

Linking Brain Activity with Development,
Learning, and Behavior

Contact Information

Alexandra P. F. Key, Ph.D.

Director of Psychophysiology Lab
Research Associate Professor of Hearing &
Speech Sciences

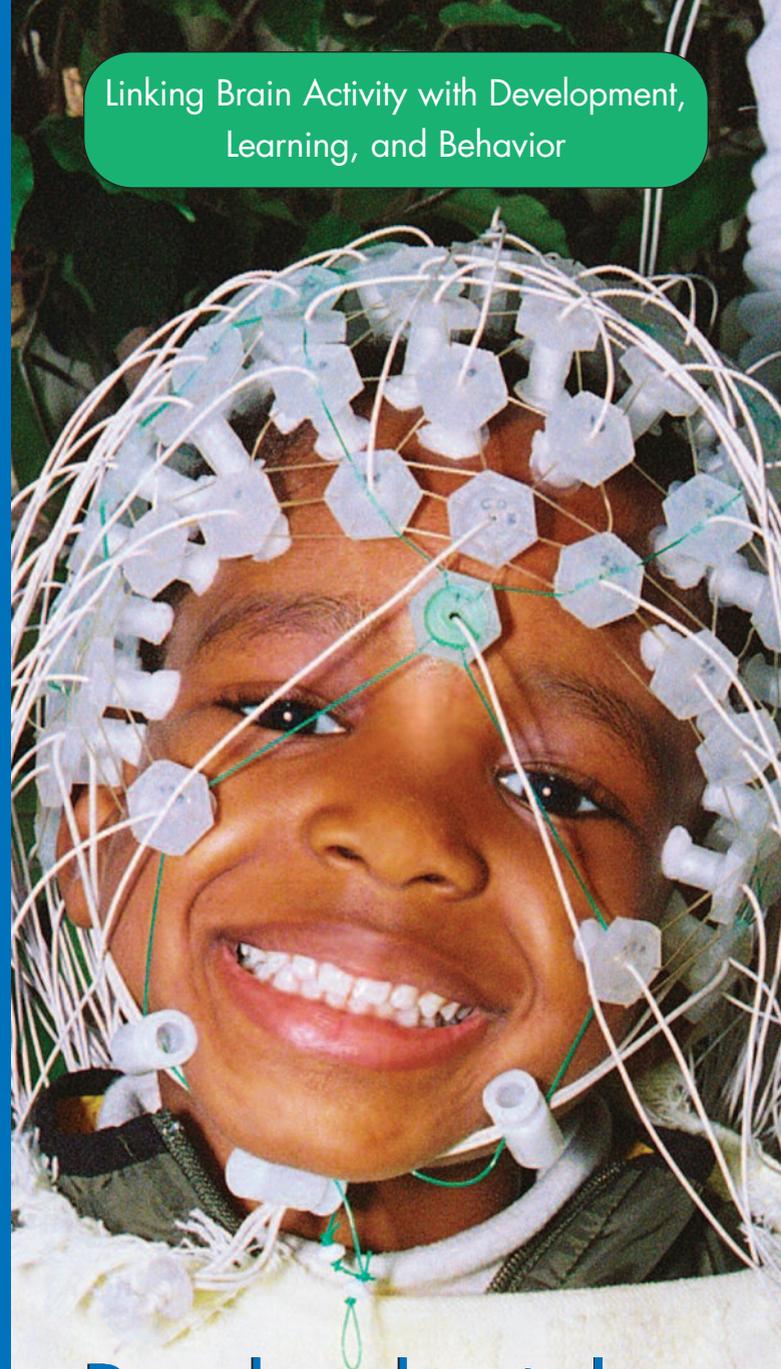
Phone: (615) 322-3498 Office

E-mail: sasha.key@vanderbilt.edu

For current projects see website
vkc.vumc.org



This brochure was constructed by the Graphics Core of the Vanderbilt Kennedy Center, Vanderbilt University, supported in part by NICHD Grant P30 HD15052. The Vanderbilt Kennedy Center is devoted to unlocking the mysteries of the brain and child development, and improving the lives of people with disabilities.



Psychophysiology Laboratory





What is EEG?

Electroencephalography (EEG) creates a set of lines, called brain waves, that is used to look at brain activity.

- Brain cells generate extremely small electrical charges. These charges add together so that electrical activity can be detected at the scalp.
- This electrical activity is so small that it can not be felt. It must be magnified 10,000 times to be large enough for a computer to read.
- Measuring differences in brain waves allows researchers to study changes in brain activity.

How do we measure EEG in the Kennedy Center Lab?

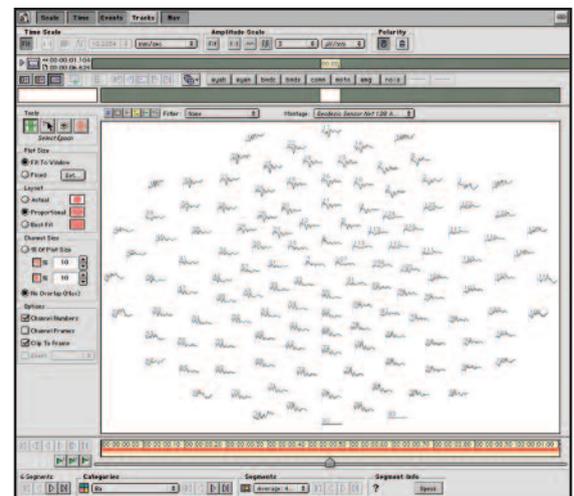
We use high density EEG technology to record from the entire surface of the scalp.

- A soft sensor net with many small sponges is placed on a child's head while he/she is playing a computer game or listening to sounds.
- The sponges on the net detect electrical activity produced by the brain and send the information to a computer.

Why are Kennedy Center researchers using EEG technology?

At the Kennedy Center, researchers strive to unlock the mysteries of development and learning. We are using EEG technology

- to identify patterns of brain activity that match with different thought processes or behaviors (for example, listening to words, reading, or looking at pictures)
- to examine differences in brain activity due to disabilities (for example, are there differences in brain activity when children with language problems hear words or when children with autism see faces?)
- to better understand why therapy methods are effective (for example, a language training program or reading instructional approach)
- to predict which children are most likely to benefit from particular treatments



Brain waves are visible on screen almost instantaneously at each electrode site on the surface of the scalp.