



**Western**  
The Brain and  
Mind Institute

## Visiting Speaker

# Ryan Stevenson

Multisensory Research Laboratory  
Vanderbilt University Medical Center

## The critical role of temporal processing in speech perception

Speech perception is an inherently audiovisual process in which a speaker perceptually binds sensory information across audition and vision. Perceptual binding, or the integration of multiple pieces of sensory information into a single, unified percept, allows for efficient use of sensory information. My research program focuses on how individuals learn and make use of the statistics of their environment in order to successfully carry out the neurocognitive operation of perceptual binding, and how perceptual binding influences higher-order cognitive operations. In this presentation, I will specifically focus on how temporal processing of audiovisual sensory information influences speech perception, both behaviourally and neurally. I will approach this research question through three populations. First, learning the temporal statistics of the environment is an inherently developmental question. I will present research examining the behavioural and neural developmental trajectories of temporal processing and perceptual binding through childhood and adolescence. Second, I will examine the influence of temporal processing on perceptual binding in healthy adults using a series of behavioural, fMRI, and TMS studies. Third, I will use the clinical example of individuals with Autism Spectrum Disorders to show how atypical temporal processing of sensory information impacts perceptual binding and speech perception in both brain function and behaviour. Through these experiments, I will present converging evidence supporting my hypothesis that the neurocognitive operations underlying perceptual binding, and subsequently speech perception, are critically dependent upon temporal processing.

**Date: Monday, July 20<sup>th</sup>, 2015**

**Time: 11:30 am**

**Location: Fisher Room,  
The Robarts Research Institute**

*If you require information in an alternate format or if any other arrangements can make this event accessible to you, please contact Denise Soanes at [dsoanes4@uwo.ca](mailto:dsoanes4@uwo.ca)*