Biography

A 2 minute talk explaining our research on speech production in the developing brain

My research programs investigate the brain mechanisms that support perception, cognition, motor control and mental imagery. I use a variety of research tools with emphasis on electrophysiological measures of brain function including magnetoencephalography (MEG) and electroencephalography (EEG).

Employment

Professor (CORE)
Professor
Department of Cognitive Science
Macquarie University
1 Jan 2020 → present

ARC Centre of Excellence in Cognition and its Disorders (CCD)
Macquarie University
1 Feb 2011 → present

Hearing CRC
Macquarie University
9 Jul 2007 → present

Research output

**CenEEGs: valid EEG selection for classification**

**Individual differences in motor development during early childhood: an MEG study**

**Musical imagery depends upon coordination of auditory and sensorimotor brain activity**

**Poorer speech reception threshold in noise is associated with lower brain volume in auditory and cognitive processing regions**

**Studying brain function in children using magnetoencephalography**
Improved coupled tensor factorization with its applications in health data analysis

High-gamma activity in the human hippocampus and parahippocampus during inter-trial rest periods of a virtual navigation task

Development of face recognition: Dynamic causal modelling of MEG data

Atypical brain responses to auditory spatial cues in adults with autism spectrum disorder

Syntactic processing in music and language: parallel abnormalities observed in congenital amusia

The functional role of human right hippocampal/parahippocampal theta rhythm in environmental encoding during virtual spatial navigation

Grey matter volume differences in the left caudate nucleus of people who stutter

The influence of visual information on auditory processing in individuals with congenital amusia: An ERP study

Event-related fields evoked by vocal response inhibition: a comparison of younger and older adults

Adaptive Motor Imagery: A Multimodal Study of Immobilization-Induced Brain Plasticity

Dual temporal encoding mechanisms in human auditory cortex: evidence from MEG and EEG

Sound envelope processing in the developing human brain: a MEG study

Abnormal time course of low beta modulation in non-fluent preschool children: a magnetoencephalographic study of rhythm tracking

Vocal response inhibition is enhanced by anodal tDCS over the right prefrontal cortex

Cortical beta oscillations and motor thresholds differ across the spectrum of post-stroke motor impairment, a preliminary MEG and TMS study

The effects of impulsivity and proactive inhibition on reactive inhibition and the go process: Insights from vocal and manual stop signal tasks

Development of effective connectivity in the core network for face perception

The Pitch Imagery Arrow Task: effects of musical training, vividness, and mental control

Face processing in the brains of pre-school aged children measured with MEG

Beta oscillations, timing, and stuttering

Behavioral and multimodal neuroimaging evidence for a deficit in brain timing networks in stuttering: a hypothesis and theory

Lateralization of brain activation in fluent and non-fluent preschool children: a magnetoencephalographic study of picture-naming

Face-sensitive brain responses measured from a four-year-old child with a custom-sized child MEG system

Deconvolution of magnetic acoustic change complex (mACC)

Movement-related neuromagnetic fields in preschool age children

Reduced object related negativity response indicates impaired auditory scene analysis in adults with autistic spectrum disorder

Brief report: atypical neuromagnetic responses to illusory auditory pitch in children with autism spectrum disorders

Neuromagnetic imaging reveals timing of volitional and anticipatory motor control in bimanual load lifting

Multimodal functional imaging of motor imagery using a novel paradigm
Lateralized auditory brain function in children with normal reading ability and in children with dyslexia

Neuromagnetic brain activity associated with anticipatory postural adjustments for bimanual load lifting

Two routes to expertise in mental rotation

Reduced activation of left orbitofrontal cortex precedes blocked vocalization: A magnetoencephalographic study

Self-initiation and temporal cueing of monaural tones reduce the auditory N1 and P2

How the brain responds to any: An MEG study
Tesan, G., Johnson, B. W. & Crain, S., Jan 2012, In : Brain and Language. 120, 1, p. 66-72 7 p.

"Shut up!" An electrophysiological study investigating the neural correlates of vocal inhibition

Premovement brain activity in a bimanual load-lifting task

Processing of binaural spatial information in human auditory cortex: Neuromagnetic responses to interaural timing and level differences

Measurement of brain function in pre-school children using a custom sized whole-head MEG sensor array

Measurement of neuromagnetic brain function in pre-school children with custom sized MEG

Event-related potentials for interaural time differences and spectral cues

Identifying treatment effects in multi-channel measurements in electroencephalographic studies: Multivariate permutation tests and multiple comparisons

Sequential processing of interaural timing differences for sound source segregation and spatial localization: Evidence from event-related cortical potentials
Neuromagnetic and neuroelectric oscillatory responses to acoustic stimulation with broadband noise

Graded cue information in dichotic pitch: Effects on event-related potentials

Cerebral processes during visuo-motor imagery of hands

Neural processing of observed oro-facial movements reflects multiple action encoding strategies in the human brain

Differential cortical processing of location and pitch changes in dichotic pitch

Long-term potentiation of human visual evoked responses

Object-related brain potentials associated with the perceptual segregation of a dichotically embedded pitch

Primary motor cortex activation during action observation revealed by wavelet analysis of the EEG

Mu rhythm modulation during observation of an object-directed grasp

Changes in rolandic mu rhythm during observation of a precision grip

Modulation of neuromagnetic oscillatory activity during the observation of oro-facial movements

One good turn deserves another: An event-related brain potential study of rotated mirror-normal letter discriminations

Neural activity associated with binaural processes for the perceptual segregation of pitch

Turn that frown upside down: ERP effects of thatcherization of misorientated faces

A high density ERP comparison of mental rotation and mental size transformation
High-density EEG mapping during general anaesthesia with Xenon and propofol: A pilot study

High density EEG mapping during general anesthesia with xenon and propofol

Non-identical neural mechanisms for two types of mental transformation: Event-related potentials during mental rotation and mental paper folding

Cerebral asymmetry for mental rotation: Effects of response hand, handedness and gender

Comparison of the N300 and N400 ERPs to picture stimuli in congruent and incongruent contexts

Perceptual and motor mechanisms for mental rotation of human hands

High-density mapping in an N400 paradigm: Evidence for bilateral temporal lobe generators

Use of multiple dipole analysis for the classification of benign rolandic epilepsy

Functional imaging of Brain responses to repetitive sensory stimulation: Sources estimated from EEG and SPECT

Topographic distribution of the 40 Hz auditory evoked-Related potential in normal and aged subjects