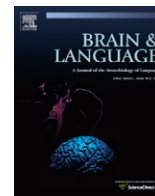




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Introduction

The First Neurobiology of Language Conference: NLC 2009

1. Introduction

1.1. The meeting

Language neuroscientists from all around the globe gathered to exchange ideas, research, and expertise at the first ever international conference on the neurobiology of language, held in the heart of the Windy City, Chicago, IL, on November 15 and 16, 2009, as a satellite event of the 39th Annual Meeting of the Society for Neuroscience.

More than 350 participants, from 22 different countries, attended this inaugural Neurobiology of Language Conference (NLC2009) – a success that reflected the remarkable growth of the field, and provided strong evidence that a conference with a sharpened focus on the neurobiology of language was needed. Indeed, the meeting was meant as a venue for researchers and students to present, review, and discuss work at the state of the art of neurobiological research at the crossroads of neuroscience, linguistics, and experimental psychology. NLC provided a unique opportunity for researchers across a broad spectrum of techniques and disciplines to gather together and discuss scientific issues and recent advances in the field.

Reflecting the exquisite complexity of language and its neural substrates, meeting topics covered a wide breadth, from the neural mechanisms underlying perceptual, cognitive, motor, and linguistic processes used to produce and to understand language in healthy adults, to the examination of these processes in typically developing children and in adults and children with a variety of different neurological injuries or developmental disorders. The program featured keynote lectures by world-recognized experts in Neuroanatomy (Michael Petrides), Neurophysiology (Charles Schroeder), Developmental Neuroscience (Kate Watkins), and Molecular Neuroscience (Simon Fisher). In addition to featuring keynote presentations, the meeting also featured unique discussion panels on current controversies in the neurobiological of language. One of these panels focused on the role of Broca's area in speech and language, and featured Yosef Grodzinsky and Peter Hagoort. The other panel focused on contribution of the motor system to speech perception, and featured Luciano Fadiga and Gregory Hickok. The discussions were intellectually stimulating, lively, and well attended. In sum, with hundreds of experts gathered in one location, the meeting really took on a life of its own reflecting a growing interest about the neurobiological foundation of language.

2. The current volume

This special issue of *Brain and Language* contains a collection of four peer-reviewed original research articles representing the products of the top abstracts presented at the conference. The main goals

of the special issue are to provide language researchers with an up-to-date overview of the state of research in the neurobiology of language and to highlight some of the best research presented at the conference. The topics covered in this volume include intraoperative electrocorticography (ECG) of the temporal lobe (Flinker et al.), semantic errors in aphasia and their relation to brain damage (Walker et al.), the neural underpinning of emotional prosody as revealed by functional resonance imaging (Rotal et al.) and cross-linguistic variations in sentence comprehension as revealed by electroencephalography (EEG) (Bornkessel-Schlesewsky et al.).

The two first papers of the volume (Flinker et al. and Walker et al.) focus on the functions of the temporal lobe in language. Flinker et al. report on a study employing a high-density multi-electrode grid placed over the posterior superior temporal gyrus. They provide a detailed account of word and phoneme processing in the human posterior temporal lobe. Their results demonstrate that the human posterior temporal area cannot be regarded as a functionally homogeneous area. Walker et al. also explored the relation of the temporal lobe to language processing, but in a group of stroke patients, and using functional MRI instead of ECG. More specifically, they examined the relationship of posterior and anterior temporal lobe lesions to lexically-based semantic errors in naming. Their results stress the importance of the anterior temporal lobe, but not posterior temporal lobe, in semantic error production. The third paper of the issue focuses on the role of inferior frontal gyrus in emotional prosody. Using an innovative functional MRI paradigm, Rota et al. examined the functional and effective connectivity in a group of subjects trained to increase activation in the right inferior frontal gyrus at will, and by doing so, to enhance their ability to identify emotional intonation in language. The fourth and last paper of the volume explores the processing of semantic anomalies in different languages (Turkish, Mandarin, and Icelandic) using EEG (Bornkessel-Schlesewsky et al.). The authors discuss important language-dependent effects that were found in the language-related N400 and P600 ERP components. These findings provide new insights on the neural mechanisms underlying these language-related components.

As can be seen from this small collection of articles, the diversity of methods and breath of topics covered is remarkable, reflecting the maturity of the field of language neurobiology. It is obvious that researchers in the field are ready to continue their journey as part of a diverse, yet coherent and independent research community whose broad objective is to understand the neural architecture of language; we expect the Neurobiology of Language Conference to provide a framework for this important endeavor well into the future.

We would like to thank all the speakers, debaters, moderators, presenters, abstract reviewers and conference organizers for their help making NLC a great success. Thanks also to all conference attendants.

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