

Part I: Contributions to Research and Development

b) Articles submitted to refereed journals

- Segalowitz, S. J., **Sternin, A.**, Lewis, T. L., Dywan, J., & Maurer, D. (2015). Electrophysiological Evidence of Altered Visual Processing in Adults who Experienced Visual Deprivation During Infancy. *Under Review – Neuropsychologia: NSY-D-15-00682*. (Undergraduate work, ~20 pages)

c) Other refereed contributions

papers in refereed conference proceedings

- Stober, S., **Sternin, A.**, Owen, A.M., Grahn, J.A. (2015). Towards Music Imagery Information Retrieval: Introducing the OpenMIIR Dataset of EEG Recordings from Music Perception and Imagination. *Proceedings of the 16th International Society for Music Information Retrieval Conference. Malaga, Spain*. (Master's work)

- **Sternin, A.**, Stober, S., Owen, A.M., Grahn, J.A. (2015). Tempo Estimation from the EEG signal during perception and imagination of music. *Proceedings of the 1st International Workshop on Brain-Computer Music Interfacing. Plymouth, UK*. (Master's work)

oral presentations

- Stober, S.*, **Sternin, A.**, Owen, A.M., Grahn, J.A. (2015). Similarity and feature learning for EEG recordings of music perception and imagination. *Fifth Annual Cognitive Based Music Informatics Research – Provincial*. (Master's Work) – **Awarded the Best Paper Award**

- **Sternin, A.***, Stober, S., Owen, A.M., Grahn, J.A. (2015). Tempo Estimation from the EEG signal during perception and imagination of music. *First International Workshop on Brain-Computer Music Interfacing – International*. (Master's Work)

poster presentations

- **Sternin, A.***, Stober, S., Owen, A.M., Grahn, J.A. (2015). Classifying perception and imagination of rhythms and speech from EEG. *Inaugural Brain and Mind Symposium – Institutional*. (Master's Work)

- **Sternin, A.***, Stober, S., Owen, A.M., Grahn, J.A. (2015). Classifying Perception and Imagination of Music from EEG. *Society for Music Perception and Cognition 2015 – International*. (Master's Work)

- **Sternin, A.***, Segalowitz, S. J., Lewis, T. L., Dywan, J., & Maurer, D. (2014). Electrophysiological evidence of altered visual processing in adults with blocked pattern vision during infancy. *Society for Psychophysiological Research (SPR) 54th annual meeting – International*. (Undergraduate Work)

- **Sternin, A.***, Segalowitz, S. J., Lewis, T. L., Dywan, J., & Maurer, D. (2014). Electrophysiological evidence of altered visual processing in adults with blocked pattern vision during infancy. *Compute Ontario Research Day 2014 – Regional*. (Undergraduate Work)

d) Non-refereed contributions

posters

- **Sternin, A.***, Stober, S., Owen, A.M., Grahn, J.A. (2015). Differentiating Music Perception and Imagination Using EEG-processing. *Lake Ontario Visionary Establishment 44th Annual Conference – Provincial*. (Master's Work)

- **Sternin, A.***, Segalowitz, S. J., Lewis, T. L., Dywan, J., & Maurer, D. (2014). Electrophysiological evidence of altered visual processing in adults with blocked pattern vision during infancy. *Southern Ontario Neuroscience Association – Provincial*. (Undergraduate Work).

Part II: Most significant contributions to research and development

In June 2015 I was sent as the sole representative of my lab to present at the first international workshop on brain-computer music interfacing (BCMI 2015). My presentation was an overview of the work completed during the first year of my Master's. In the past, classification of brain states using EEG has been done by investigating frequency band modulation. We were able to create a novel analysis approach. Using autocorrelations on event-related potentials we were able to estimate the tempo of the perceived or imagined music. I presented this novel approach at BCMI 2015 and it was met with excitement. Future collaborations have been made possible as a direct result.

I was awarded a NSERC undergraduate student research award in 2013. Before I arrived in the lab data was collected from a group of adults born with bilateral cataracts but who were fitted with corrective lenses before their first birthdays. These patients participated in a series of EEG experiments that explored whether the early visual deprivation had affected the organization of their visual system. We found that although these patients were performing at normal levels on visual behavioural tasks their EEG results showed they processed the stimuli differently than controls. I first wrote up these results as my undergraduate thesis and then as a manuscript. Due to the specificity of this experiment the paper (*Electrophysiological Evidence of Altered Visual Processing in Adults who Experienced Visual Deprivation During Infancy*) was submitted to *Neuropsychologia*.

Together with Dr. Sebastian Stober I submitted a paper to the 16th International Society for Music Information Retrieval Conference. This paper introduces our music perception and imagination data as the OpenMIIR dataset and is part of a growing trend in research to make raw data and analyses publicly available.

Part III: Applicant's statement

Research Experience

In 2011 I began volunteering at Brock University with Dr. Sid Segalowitz. I designed and debugged an automated EEG processing program that is now used in all of the lab's analysis procedures. In the process I became comfortable programming in MATLAB, Octave and EEGLab which are widely used for EEG analyses. I then completed my honours degree with Dr. Segalowitz. The research experience of completing a project taught me to use various statistical techniques and gave me the experience of running multiple analyses to ensure all of the information in the data is extracted. While working in the lab I assisted with EEG data collection and when I graduated I was comfortable using a BioSemi EEG system on my own.

In 2014 I began a Master's degree at the University of Western Ontario. I worked with a post-doctoral fellow to design an experiment to address the exploratory nature of our research question. I've learned about the complications that arise when testing human subjects – from writing ethics proposals to dealing with issues during testing sessions. As this was an exploratory study we needed to be creative in our analysis of the data. By working with other students, post-doctoral fellows and senior researchers I have learned many techniques for approaching a novel research question. We have already submitted preliminary results as short papers to conferences in the past year. The experience of writing the short papers has taught me to frame my research for different audiences and how to write to a deadline.

Relevant Activities

As an undergraduate student at Brock University I started and was president of a student club for three years. We ran social and educational events for Jewish students and the larger campus community. During that time we were awarded Best New Club of the Year and Best Event of the Year. In my final year at Brock I was a representative on the University Senate and sat on the Student Appeals Committee. In these roles I brought the student's perspective to the issues being discussed. I was also a member of the Student Union Academic Affairs Committee and helped organize the university's first student run teaching awards.

At the University of Western Ontario I am also involved in the campus community. I was a teaching assistant in a second year psychology research methods course responsible for teaching a group of 30 students every week about statistics and experimental design. In April 2015 I was nominated by one of my students for a teaching award. At the end of the year I was a member of the Graduate Teaching Awards Committee run by the Society of Graduate Studies.

Due to the interest generated by my talk at BCMI 2015 I was interviewed for a German online science blog associated with the newspaper Zeit. I was also a member of the Program Support Team for the Society for Music Perception and Cognition conference (August 2015, Nashville, TN).