of Health Sciences Research Conference, Sanford School of Medicine, University of South Dakota, SD.
- Hanson, E., Fercho, K., **Baugh, L.A.** (2013). Effects of alphabet supplementation on speech perception: an fMRI study. Poster presented at the SD Speech-Language Hearing Association Annual Convention, Sioux Falls, SD.
- Stewart, B. M., Flanagan, J. R., Gallivan, J., Khan, A. Z., **Baugh, L. A.** (2012). Encoding Target Location and Orientation in a Reaching Task. *Canadian Society of Brain, Behavior and Cognitive Sciences*, Montreal, Canada.
- Olson, D., **Baugh, L. A.**, Gaher, R. Simons, J., Magnotta, V., Forster, G. (2012). Neural Imaging: The Effects of Alcohol Use on Emotional Processing in Posttraumatic Stress Disorder (PTSD). School of Health Sciences Research Conference, Sanford School of Medicine, University of South Dakota, SD.
- Lawrence, J.M., **Baugh, L.A.** & Marotta, J.J. (2011). Behavioural distinction between strategic control and spatial realignment during visuomotor adaptation in a viewing window task. *Society for Computers in Psychology*, St. Louis, MO.
- Markovik, S., **Baugh, L. A.**, Flanagan, J. R. (2011). Rapid intelligent adaptation of reactive force control when lifting objects. Talk presented at the Canadian Physiology Society Annual Meeting, St. Gabriel, Quebec, Canada.



Lawrence, J.M., Abhari, K., Prime, S.L., Meek, B.P., Desanghere, L., **Baugh, L.A.** & Marotta, J.J. (2010). A Novel Integrative Method for Analyzing Eye and Hand Behaviour during Grasping in an MRI Environment. *Society for Computers in Psychology*.

**Baugh, L.A.**, Lawrence, J.M., Marotta, J.J. (2010). Novel insular cortex and claustrum activation observed during a visuomotor adaptation task using a viewing window paradigm. *Vision Sciences Society Annual Meeting*, Naples, FL.

Lawrence, J. M., **Baugh, L.A.**, Marotta, J.J. (2009) A Window into behavioural strategies used in visuomotor adaptation. *Vision Sciences Society Annual Meeting*, Sarasota, FL.

Marotta, J. .,Desanghere, L., Meek, B., **Baugh, L. A.**, Lawrence, J., Lockheed, K., Shelton, P (2009) Posterior Cortical Atrophy: The effects on Perception and Action. *Vision Sciences Society Annual Meeting*, Sarasota, FL.

Rhode, L., **Baugh, L. A.**, Pearson, P. M., Jakobson, L. S., Marotta, J. J. (2006) Colour-Specific Deficits in Colour Working Memory: A Visuomotor Case Study. *Vision Sciences Society* 6(6), 132a, Sarasota, FL.

#### **ABSTRACTS:**

Pearson, K., Brown-Rice, K., Scholl, J., Fercho, K. A., Schweinle, A., Olson, S., Olson, D., Forster, G., **Baugh, L.A.** (2017). Mediators of Emotional Issues in College Students of Alcoholic Parents. Poster presented at the Faculty for Undergraduate Neuroscience Annual Meeting, Washington, DC.

Fercho, K.A., **Baugh, L.A.** (2017). Increased levels of fatigue are associated with deficits in skilled object manipulation following stroke. Poster presented at the 47<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.

Scholl, J.L, Brown-Rice, K.A., Fercho, K.A., Pearson, K., Kallsen, N.A., Davies, G.E., Ehli, E. A., Olson, S., Schweinle, A., **Baugh, L.A.**, Forster, G.L. (2017). Neural and psychological characteristics of college students with alcoholic parents differ depending on current alcohol use. Poster presented at the 47<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.

Forster, G., Brown-Rice, K., Pearson, K., Scholl, J., Fercho, K.A., Schweinle, A., Olson, S., Kallsen, N., Davies, G., Ehli, E., **Baugh, L.A.** (2017). Neural and psychological characteristics of college students of alcoholic parents depend on current alcohol use. Presented at the Central Regional IDeA Conference, Sioux Falls, SD, USA.

Jones, W. Fercho, K.A., **Baugh, L.A.** (2017). Neural correlates of alphanumeric brand names. Presented at the 7<sup>th</sup> Annual Interdisciplinary Symposium on Decision Neuroscience, Stanford, CA, USA.

- Burnison, E., **Baugh, L.A.**, Hanson, E.K., Fercho, K.A. (2017). Assessing a hybrid brain computer interface for end-users with communication impairments. Presented at the Central Regional IDeA Conference, Sioux Falls, SD, USA.
- Fercho, K.A., KC, Bikash, **Baugh, L.A.** (2017). Isometric force control is more affected by right than left hemisphere damage following stroke. Presented at the New Mexico Clinical Neurostimulation Meeting, Albuquerque, NM, USA.
- Bosch, T.J., Fercho, K.A., Hanna, T., **Baugh, L.A.** (2017). Left anterior supramarginal gyrus activation following extensive tool use training. Presented at the Central Regional IDeA Conference, Sioux Falls, SD, USA.
- Fercho, K., Burnison, E., Hanson, E., **Baugh, L. A.** (2017). Addition of pupil diameter measurements increases brain computer interface (BCI) performance in a P300-based speller. Poster presented at the Sioux Falls VA Research Day, Sioux Falls, SD.
- Fercho, K., KC, B., **Baugh, L. A.** (2017). Differential effects of left and right hemisphere stroke on a precision grip force task. Poster presented at the Sioux Falls VA Research Day, Sioux Falls, SD.
- Bosch, T. J., Fercho, K., Reno, A., **Baugh, L. A.** (2017). Changes in cortical activation following tool use motor learning. Poster presented at the Sioux Falls VA Research Day, Sioux Falls, SD.
- Fercho, K., Burnison, E., Hanson, E., **Baugh, L. A.** (2016). Addition of pupil diameter measurements increases brain computer interface (BCI) performance in a P300-based speller. Poster presented at the 46<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA.
- Fercho, K., KC, B., **Baugh, L. A.** (2016). Differential effects of left and right hemisphere stroke on a precision grip force task. Poster presented at the 46<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA.
- Pearson, K., Brown-Rice, K., Scholl, J., Fercho, K.A., **Baugh, L.A.**, Schweinle, A., Olson, S. Olson, D., Forster, G. (2016). Mediators of emotional issues in college students of alcoholic parents. Poster presented at the Faculty for Undergraduate Neuroscience Annual Meeting, San Diego, CA.
- Fercho, K., Reno, A., Bosch, T., **Baugh, L. A.** (2015). Virtually perfect recall: An examination of the memory systems involved in the recall of complex virtual tool use. Poster presented at the 68<sup>th</sup> Annual Meeting of the American Academy of Neurology, Vancouver, BC, Canada.
- Reno, A., Fercho, K., Finn, R., Bosch, T., **Baugh, L. A.** (2015). Getting a handle on Virtual Tools: An examination of the neuronal activity associated with virtual tool use. Poster

presented at the 68<sup>th</sup> Annual Meeting of the American Academy of Neurology, Vancouver, BC, Canada.

KC, B., Fercho, K., **Baugh, L. A.** (2015). Sensorimotor memory and sensorimotor integration abilities dissociate in a post MCA stroke population. Poster presented at the 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, Ill.

Fercho, K., Reno, A., Bosch, T., **Baugh, L. A.** (2015). Virtually perfect recall: An examination of the memory systems involved in the recall of complex virtual tool use. Poster presented at the 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, Ill.

Bosch, T. J., Fercho, K., Reno, A., **Baugh, L. A.** (2015). Learning the exotic: Effects of direct experience with unfamiliar tools on motor resonance during tool use action observation. Poster presented at the 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, Ill.

Reno, A., Fercho, K., Finn, R., Bosch, T., **Baugh, L. A.** (2015). Getting a handle on Virtual Tools: An examination of the neuronal activity associated with virtual tool use. Poster presented at the 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, Ill.

Palmer, G. M., Fox, L. C., Forster, G. L., **Baugh, L. A.** (2015). Sex differences in the ability of progesterone to modify fear conditioning after a mild traumatic brain injury. Poster presented at the 2015 FUN poster session held in conjunction with the 45<sup>th</sup> Annual Meeting of the Society for Neuroscience, Chicago, Ill.

Forster, G., Olson, D., **Baugh, L. A.**, Hansen, J. M., Engel, S., Simons, R., Simons, J., Magnotta, V. (2015). Enhanced frontal cortex activity elicited by emotional stimuli in veterans with hazardous alcohol. Presented at the International Behavioral Neuroscience Society Annual Meeting, Victoria, BC.

Fercho, K., Peterson, D. **Baugh, L. A.** (2015). A Rested Development: Task performance and ERP evidence of blocking as a form of coping with task-induced cognitive fatigue. Poster presented at the Nebraska Physiological Society Annual Meeting, Vermillion, SD.

Reno, A., Fercho, K., Finn, R., Bosch, T., **Baugh, L. A.** (2015). The Role of the Ventral Visual Stream in Virtual Tool Spatial Transformations. Poster presented at the 2<sup>nd</sup> Annual CBBRe Research Conference, Vermillion, SD.

Fercho, K., **Baugh, L. A.** (2015). P3 or Not P3: Assessing the occurrence of the P300 event-related potential during sensorimotor memory updating during an object lifting task. Poster presented at the 2<sup>nd</sup> Annual CBBRe Research Conference, Vermillion, SD.

Reno, A., Fercho, K., Finn, R., Bosch, T., **Baugh, L. A.** (2015). The Role of the Ventral Visual Stream in Virtual Tool Spatial Transformations. Poster presented at the 30<sup>th</sup> Annual Meeting of the MD/PHD National Student Conference, Keystone, CO.

- Zylstra, H., Fercho, K., Hanson, E., **Baugh, L. A.** (2015). A Brain Computer Interface for Augmentative and Alternative Communication. Poster presented at the 87<sup>th</sup> Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
- Fercho, K., **Baugh, L. A.** (2014). Dragged into the future: Frictional information obtained by sliding an object increases weight prediction abilities in a novel lifting task. Poster presented at the 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.
- Baugh, L. A.**, Fercho, K. (2014). Cognitive attribution of the source of an error in object lifting results in differences in motor generalization. Poster presented at the 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.
- Forster, G.L., Olson, D., **Baugh, L.A.**, Hansen, J.M., Engel, S., Gaher, R., Simons, J., Magnotta, V. (2014). Frontal Cortex Activity During Emotional Processing is Altered in Veterans with Hazardous Alcohol Use and Posttraumatic Stress Disorder. Poster presented at the 44<sup>th</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.
- Forster, G., Olson, D., **Baugh, L. A.**, Hansen, J. M., Engel, S., Gaher, R., Simons, J., Magnotta, V. (2014). Neural and Behavioral Correlates of PTSD and Alcohol Use. Presented at the DoD Substance Abuse Research IPR, Frederick MD.
- Forster, G.L., Olson, D., **Baugh, L.A.**, Hansen, J.M., Gaher, R., Simons, J., Magnotta, V. (2013). Effects of heavy alcohol use on frontal cortex activity and behavior during emotional processing in veterans with PTSD. Poster presented at the 43<sup>rd</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA.
- Lawrence-Dewar, J., Mackenzie, M., **Baugh, L. A.**, Marotta, J. J. (2012). Decline in visuomotor adaptation behavior in aging and stroke: A Viewing Window study. Poster presented at the 42<sup>nd</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA.
- Reichelt, A., Ash, A., **Baugh, L.A.**, Johansson, R. S., Flanagan, J.R. (2011). Seeing is predicting: rapid parametric motor learning through action observation. Poster presented at the 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Washington, DC.
- Markovik, S., **Baugh, L. A.**, Flanagan, J. R. (2010). Rapid, intelligent adaptation of reactive force control when lifting objects. *Neuroscience Research Day, Queen's University*. Kingston, ON.
- Baugh, L.A.**, Hoe, E., Flanagan, R. (2010). Presentation of a visual schema reduces reaction time costs associated with performing a visuomotor reversal. *Society for Neuroscience Program No. 777.2, Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience. CD-ROM.
- Baugh, L.A.** & Marotta, J. J. (2008). Differential effects of aging on a visuomotor paradigm. *Centre on Aging, Spring Research Symposium, University of Manitoba*.

**Baugh, L.A.,** Marotta, J.J. (2007). Differential effects of aging on a visuomotor paradigm. *Society for Neuroscience Program No. 397.16 2007 Abstract Viewer / Itinerary Planner*. Washington, DC: Society for Neuroscience. CD-ROM.

**Baugh, L.A.,** Marotta, J. J. (2006). A new window into the interactions between perception and action. *Society for Neuroscience Program No. 440.21 2006 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience. CD-ROM.

Rhode, L., **Baugh, L.A.,** Pearson, P.M., Jakobson, L.S., & Marotta, J.J. (2006). Colour-Specific Deficits in Implicit Colour Working Memory: A Visuomotor Case Study. *Canadian Society for Brain, Behaviour, and Cognitive Science*. Available at <http://www.science.mcmaster.ca/~BBCS/2006/viewabstract.php?id=117>.

### ORAL PRESENTATIONS:

Fercho, K.A., **Baugh, L.A.,** Louw, A., Zimney, K. (2017). Pain neuroscience education effect on pain matrix processing in an individual with complex regional pain syndrome: A single subject research design. Presented at the 2nd Annual Pain Science in Motion: International and Interdisciplinary Colloquium on Research Methods in Pain Sciences, Stockholm, Sweden.

**Baugh, L. A.** (2017). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Rapid City Stroke Support Group, Rapid City, SD.

**Baugh, L.A.,** Fercho, K.A. (2017). Tiring from trying: A potential relationship between errors in motor control and post-stroke fatigue. Presented at the CBBRe Annual Research Symposium, Vermillion, SD.

**Baugh, L. A.** (2016). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Rapid City Stroke Support Group, Rapid City, SD.

**Baugh, L. A.** (2015). Object manipulation deficits following MCA stroke. Presented at the 2015 CBBRe Stroke Symposium, Sioux Falls, SD.

**Baugh, L. A.** (2015). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Rapid City Stroke Support Group, Rapid City, SD.

**Baugh, L. A.** (2015). Alterations in Neural Activity Following Direct Experience with Unfamiliar Tools. Presented at the 2015 MidBrains Research Conference, St. Paul, MN.

Fercho, K., **Baugh, L. A.** (2015). The Human Functional Neuroimaging Core. Presented at the September 2nd CBBRe Workshop, Vermillion, SD.

- Baugh, L. A.** (2015). Human Functional Neuroimaging at the Sanford School of Medicine. Presented at the 2015 SSOM Alumni Lunch, Sioux Falls, SD.
- Bosch, Taylor, **Baugh, L. A.** (2015). Need a new vise? Alterations in neural activity following direct experience with unfamiliar tools. Presented at the CBBRe Annual Research Symposium, Vermillion, SD.
- Baugh, L. A.** (2015). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Aberdeen Stroke Support Group, Aberdeen, SD.
- Baugh, L. A.** (2015). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Sioux Falls Stroke Support Group, Sioux Falls, SD.
- Baugh, L. A.** (2015). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Vermillion Support Group, Vermillion, SD.
- Baugh, L. A.** (2015). Contemporary Research in Stroke Rehabilitation: An update. Presented to the Watertown Stroke Support Group, Watertown, SD.
- Baugh, L. A.** (2015). Heavy Weight Technology: Cognitive attribution of the source of an error induces a novel motor illusion. Presented at the Weight Illusion Workshop at the IEEE Haptics World Conference, Chicago, IL.
- Bosch, Taylor, **Baugh, L. A.** (2015). Alterations in neural activity following direct experience with unfamiliar tools. Presented at IdeaFest 2014, Vermillion, SD.
- KC, B., **Baugh, L. A.** (2015). Object manipulation error following middle cerebral artery stroke. Presented at IdeaFest 2015, Vermillion, SD.
- Baugh, L. A.** (2014). Cognitive attribution of the source of an error in object lifting results in difference in motor generalization. Presented at the CBBRe Annual Research Symposium, Vermillion, SD.
- Ladd, A., Fercho, K., **Baugh, L.A.** (2014). Examining the P300 as a Marker of the Updating of Sensorimotor Memory: An event related potential EEG Study. Presented at the Annual Medical Student Research Forum, Vermillion, SD.
- Ikiugu, M. N., Fercho, K. A., **Baugh, L. A.**, Hoyme, A. K., Mueller, B. A., Rochelle, R., Reinke, B. A. (2014). Identifying meaningful and psychologically rewarding occupations: A pilot study. Presented at the 5<sup>th</sup> Annual University of South Dakota's Occupational Therapy Research Symposium, Vermillion, SD.
- Baugh, L.A.** (2014). Functional Magnetic Resonance Imaging: A practical guide to impractical experimentation. Presented to members of the Center for Behavioral Research (CBBRe), Vermillion, SD.

- Reno, A., **Baugh, L. A.** (2014). How the human brain uses tools. Presented at IdeaFest, Vermillion, SD.
- KC, B., **Baugh, L. A.** (2014). Force modulation errors following MCA stroke. Presented at IdeaFest, Vermillion, SD.
- Fercho, K., Neilson, M., Wang, X.T., **Baugh, L. A.** (2014). The effect of artificial sweetener on the neurological and behavioral responses observed during a temporal discounting task. Presented at IdeaFest, Vermillion, SD.
- Bosch, T., **Baugh, L. A.** (2014). An examination of the effect of experience on the mirror neuron system and tool use. Presented at IdeaFest, Vermillion, SD.
- Baugh, L.A.** (2013). Human Participant Research and fMRI. Presented to the South Dakota Biomedical Research Infrastructure Network (BRIN) - Pathways in Biomedical Research Talks Sanford School of Medicine, Vermillion, SD.
- Baugh, L.A.** (2013). Confessions of a Neuroimager: What can we actually do with functional magnetic resonance imaging (fMRI)? Presented at the Sigma Xi Spring Banquet, Vermillion, SD.
- Baugh, L. A.** (2013). Contemporary Research in Stroke Rehabilitation. Presented to the Sioux Falls Stroke Support Group, Sioux Falls, SD.
- Baugh, L. A.** (2013). Contemporary Research in Stroke Rehabilitation. Presented to the Vermillion Stroke Support Group, Vermillion, SD.
- Baugh, L. A.,** Kao, M., Flanagan, J. R. (2013). Virtually Perfect: Tool use decreases reaction time and restores rapid online corrections during conditions of visuomotor reversal in a virtual reality environment. Presented to members of Human Factors, Department of Psychology, University of South Dakota, Vermillion, SD.
- Baugh, L. A.,** Kao, M., Flanagan, J. R. (2013). Virtually Perfect: Tool use decreases reaction time and restores rapid online corrections during conditions of visuomotor reversal in a virtual reality environment. Presented to members of Brain and Cognitive Sciences, Department of Psychology, University of Manitoba, Winnipeg, MB, Canada.
- Baugh, L. A.** (2013). Function Magnetic Resonance Imaging: What it is, how you do it, and why you might care. Faculty Seminar Series presented at Sanford School of Medicine, Vermillion, SD.
- Baugh, L. A.** (2012). Me, Myself, and fMRI. Presented to Avera Sacred Heart Hospital School of Radiologic Technology, Yankton, SD.

Stewart, B. M., **Baugh, L. A.**, Gallivan, J. P., Flanagan, J. R. (2012). Independent Processing of Location and Orientation in a Multiple Target Reaching Task. Nanosymposium talk presented at the 42<sup>nd</sup> Annual Meeting of the Society for Neuroscience, New Orleans, LA.

**Baugh, L. A.** (2012). fMRI Research at the USD!?. Presented to the South Dakota Biomedical Research Infrastructure Network (BRIN) - Pathways in Biomedical Research Talks Sanford School of Medicine, Vermillion, SD.

**Baugh, L. A.**, Kao, M., Flanagan, J. R. (2012). Interaction of priors and sensorimotor memory in weight prediction during object manipulation. School of Health Sciences Research Conference, Sanford School of Medicine, Vermillion, SD.

Lawrence-Dewar, J.M., Mckenzie, M., **Baugh, L.A.** & Marotta, J.J. (2012). Decline in visuomotor adaptation behavior in aging and stroke: A Viewing Window Study. Presented to Occupational Therapy, Riverview Health Centre, Winnipeg, MB, Canada.

Lawrence-Dewar, J.M., Mckenzie, M. **Baugh, L. A.**, Marotta, J. J. (2012). Decline in visuomotor adaptation in aging and stroke: A Viewing Window Study. Presented to Occupational Therapy, Riverview Health Center, Winnipeg, MB, Canada.

**Baugh, L. A.**, Kao, M., Flanagan, J. R. (2011). Role of priors and sensorimotor memory when predicting weight for object manipulation. Nanosymposium talk presented at the 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Washington, D.C.

Markovik, S., **Baugh, L. A.**, Flanagan, J. R. (2011) Rapid adaptation of reactive sensorimotor control processes when lifting objects. Nanosymposium talk presented at the 41<sup>st</sup> Annual Meeting of the Society for Neuroscience, Washington, D.C.

**Baugh, L.A.**, Flanagan, J. R. (April, 2011). Reversing the reversal: Virtual tool use decreases reaction time and restores rapid online corrections during conditions of visuomotor reversal. Society for the Neural Control of Movement, 21<sup>st</sup> Annual Conference, Puerto Rico.

**Baugh, L.A.** , Flanagan, J. R. (December, 2010). Reversing the reversal: Virtual tool use decreases both reaction time costs and errors when performing a visuomotor reversal. Presented to members of the Centre for Neuroscience, Queen's University, Kingston, ON, Canada.

**Baugh, L.A.** (June, 2010). A (very) brief overview of fMRI software packages. Presented to members of the fMRI User Group, Queen's University, Kingston, ON, Canada.

**Baugh, L.A.**, Marotta, J.J. (May, 2009). Utilizing fMRI for Neuropsychological Research: Facts, Fables, and Features. Rupert's Land Consumer Behaviour Symposium. Winnipeg, MB, Canada.



**Baugh, L. A.,**(August, 2008). Visuomotor control in an aged population. Presented to members of the Vision Research Group, McGill University, Montreal, QC, Canada.

**Baugh, L.A.** (August, 2008). Parietal based visuomotor performance in an aged population. Presented to members of the Cognition and Action Laboratory, Queen's University, Kingston, ON, Canada

**Baugh, L.A.** (June, 2008). The aging visuomotor system. Presented to members of the Cognitive Neuroscience Lab, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA.

**Baugh, L.A.,** Marotta, J.J. (February, 2008). When what's left is right: Parietal based visuomotor performance in an aged population. Presented to the Sections of Neurology and Neurosurgery, Neuroscience Grand Rounds, Health Sciences Centre, University of Manitoba, Bannatyne Campus, Winnipeg, MB, Canada.

**Baugh, L.A.,** Marotta, J.J. (February, 2008). Visuomotor control in an aged population. Presented to the Spinal Cord Research Centre, Department of Physiology, University of Manitoba, Bannatyne Campus, Winnipeg, MB, Canada.

**Baugh, L.A.,** Marotta, J. J. (November, 2007). Aging and visuomotor performance. Presented to the Brain and Behaviour Area, University of Manitoba, Winnipeg, MB.

**Baugh, L.A.,** Marotta, J.J. (October, 2006). A new window into the interactions between perception and action. Presented to the Cognitive Psychology Area, University of Manitoba, Winnipeg, MB.

**Baugh, L.A.,** Marotta, J. J. (September, 2006). The viewing window task: A new window into the interactions between perception and action. Presented to the Winnipeg Vision Group, Winnipeg, MB

## **TEACHING EXPERIENCE**

### Sanford School of Medicine

#### *Medical Neurosciences*

Co-director, 2015-Present

Responsible for all assisting in the administration of all components of this Pillar I (Basic Sciences) course. Lectured and generated content covering spinal cord pathways, brainstem pathways, respiration, brainstem lesions, visual pathways, movements of the eye, neuroradiology, and the auditory system.

#### *Medical Neurosciences*

Lecturer, 2013-2015

Lectured and generated content covering spinal cord pathways, brainstem pathways, respiration, brainstem lesions, visual pathways, movements of the eye, neuroradiology, and the auditory system. Devised test questions pertinent to presented material.

*Neuroscience Journal Club*

Director, 2014-present

Responsible for all aspects of course administration.

*Neuropharmacology*

Lecturer, 2013-Present

Presented content on methods in Neuropharmacology including EEG, fMRI, PET, and computational modeling.

*Neurobiology of Disease*

Lecturer, 2013-Present

Presented content on Agnosia and Schizophrenia. Responsible for the generation of content and testing materials.

University of South Dakota

*Neurobiology*

Lecturer, 2013-Present

Developed and presented lectures on neuroanatomy, vision, visual pathways, upper motor systems, lower motor systems, cerebellum, eye movements, sensorimotor integration, association cortex, cognition, learning and memory, and research methodologies. Creation of test questions and assessments related to this material.

University of Manitoba

*Introduction to Psychology*

Lecturer, 2006-2009

Developed and presented all lectures, creation of all exams and all additional testing materials.

**SUPERVISORY EXPERIENCE:**

Supervisor

*Honours Students*

Luke Fuhrman (Biology, 2012-2013), Paige Moser (Biology, 2013-2014), Erik Burnison (Biology, 2014-2015); Sara Niederbaumer (2015-2016)

*Masters Students*

Bikash KC (Basic Biomedical Sciences, 2013-2016)

*PhD Students*

Taylor Bosch (Basic Biomedical Sciences, 2013-Present), Gina Collings (Basic Biomedical Sciences, 2012 )

*MD/PhD Students*

Austin Reno (Basic Biomedical Sciences, 2013 - Present)

Co-Supervisor:

*Honours Students*

Erica Hoe (Life Sciences, 2009-2010); Michelle Kao (Life Sciences, 2010- 2011); James Kim (Psychology, 2011-2012)

*Masters Students*

Simona Markovik (Neuroscience, 2009-2012)

Thesis Committee Member

*Honours Students*

Andrea Senger (Biology, 2012)

Kristina Sanderson (Kinesiology, 2015-2016)

*PhD Students*

Kelene Fercho (Psychology, 2012-2015); Robert McCall (Psychology, 2013-Present); Torrie Rasmussen (Basic Biomedical Sciences, 2013-2015); Abby Wolf (Basic Biomedical Sciences, 2013); Matt Weber (2014-Present)

**COMMITTEE EXPERIENCE:**

Graduate Student Committee ( <i>appointed</i> ) University of South Dakota	2016- Present
Human Subjects Institutional Review Board ( <i>appointed</i> ) University of South Dakota	2015- Present
Health Affairs Medical Informatics Committee ( <i>appointed</i> ) Sanford School of Medicine, University of South Dakota	2014- Present
Chair, Research Committee ( <i>appointed</i> ) Sanford School of Medicine, University of South Dakota	2013- Present
University Senate ( <i>elected</i> ) University of South Dakota	2013- 2015
Education and Training ( <i>appointed</i> )	2010-

Centre for Neuroscience, Queen's University	2011
Subject Pool ( <i>elected</i> ) Psychology Dept. University of Manitoba	2008- 2009
Teaching Evaluation ( <i>elected</i> ) Psychology Dept. University of Manitoba	2007- 2008
Grade Appeals ( <i>elected</i> ) Psychology Dept. University of Manitoba	2007- 2008
Rules, Procedures, and Nominating Committee ( <i>elected</i> ) Psychology Dept. University of Manitoba	2005- 2006
<b>VOLUNTEER EXPERIENCE:</b>	
Mentor, <i>Canadian Institutes of Health Research</i>	2006- Present
Application Reviewer, <i>UDiscover</i>	2014- Present
Member, Neuroscience Teacher Partnership, Society for Neuroscience	2013- Present
Presenter, <i>SCRUBS Camp</i>	
Poster Judge, <i>CBBRe Research Symposium</i>	2015- 2016
Presenter, <i>SPURA Career Fair</i>	2014- 2016
Presenter, <i>It's All About Science Festival</i>	2014- 2016
Application Reviewer, <i>SPURA</i>	2014, 2016
Presenter, <i>Lawrence Brother's Science Camp</i>	2014
Poster Judge, <i>USD/Sanford Research Symposium</i>	2014
Science Fair Judge, <i>Centerville Middle School</i>	2012, 2013

Presenter, <i>Brain Awareness Day, Centre for Neuroscience Studies</i>	2011
Presenter, <i>Brain Awareness Day, Centre for Neuroscience Studies</i>	2010
Graduate Student Mentor, <i>University of Manitoba Dept. Of Psychology</i>	2005- 2009
Conference Organizer, <i>SLAMM: Symposium on Language and Memory At Manitoba, Winnipeg, MB.</i>	2007
Conference Organizer, <i>Vision in the Prairies, Winnipeg, MB.</i>	2006
Science Fair Judge, <i>Winnipeg School Division #1</i>	2006