

October 25, 2011
9a - 4p
BSE 2.102
1604 Campus
UT San Antonio



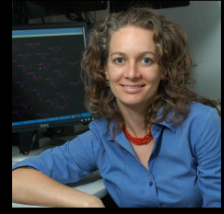
Karen Emmorey PhD
is Professor of Speech, Language and Hearing Sciences, and Director of the Laboratory for Language & Cognitive Neuroscience at San Diego State University.



Judith Kroll PhD
is Distinguished Professor of Psychology, Linguistics, and Women's Studies and Director of the Center for Language Science at Pennsylvania State University.



Lee Osterhout PhD
is Professor of Psychology and Director of the Cognitive Neuroscience of Language Lab at the University of Washington.



Nicole Wicha PhD
is Assistant Professor of Biology at UTSA and the Research Imaging Institute at UT Health Science Center at San Antonio.

2011 Neuroscience Symposium

The Bilingual Brain

Symposium AM Session

9:00 Welcome & opening remarks

Welcome - Dr. Charles Wilson, UTSA Neuroscience Institute Director, UTSA

Opening Remarks - Dr. Nicole Wicha, UTSA

9:15 Juggling two languages in one mind and brain: Evidence for inhibition of the first language when preparing to speak the second language

Dr. Judith F. Kroll, The Pennsylvania State University

Although proficient bilinguals are able to speak fluently in each of their two languages, recent studies suggest that both languages are continually active, to the point where the unintended language is often on the tip of the speaker's tongue. In this talk, I describe recent behavioral, ERP, and fMRI evidence on bilingual speech planning that suggests that alternatives in each language are planned but that the more dominant language is inhibited to allow the weaker language to proceed. A question of interest is how this inhibitory process during speech planning may create domain-general advantages in cognitive control.

10:15 Q & A

10:30 Accessing the meaning of words: perspectives from the bilingual brain

Dr. Nicole Y.Y. Wicha, UTSA

Bilinguals have the ability to perform simple arithmetic in 3 different formats, digits and words in each of their languages. It has been suggested that the language of learning establishes a stronger memory network for simple arithmetic facts that may lead to language-specific access to these concepts. Recent work in my lab measured the electrophysiological time course of judging the

correctness of simple multiplication problems in adult balanced bilinguals. We show that access to arithmetic facts is not biased toward a single language when looking at the group as a whole. Individual bilinguals showed a variety of patterns, with a processing bias toward the language of learning, the other language or no bias at all. In contrast, practice using arithmetic facts enhanced the speed of access in the language of use. Together these findings suggest that, at least in bilinguals with relatively equal proficiency in their languages, memory for and access to simple arithmetic concepts is more dependent on use than on the original language of learning. This work presents the groundwork for future research in the development of arithmetic skills in bilingual children.

11:30 Q & A

11:45 AM session adjourned

Symposium PM Session

1:15 What the brain's electrical activity can tell us about how we learn (and forget) a second language

Dr. Lee Osterhout, University of Washington

Second language (L2) learning is a dynamic process, in which the learner gets better over time at processing L2 sounds, words, and sentences. In our lab, we track changes in brain activity that occur as novice learners progress through their first year of classroom-based L2 instruction. The goal is to determine how much L2 experience is needed before learners incorporate L2 knowledge into their on-line comprehension systems. We describe the trajectory of lexical and grammatical learning, and show that (at least in some instances) the process of language attrition is just like the process of language learning – but in reverse.

2:15 Q & A

2:30 The Bimodal Bilingual Brain: When language is both spoken and signed

Dr. Karen Emmorey, San Diego State University

Bimodal bilinguals (people who are fluent in a signed and a spoken language) use separate perceptual and motoric systems for each language. This separation of systems has significant implications for language mixing patterns, for the cognitive effects of bilingualism, and for the structural and neural changes that accompany bilingualism. Language mixing is unique for bimodal bilinguals because they do not need to inhibit one language to speak the other (as required for code-switching); rather, bimodal bilinguals can *code-blend* and produce elements from their two languages at the same time. In addition, bimodal bilinguals out-perform monolingual speakers on mental rotation and face processing tasks, and this enhanced performance is thought to be tied to the processing demands of sign language (e.g., understanding spatial descriptions requires mental rotation, and grammatical facial expressions are used to indicate syntactic structure). Bimodal bilinguals also exhibit differences in neural activity when perceiving facial expressions and when producing spatial descriptions compared to monolingual speakers. Finally, we are beginning to uncover structural, as well as functional changes in the brain that appear to be unique to bimodal bilinguals.

3:30 Q & A

3:45 Panel Discussion, Podcast recording

4:30 Symposium adjourned

About the Panel

Dr. Karen Emmorey received her Ph.D. in Linguistics in 1987 from the University of California, Los Angeles, and she was a Senior Staff scientist at the Salk Institute for Biological Studies from 1988-2005. While at the Salk Institute, Dr. Emmorey was the Associate Director of the Laboratory for Cognitive Neuroscience. Dr. Emmorey is the author of 4 books and more than 50 journal articles, and she currently holds several research grants from the National Institutes of Health and the National Science Foundation. Dr. Emmorey is also an Associate Editor for the Journal of Deaf Studies and Deaf Education, and she has been on the Editorial Board of Sign Language Studies, Sign Language & Linguistics, and the Journal of Memory and Language.

Dr. Judith Kroll is Distinguished Professor of Psychology, Linguistics, and Women's Studies and Director of the Center for Language Science at Pennsylvania State University. She completed her undergraduate work at New York University and her graduate work at Brandeis University. She previously held faculty positions at Mount Holyoke College, Rutgers University, and Swarthmore College. Together with Annette de Groot, she co-edited *Tutorials in Bilingualism: Psycholinguistic Perspectives* (1997, Erlbaum) and the *Handbook of Bilingualism: Psycholinguistic Approaches* (2005, Oxford). She served as a co-editor of *Bilingualism: Language and Cognition* from its founding in 1997 until 2001 and its coordinating editor from 2001-2002. She serves on a number of editorial boards, including *Journal of Memory and Language*, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *International Journal of Bilingualism*, and *Psychological Science*. The research that she and her students conduct concerns the acquisition, comprehension, and production of two languages during second language learning and in proficient bilingual performance. Their work, using behavioral and neurocognitive methods, is supported by grants from the National Science Foundation and the National Institutes of Health. She is the PI on a grant from NSF (PIRE - Partnerships for International Research and Education) to develop an international research network and program of training to enable Penn State students and early career faculty to pursue research abroad on the science of bilingualism. She was one of the founding organizers of *Women in Cognitive Science*, a group developed to promote the advancement of women in the cognitive sciences and supported by the National Science Foundation.

Dr. Lee Osterhout received his Ph.D. in Psychology from Tufts University in 1990. After a year of post-doctoral work at Northwestern University he moved to the University of Washington, where he is currently Professor of Psychology and director of the Cognitive Neuroscience of Language lab. Dr. Osterhout's primary research method involves recording event-related potentials (ERPs) while people read or listen to language. He was the first to show that syntactic and semantic anomalies elicit distinct ERP responses. Subsequently, he has used these language-sensitive ERP effects to study real-time language processing in native speakers and language learners. Dr. Osterhout's research is supported by the National Institute on Deafness and Other Communication Disorders (NIDCD) at the National Institutes of Health.

Dr. Nicole Wicha holds a PhD in Cognitive Science from the University of California at San Diego. She is now an Assistant Professor in the Department of Biology at the University of Texas at San Antonio, and holds a cross appointment with the University of Texas Health Science Center through the Research Imaging Institute, where she is the Technical Director of the ERP laboratory. Dr. Wicha's research is aimed at understanding the bilingual brain. Her research addresses questions within the domain of language, as well as how being bilingual affects processing in other cognitive domains, such as arithmetic. Her work is funded by the Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD) at the National Institutes of Health.