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Discovery



Measuring Brain Waves



The walls of the Psychophysiology Laboratory are decorated as if children are entering a castle. Researchers literally roll out a red carpet leading children to the "throne." They talk with kids about wearing silly crowns, one of which resembles a hairnet that slips over a child's head. The soft sensors in this net detect the electrical activity of the brain and tell researchers how this activity changes in response to a task at any given point in time, millisecond by millisecond. The sensors provide information about how much activity is generated and allow researchers to estimate what parts of the brain are engaged. Brain wave measures are being combined with behavioral research measures in new ways that may advance knowledge of typical and atypical development, predict response to treatment, and measure treatment effectiveness.

The Psychophysiology Laboratory is directed by Sasha Key, Ph.D., a research assistant professor who was recruited jointly by the Vanderbilt Kennedy Center and Department of Hearing and Speech Sciences in August 2004. As an undergraduate psychology major at Moscow State University in Russia, she became intrigued with

Head sensor net measures brain activity.

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Director's Message

Play Is the Work of Children



Pat Levitt, Ph.D.

What we are engaging in at the Vanderbilt Kennedy Center is our version of "Come Play," the theme of the most recent Leadership Council Dinner that honored our great Hobbs Society members who financially support

our efforts to lead the vanguard of scientific discovery. What we do as researchers, trying to discover the biological basis and best treatments for autism, learning and language disorders, mental retardation, and mental

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What Are Babies Thinking Before They Start Talking?

By Melanie Cantania

Babies as young as five-months-old make distinctions about categories of events that their parents do not, revealing new information about how language develops in humans. The research by Kennedy Center member Sue Hesos, Ph.D., assistant professor of psychology, and Elizabeth Spelke, Ph.D., professor of psychology at Harvard University, was published in the July 22 issue of *Nature* in the article "Conceptual precursors to language."

"It's been shown in previous studies that adults actually categorize things differently based on what language they speak," Hesos said. "So, if language is influencing adults' thought, one of our questions was: What's going on with pre-verbal infants? Do children think before they speak?"



A mother holds her baby while they participate in the study. The infants made distinctions between objects without the help of categories designated by language.

"Language capitalizes on a pre-existing system of 'I live in a 3-D world, I know how objects behave and interact,'" she continued. "This pre-existing ability suggests that children do think before they speak."

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Measuring Brain Waves

from page one

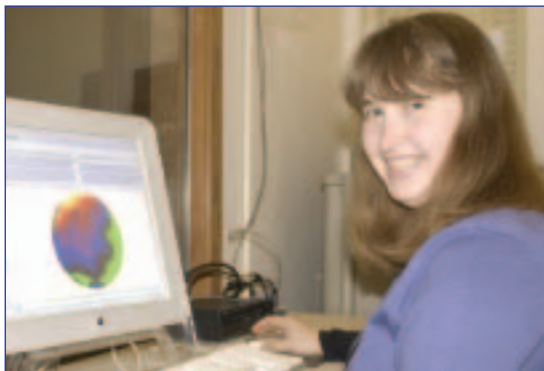
neuropsychology and continued to pursue her interests in graduate school. At the University of Louisville she worked with Dennis L. Molfese, a national leader in the use of brain wave measures as indicators and predictors of children's language development.

"I'm interested in the brain correlates of learning and development," Key said. "Typically, changes in brain activity occur, as a rule, before observable behavior changes. So brain waves can help us assess specific abilities in persons unable to provide a response or to get an early indicator whether a treatment or instructional method is working well before the behavior has caught up."

Brain wave measures can be used across the life span. "Using the same equipment and testing procedure, we've tested newborn babies and 80-year-olds, which allows us to compare the data directly," Key said. "That's not possible with any behavioral measure."

Another advantage is that brain wave measures are quicker in comparison to behavioral measures. "A behavioral assessment may take two hours and a brain wave measure may take ten minutes, which is easier for young children," Key pointed out. "In the future, it will be possible to combine brain wave measures during a specific task with shorter behavioral assessments and obtain the developmental information needed."

Key emphasizes that brain wave measures and behavioral assessments are each important research tools but together they provide even more detailed information about development and learning than either one individually.



Sasha Key, Ph.D., director of Psychophysiology Lab

Kennedy Center investigator Paul Yoder, Ph.D., professor of special education, uses brain wave measures to study speech processing in children with language delays. Speech processing refers not just to listening to speech but deriving information, storing it, and comparing that information with what one already knows. The speed and ease with which speech is processed is important. "If a child has difficulty processing speech even under the simplest conditions, then the child will lose more information, more often," Yoder explained.

Measuring speech processing behaviorally is difficult, especially for children between two and four years of age, the very age at which language delays become apparent and early intervention should be provided for children with communication disorders.

"We need to be measuring processing speed in milliseconds, and event-related potentials allow us to measure brain responses very fast after the stimulus of a speech sound," Yoder explained. "We want to know if a child is processing a speech sound and how fast and how difficult processing is."

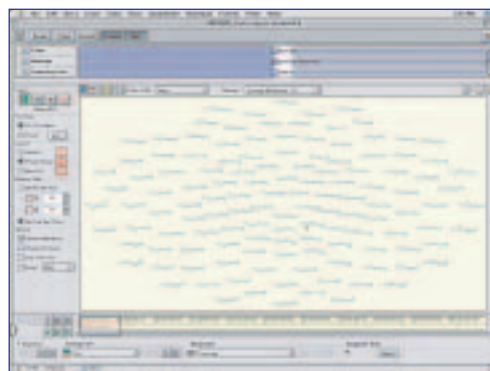
Yoder describes brain wave recordings as made up of peaks and valleys. The peaks indicate when the brain is recruiting more brain cells, or expending more energy, to accomplish a task. Children whose speech processing is impaired tend to have bigger peaks for the part of the brain wave that is relevant to speech processing compared with that of typically developing children of the same age.

Moreover, those peaks tend to be later after the stimulus (for example, a speech sound) has been presented, compared with the pattern seen in typically developing children.

In one study, Yoder found that a component of a brain wave associated with speech processing predicted how much children would improve in speech intelligibility more strongly than other variables. Moreover, these measures can be used successfully with children who are quite immature in their language acquisition.

Yoder and Stephen Camarata, Ph.D., professor of hearing and speech sciences and director of the Late Talkers Clinic, a joint project with the Kennedy Center and the Bill Wilkerson Center, are collaborating with Dennis L. Molfese, Ph.D. (University of Louisville) on a study using brain wave and behavioral measures as predictors of language impairments (funded by the National Institute on Deafness and Other Communication Disorders).

Yoder is optimistic that as more research using brain wave measures is done involving young children with and without disabilities, these measures will be useful in diagnosis and in predicting response to treatment.



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

Key has a similar vision. "Through this research, it may one day be possible to bring a child into a clinic, record brain waves, and based on the findings, recommend an intervention most likely to be effective, track changes in brain activity as the intervention proceeds, and more rapidly know whether the intervention should continue or be changed."

Both Yoder and Key agree that the Vanderbilt Kennedy Center is uniquely positioned to pursue innovative neuroimaging and intervention studies to enhance development and treatment of children with a wide range of developmental disabilities. ●

Primer

Measuring Brain Waves

EEG – Electroencephalogram, a recording of the brain's electrical activity. Data is obtained by placing small sensors on the head and amplifying the recorded signal several thousand times. It is usually described in terms of frequency, e.g., alpha frequency (8-13Hz).

ERP – Event-Related Potential, a portion of EEG that correlates in time to a precise stimulus event. It reflects changes in EEG associated with that event. ERP is described in terms of peaks

varying in polarity, size, and time from stimulus onset. It has millisecond time resolution.

Benefits of EEGs and ERPs

- Is noninvasive, well tolerated even by young children and infants.
- Has high temporal resolution (milliseconds).
- Behavioral responses (e.g., pressing a button when a sound is heard) are not required. Often changes in brain activity are present before changes in behavior can be observed.
- Can be directly compared across ages.
- Can be combined with other imaging techniques. (e.g., functional Magnetic Resonance Imaging)
- Complements standard behavioral assessments.



Resources

Coles, M., & Rugg, M. (1995). Event-related brain potentials: An introduction. In M. Rugg & M. Coles (Eds.), *Electrophysiology of mind: Event-related brain potentials and cognition*. (pp.1-26). New York: Oxford University Press.

Fabiani, M., Gratton, G., & Coles, M. G. H. (2000). Event-related brain potentials: Methods, theory, and applications. In J. T. Cacioppo, L. G., Tassinari, & G. G., Berntson (Eds.), *Handbook of Psychophysiology*, 2nd ed. (pp. 53-84). Cambridge, UK: Cambridge University Press. ●

Director's Message from page one

health disorders, is hard work—but those of you who know many of us in the Vanderbilt Kennedy Center are aware that we often seem like children at play. We love what we do, and most of us cannot imagine doing anything else. We embrace the challenge of discovery because it is, in essence, an exercise in reacting to the *unexpected*.

What comes next around the corner of discovery? This is what child's play is all about. It is not about learning how to cope with stress or danger in the way that we think about exploration. Indeed, children explore novel situations with all the vigilance needed to respond quickly. They develop their own unique so-called "fight or flight" response. Exploration is all about learning how to *avoid* trouble.

Play is different. Children only play in the context of a safe environment; they are neither

vigilant nor fearful. Instead, play incorporates the unpredictable in a positive way, with experiences that let children learn how to deal with the unanticipated. There is something remarkably rewarding about experiencing the unexpected—it is simply fun. Have you ever watched puppies or kittens at play? They roll, tumble, leap, and place themselves in physical situations that never would be appropriate in learning how to be vigilant and recognize danger. In fact, at the heart of play for all mammals is the joy in learning how to reach beyond what is familiar—reaching beyond the expected. Isn't that a characteristic of our most successful adults, and the essence of what scientists do here at the Vanderbilt Kennedy Center?

Our theme "Come Play" reflects the view of how very important play is to all children. It is meant to be inclusive of all children, typical and atypical alike. Play is not a luxury,

it is a necessity. Fred Rogers once said, "Play is often talked about as if it were a relief from serious learning. But for children play is serious learning. Play is really the work of childhood." As you watch children at play, remember what Mr. Rogers said. Just as we battle for children's opportunities for growth and development as they experience the trials and tribulations of learning in preschool and the classroom, we need to be vigilant in providing the best opportunities for them to experience the joys of play. Research tells us that by providing opportunities for play, we are doing as much for children's mental and physical health and well-being as anything else that we might do. The comments of Mr. Rogers are relevant to our research efforts as well. I can vouch for our many scientists here at the Vanderbilt Kennedy Center—we all take scientific discovery, our version of "Come Play," very seriously. ●

What Are Babies Thinking

from page one

Previous research has found that infants are sensitive to the acoustic variations that signal meanings in all the world's languages that adults can no longer hear, even those variations that their own language does not use and that the adults around them no longer hear. For instance, an adult native-English speaker will not hear all of the sounds of Korean and vice versa. Infants hear these subtleties but lose this awareness as their language skills develop over the first year of life.

"The languages of the world vary both in the sounds they require speakers to distinguish and in the meanings they require speakers to convey, and these differences influence what speakers of a language readily hear and think about," Spelke said. "Our research asked how these differences arise: Does the experience of learning to speak English or Korean make you aware of the categories your language honors?"

The example they used to explore this question was differences between how different languages describe space. For example, the distinction between a tight fit versus a loose fit is marked in Korean but not in English. A cap on a pen would be a tight fit relationship, while a pen on a table



Sue Hesos, Ph.D.

would be a loose fit relationship. English does not mark this distinction in the same way, instead emphasizing the "containment" versus "support" relationship, for example: the coffee is *in* the mug or the mug is *on* the table.

Hesos and Spelke tested

whether five-month-old infants from native English-speaking homes noticed whether objects fit tightly or loosely. The tests were based on infants' tendency to look at events that they find to be novel. Infants were shown an object being placed inside a container that fit either tightly or loosely until the time they looked at the object being placed inside the container decreased. They were then shown new tight and loose fit relationships. The researchers found that the babies looked at the objects longer when there was a change between tight or loose fit, illustrating that they were detecting the Korean concept.

Hesos and Spelke also conducted the experiment with adults to confirm that English-

speaking adults do not spontaneously make the tight versus loose fit distinction.

"Adults ignore tight fit versus loose fit and pay attention to 'in' versus 'on,'" Hesos said. "Adults were glossing over the distinction that the babies were actually detecting."

"These findings suggest that humans possess a rich set of concepts before we learn language," Spelke added. "Learning a particular language may lead us to favor some of these concepts over others, but the concepts already existed before we put them into words."

Hesos is a member of the Vanderbilt Kennedy Center and the Vanderbilt Vision Research Center. Spelke is co-director of Harvard's Mind/Brain/Behavior Initiative. The research was supported by grants from the National Institutes of Health. ●



Where to Find Help

Vanderbilt Kennedy Family Outreach Center

Supported by the Lili Claire Foundation
(615)936-5118

Tennessee Disability Pathfinder

(800)640-INFO [4636]
(615)322-8529 (Nashville)

Taking Part in Research

See Study Finder

<http://kc.vanderbilt.edu/studyfinder/>

Leading the Vanguard of Discovery



PAUL YODER, PH.D.

Professor of Special Education
Vanderbilt Kennedy Center Investigator
Joined Vanderbilt Kennedy Center 1986

Research Interests

Communication and language development, and intervention in children with language delays; mother-child linguistic and prelinguistic interaction; event-related potentials; autism

Principal Investigator for

Early Communication Intervention in Children with Autism, National Institute of Deafness and Other Communication Disorders

ERP & Behavior Predictors of Language Intervention, National Institute of Deafness and Other Communication Disorders

EEG Power and Growth in Joint Attention in Children with Autism Spectrum Disorders and Their Siblings, Nicholas Hobbs Society Discovery Grant

Clinical Interests

Early communication and language intervention for toddlers and preschoolers with a variety of communication disorders

National Service

- Member, Research Committee, Division of Early Childhood, Council for Exceptional Children
- National Advisory Board, Early Childhood Research Institute, University of Louisville
- Board of Editors, *American Journal of Speech-Language Pathology*, *Journal of Early Intervention*, *Journal of Speech, Language, and Hearing Research*, and *Topics in Early Childhood Special Education*

Publications

Yoder, P. J., & Warren, S. F. (2004). Early predictors of language in children with and without Down syndrome. *American Journal on Mental Retardation*, 109, 285 - 300.

Yoder, P. J., & McDuffie, A. (2002). Treatment of primary language disorders in early childhood: Evidence of efficacy. In P. Accardo (Ed.), *Disorders of Language Development* (pp. 151 - 177). Baltimore: York Press.

Yoder, P. J., & Warren, S. F. (2002). Effects of prelinguistic milieu teaching and parent responsibility education in dyads with children with intellectual disabilities. *Journal of Speech, Language, and Hearing Research*, 45, 1158 - 1174.

Education

B.S., 1978, Psychology, Louisiana State University
M.S., 1979, Special Education, George Peabody College
Ph.D., 1985, Special Education, University of North Carolina, Chapel Hill
Postdoctoral Fellow, 1985-87, Peabody College, Vanderbilt University

Attraction to Developmental Disabilities Research

As a sophomore volunteer in a preschool for children with language impairments, I was fascinated and touched by these bright children that had such difficulty communicating. One of the children had autism. Another had mental retardation. Another seemed fine in every way but could not speak clearly. It seemed obvious that we could not use the same teaching methods with all of these children. Doing developmental disability research combines my love of the scientific method, my desire to be a positive force in the lives of children with communication disabilities, and my passion for learning.

Reasons for Kennedy Center Membership

The Vanderbilt Kennedy Center is why I stay at Vanderbilt. Its Psychophysiology Laboratory is an example of the Center's commitment to supporting multidisciplinary research. Without it, as a behavioral scientist, I could never move into using event-related potentials to measure speech processing. Without the production and support of many, custom-made or adapted data collection and analysis programs by Jon Tapp, the Center's director of computer services, I simply would not be able to accomplish what I do. The Communications and Graphics services help me produce posters, PowerPoint slides, and Web sites that allow me to communicate complex findings efficiently to a variety of audiences varying on education and interest level. The Administrative Core makes budgeting, purchasing, and hiring more manageable. Linda Dupré, the Center's manager of grants development, makes it possible to get all of those Institutional Review Board forms, progress reports, and applications completed on time. My gratitude to the Kennedy Center goes beyond my expression. ●

Accolades

Camilla Benbow, Ed.D., Patricia and Rodes Hart Dean of Education and Human Development, Peabody College, received the **2004 Lifetime Achievement Award of the Mensa Education and Research Foundation**.



Raymond Burk, M.D.

Raymond Burk, M.D., professor of medicine and pathology, has received a **National Institutes of Health MERIT Award** for his research on the nutritional effects of selenium. Selenium deficiency has been implicated as a contributing metabolic factor in some developmental disabilities.

Alfred L. George, Jr., Ph.D., been named **chair of a Special Emphasis Panel of the National Institute of Diabetes & Digestive & Kidney Diseases**. The panel will review applications solicited by one of the new National Institutes of Health Roadmap training initiatives.



Alfred L. George, Jr., Ph.D.

H. Carl Haywood, Ph.D., and **Penelope Brooks**, Ph.D., professors of psychology emeriti, held **Bright Start curriculum workshops in Reykjavik, Iceland**, August 9-13, sponsored by the **Iceland Ministry of Education**. *Bright Start* is a preschool cognitive education curriculum co-authored by Haywood, Brooks, and S. Burns.

Pat Levitt, Ph.D., Vanderbilt Kennedy Center director, received the **Friends of Children Award of the Tennessee Chapter of the American Academy of Pediatrics**.

Wendy Stone, Ph.D., professor of pediatrics and psychology, is featured on the **Dan Marino Foundation's Childnett.tv**, the first 24-hour web channel dedicated to families living with autism and other neurological disorders. See www.childnett.tv.

The **Best Buddies Vanderbilt Chapter**, led by president Kathy Lawton, was recognized as the first "Outstanding College Chapter of the Year" by the International Best Buddies organization. The Chapter's advisor is **Elise McMillan**, J.D., Vanderbilt Kennedy Center director of community outreach. ●

New Grants

NUTRITIONAL AND METABOLIC SIGNIFICANCE OF SELENIUM

Raymond Burk, M.D., professor of medicine and pathology

Funding: National Institute of Environmental Health Sciences, MERIT Award

FAMILY COGNITIVE-BEHAVIORAL PREVENTION OF DEPRESSION

Bruce E. Compas, Ph.D., professor of psychology

Funding: National Institute of Mental Health

RELATING DECODING AND FLUENCY DEVELOPMENT IN CHILDREN WITH READING DISABILITIES

Donald L. Compton, Ph.D., assistant professor of special education

Funding: National Institute of Child Health and Human Development

SCALING UP PEER-ASSISTED LEARNING STRATEGIES (PALS) TO STRENGTHEN READING ACHIEVEMENT

Doug Fuchs, Ph.D., and Lynn Fuchs, Ph.D., Nicholas Hobbs Chair in Special Education and Human Development

Funding: U. S. Department of Education

LIFE-SPAN DEVELOPMENT OF NORMAL AND ABNORMAL BEHAVIOR

Judy Garber, Ph.D., professor of psychology and human development and psychiatry

Funding: National Institute of Mental Health

PREDOCTORAL TRAINING PROGRAM IN BIOMEDICAL IMAGING

John C. Gore, Ph.D., Chancellor's University Professor of Biomedical Engineering and Radiology

Funding: National Institute for Biomedical Imaging and Bioengineering

PANCREATIC ISLET IMAGING AND BLOOD FLOW

John C. Gore, Ph.D., Chancellor's University Professor of Biomedical Engineering and Radiology

Funding: National Institute of Diabetes and Digestive and Kidney Diseases

NEUROGENETICS OF CANDIDATE SYSTEMS IN AUTISM

(Parent project: Genetic Studies in Neurological Disorders, Pericak-Vance, PI, Duke University) Jonathan L. Haines, Ph.D., T. H. Morgan Professor of Human Genetics, and James S. Sutcliffe, Ph.D., assistant professor of molecular physiology and biophysics

Funding: National Institute of Neurological Disorders and Stroke

SOCIAL COMMUNICATIVE EFFECTS OF LANGUAGE INTERVENTION

Ann P. Kaiser, Ph.D., professor of special education

Funding: National Institute of Child Health and Human Development

TREDS – TENNESSEE TECHNICAL ASSISTANCE AND RESOURCES FOR ENHANCING DEAF-BLIND SUPPORT

Craig Kennedy, Ph.D., professor of special education

Funding: U.S. Department of Education

FACTORS REGULATING LIMBIC SYSTEM ASSEMBLY

Pat Levitt, Ph.D., professor of pharmacology and Aurea Pimenta, Ph.D., research assistant professor of pharmacology

Funding: National Institute of Mental Health

DEVELOPING EXCEPTIONAL HUMAN CAPITAL

David Lubinski, Ph.D., professor of psychology and Camilla P. Benbow, Ed.D., Patricia and Rodes Hart Dean of Education and Human Development

Funding: Templeton Foundation

MATERNAL OPIOID TREATMENT: HUMAN EXPERIMENTAL RESEARCH

Peter Martin, Ph.D., professor of psychiatry and pharmacology

Funding: National Institute on Drug Abuse

CELLULAR MECHANISMS OF PRECONDITIONING NEUROPROTECTION

BethAnn McLaughlin, Ph.D., research assistant professor of pharmacology

Funding: National Institute of Neurological Disorders and Stroke

ANTIOXIDANT INTERACTION OF SELENIUM AND VITAMINS C AND E

James May, Ph.D., professor of medicine and molecular physiology and biophysics, and Raymond Burk, Ph.D., professor of medicine and pathology

Funding: National Institute of Aging

HALLUCINOGENS AND SEROTONIN SIGNAL TRANSDUCTION

Elaine Sanders-Bush, Ph.D., professor of pharmacology and psychiatry

Funding: National Institute on Drug Abuse

GENETIC ANALYSIS OF 15q11-q13 IN AUTISM

James Sutcliffe, Ph.D., assistant professor of molecular physiology and biophysics

Funding: National Institute of Mental Health

BEHAVIORAL TRAINING IN DEVELOPMENTAL DISABILITIES

Tedra Walden, Ph.D., professor of psychology, and Craig Kennedy, Ph.D., professor of special education

Funding: National Institute of Child Health and Development research training grant

REDUCING SEVERE PROBLEM BEHAVIOR IN SCHOOLS

Joseph Wehby, Ph.D., associate professor of special education, and Craig Kennedy, Ph.D., professor of special education

Funding: U.S. Department of Education

Outreach Grants

ARTS BUILD COMMUNITIES

Vanderbilt Kennedy Center Arts Initiative

Elise McMillan, J.D., director of community outreach

Funding: Metropolitan Nashville Arts Commission

FAMILY SUPPORT 360 GRANT

Funding: Administration on Developmental Disabilities

Frequently Asked Questions



What is the value of children's play? How can parents promote the development of their children, with and without disabilities, through play?

Play is important for learning. Parents can get down into their child's world and interact, guiding play in ways that facilitate development of specific skills. Through play, young children examine objects, learning about spatial structure, cause and effect, and numerical concepts, e.g., through toys that have gradations in size and other perceptual characteristics like sound. They learn communication and social interaction. Providing new objects or playing with familiar ones in different ways teaches new characteristics about objects, for example, rolling a ball and later bouncing it.

Imaginative play should be encouraged. Parents can take an object and model an imaginative use for it. They can set up "pretend" scenarios, like a birthday party, and add characters. As children get older, parents can ask the child to tell the story.

Children with disabilities learn in ways that parallel typical child development. The difference is in how quickly they learn and how many times they need to experience something for it to be stored in long-term memory.

For example, a parent may be helping a child with Down syndrome learn to name objects. On average, children with Down syndrome need to hear words more often and in more meaningful contexts than typically developing children. Their speech may be less intelligible, which makes it difficult for parents to provide a teaching model in response. Parents can manage this by selecting a set of words they want their child to learn, beginning with words made of sounds that are easier to pronounce, e.g.,

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Susan Gray School for All Children

Vanderbilt Kennedy Center • Peabody College

A New Model for the Delivery of Therapy



Grace Ann Hunter

While the Susan Gray School serves children at varying levels of development, some families find it helpful to have their child take part in therapy sessions in addition to their daily curriculum. Students can receive speech, physical, or occupational therapeutic services from different providers depending on a child's age through an independent clinic, through Metro Nashville Public Schools, or through the School's collaboration with Vanderbilt's Pediatric Team Rehabilitation Services.

"In an effort to move toward on-site therapists, we have established a collaboration with Pediatric Team Rehabilitation Services. They now send a physical therapist and occupational therapist to the School on a weekly basis," said Ruth Wolery, Ph.D., the School's director. "We like this arrangement because a single therapist builds a relationship with the teachers and the children."

The following is an account of one child's therapy routine and how these services are integrated

through the Susan Gray School and Pediatric Team Rehabilitation Services.

Delivery in Action

Each day Grace Anne Hunter looks forward to school. Her "Cuddle Bugs" classroom is full of bright toys, fun times, and great friends. But Tuesdays, Wednesdays, and Thursdays are extra special due to two friends who come to class—Ellen Argo and Deborah Powers, a physical therapist and occupational therapist, respectively. A lively eighteen-month-old, Grace Anne has Down syndrome, and her motor development—such as walking and upper body strength—are developing at a slower pace.

It was suggested to Grace Anne's parents that she receive therapy at Vanderbilt in the Susan Gray School. Both Argo and Powers take time during Grace Anne's school day to work on her learning to walk with less assistance and to develop more

strength in her arms. Having therapists come into the School allows Grace Anne to receive therapy while continuing to take part in daily activities with other students.

Argo is Grace Anne's physical therapist. As soon as she arrives to work with Grace Anne, Argo assesses the current learning situation to see what activity all the children are doing that she can incorporate within physical therapy. Since today the children are outside when Argo arrives, she jumps at the chance to have Grace Anne

push a toy cart around the playground. While Grace Anne sees this opportunity as fun time, Argo knows that it is a great way to work on developing Grace Anne's balance, leg strength, and walking stride.

"A child only spends an hour in a therapy clinic, but spends four or more hours here at the School. This way, working in a child care center, I

can integrate activities [for physical therapy] within what teachers have planned for the day," Argo explained.

Argo has found that working with Grace Anne and the other students in the class who have thera-

peutic needs also has benefited students who do not receive therapy at the School.

"Teachers are eager to learn. They watch what we do, ask for suggestions, then take that information and use it in the classroom," Argo continued. "We are forming a team to make sure that this environment is what is best for children."

When Grace Anne has made strides in her therapy for the day, it is time for Argo to move on to another child in the



MELANIE BRIDGES

School and for Grace Anne to take part in occupational therapy with Powers. As Powers works with Grace Anne, the focus is on the great weather and fun toys as they play outside.

"No matter where the class is," said Powers, "I find ways to help Grace Anne overcome her difficulties and take part with the other children."

While playing outside, Powers encourages Grace Ann to use her arms to rock the horse, throw the ball, or push herself down the slide, just like the other kids on the playground.

When the class moves inside, so do Powers and Grace Anne, giving them a chance to take part in new variety of activities involving eye-hand coordination like taking off shoes to do a painted footprint poster or removing a hat off her head. A major goal is helping Grace Ann learn to feed herself using her fingers or a spoon.

"We believe that kids learn from other kids, so they are a great example for Grace Anne," Powers said. "She will learn from her peers and that will serve as a follow-up to the therapy that we provide. If she were an 'outpatient' in a traditional therapy clinic, she would receive therapy for an hour and then go home. Here, where she is around typically developing children, her environment reinforces the therapy."



Physical therapist Ellen Argo and Grace Anne

MELANIE BRIDGES

The Susan Gray School provides inclusive education for young children with and without disabilities and support for their families. Its fourfold mission is providing high-quality service, supporting research, contributing to the training of future teachers and researchers, and demonstrating recommended practices as a national model. It is a program of the Vanderbilt Kennedy Center and Peabody College.



MELANIE BRIDGES

challenges, since the student would become distanced from the class instead of further integrated. Also, children had to meet and become comfortable with different therapists in the classroom while various activities were taking place. Therapists were put in a difficult position having to learn the system of each class and teacher. Now, through the collaboration with Vanderbilt's



MELANIE BRIDGES

Occupational therapist Deborah Powers and Grace Ann



MELANIE BRIDGES

Pediatric Team Rehabilitation Services, Grace Ann has the same therapist as others in her class. This model fosters collaboration between the School and the therapist while supporting daily routines.

"I see children both at the clinic and here at the School, and I seem to see a bigger carryover of knowledge and development at the School," said Powers. "As long as you have a teacher and a school that are willing to implement all the different activities that you need to meet your therapy goals, like the Susan Gray School is, I feel that therapy in the school is one of the best things for a child." ●

Setting the Standard—Again

For over 35 years, the Susan Gray School has served the full range of young children, those who are typically developing as well as those with developmental delays or intellectual or physical disabilities. It was the first nationally recognized early intervention program to include children with and without disabilities. Today the Susan Gray School is doing it again by integrating therapy sessions within the classroom.

In previous experiences at the School, several therapists would come into the classroom and meet with a specific child. This posed many

SGS News

Autumn Jubilee

The Susan Gray School held its first Autumn Jubilee October 25-29. Students spent the week enjoying a variety of activities. Each day featured a different aspect of fall.

On Monday, the first day of the celebration, students learned about apples while making applesauce and caramel apples. Other activities throughout the week were centered on corn, leaves, and pumpkins. Parents were invited on Thursday to decorate pumpkins with their child's class. Each day contained an informational activity as well as a hands-on learning project.

Festivities concluded Friday with a "Pumpkin Parade" in which students visited near-by campus offices in the Vanderbilt Kennedy Center, the Peabody Administration Building, and several other campus buildings and residence halls.

"We added these special activities to provide variety within our curriculum," said Michelle Wyatt, assistant director. "We hope to continue this growth by adding Olympic Games this summer." ●

Frequently Asked Questions

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objects whose names start with "b." They can select a small set of similar objects so that a child sees multiple examples, e.g., many kinds of balls. They are guiding play so that the child hears "ball" repeatedly, and they can praise or otherwise reinforce the child's speech when the child produces or approximates the word "ball."

Because children with autism have a reduced motivation for social communication, they tend to play alone in repetitive ways. Parents can direct play in ways that are more social. For example, in the Kennedy Center intervention research of Paul Yoder and Wendy Stone, adults direct a child's attention to desired toys mediated through the adult, so that there's joint attention, an important prelinguistic skill.

Developmental specialists can help parents identify specific learning goals and strategies to guide children through their developmental challenges.

Parents may want to be cautious about purchasing items marketed as promoting a child's intelligence. Playing with a child, interacting,

offering them learning opportunities, these are sufficient. Select toys and activities that interest a child, are flexible, and allow a child to learn different characteristics.

If your family watches TV or uses computers, make this time interactive. Studies indicate that passive TV watching activates the brain's visual centers but does not result in the kind of broader activation seen in learning as one would hope for in play. Watch TV or use computers *with* children, ask them questions, and develop play routines around shows or software. Connect what is learned to lived experience.

For all children, the goal is supporting play that is highly motivating for the child and making alterations so that it can be more enriching than if they were left to their own devices. Playing should be fun for parents, too. Avoid letting worry or stress interfere and remember to enjoy your child while playing.

Stephen M. Camarata, Ph.D., Professor of Hearing and Speech Sciences serves in the Vanderbilt Kennedy Center as the Director of the Research Program on Communication and Learning and the Late Talkers Clinic at the Test and Technology Center. ●

Outreach News

Sibshops Build Foundation



Sibling relationships are perhaps the most enduring relationships in life. In the case of children with special health, developmental, or mental health concerns, the relationships among siblings may be the most important caregiving relationship in their adult lives. Sibshops are designed to provide support during childhood and young adulthood and provide a foundation that will foster long-term positive relationships across the life span.

Sibshops offer recreation, education, and peer support. These workshops acknowledge that being a brother or sister of a person with special needs opens a wide spectrum of emotions. For some it is a good thing, for others a not-so-good-thing, and for many somewhere in between. All brothers and sisters have a lot to offer one another, if they are given the chance.

Donald J. Meyer, creator of Sibshops and director of The Arc's Sibling Support Project, was invited to the Vanderbilt Kennedy Center in 2002 to present the Sibshop program, and by Fall 2003 the Kennedy Center held its first Sibshop for siblings, 7 to 12 years old, of children with special needs.

Sibshops offer a variety of activities throughout the session. "Some type of activity at the beginning of a session helps children feel comfortable," explained Elise McMillan, Vanderbilt Kennedy Center director of community outreach and parent of two Sibshop participants. "It may be a fun game to introduce yourself and get to know others. There is usually some kind of art or creative activity, and there is always a time for children to sit down and seriously talk about what it is like to have a sibling with a disability."

Katie Moore is ten-years-old and has attended Sibshop for the past two years. Her brother Matt is 15-years-old and has Down syndrome. "Sibshops have given Katie an opportunity to talk about

what she experiences having a brother with Down syndrome," says their mother Sheila Moore. "She can do this with other siblings who know what she feels and experiences. They are *her* support system, and she looks forward to the Sibshops."

"I am grateful to have a support group for Katie," Moore continued. "I know there are things that she feels or would like to say but feels she cannot say at home. She loves her brother, but sometimes she feels guilty for having certain thoughts about him. Katie always comes home from the Sibshop feeling better about herself. She has certainly been helped by Sibshops, and I believe her relationship with her brother has definitely benefited. She is always telling him that she loves him," Moore says proudly.

Katie also shared her views of what she has learned at Sibshop, that "we are all unique and different, and that's a great thing about this world."

Sibshops open up opportunities to meet other siblings and discuss the concerns and the joys of being a sibling of a person with special needs and how others handle situations

commonly experienced by siblings of a person with special needs. Participants learn about self-concept, insight, tolerance, loyalty, pride, friendships, fun, awareness, and support.

"In Sibshop, I have observed the celebration of the strengths and the gifts of these siblings as well as the acknowledgment of the challenges and stresses they experience," said Carol Rabideau, a social worker for the Vanderbilt Kennedy Family Outreach Center. "This validates for the children that a range of feelings is normal and acknowledges their many competencies. The children clearly enjoy the opportunity for recreation and discussion in which they can focus on themselves and their peers and experience this validation."

The Vanderbilt Kennedy Center Sibshop for children 7-to 12-years old continues this academic year. A reading and discussion group for college students and other young adults, 18 to 26 years, began this fall.

A third group for teens is planned for 2005. Rabideau will be this group's facilitator along with Stacie Salmon, a graduate student at Vanderbilt. Rabideau's goal is to create a Sibshop that will be appealing to adolescents, ages 13 to 18, and will give them a sense of "ownership" of the group where they can experience peer support and have confidence that their discussions will not be shared outside the group.

For Vanderbilt Kennedy Center Sibshops, contact Teresa Turnbo, (615) 936-5118, teresa.turnbo@vanderbilt.edu. For the Arc Sibling Support Project, see www.thearc.org/siblingsupport; see their directory for other Tennessee Sibshops in Cookeville, Franklin, Knoxville, and Memphis. ●

Purr-fecting Art

"The Fat Cat" will be the unifying theme for an imaginative art exhibit opening in January that has been developed by Pacesetters, Inc. The art is based on a Danish folk tale about a cat who was so fat and greedy that he consumed everything in his path. The exhibit will primarily feature two-dimensional artwork in a variety of media, such as pastel, paint, and prints. The exhibit will be on display in the lobby of the Vanderbilt Kennedy Center from January through March 2005.

Begun in 1996, Pacesetters' art program is designed to enhance verbal and visual communication skills as well as the self-esteem of the adults with developmental disabilities who participate in the program. Storyteller Marcia Donovan and visual artist Merritt Ireland are artists-in-residence who work with Pacesetters' artists. The program receives support from the Tennessee Arts Commission. This will be the second Pacesetters' exhibit to be held at the Vanderbilt Kennedy Center.

Pacesetters, Inc. is a Tennessee nonprofit organization, with funding from the



United Way. It has grown to become one of the largest community-based day training and residential programs serving persons with developmental disabilities in the State of Tennessee. It provides services in six centers located in Clay, Macon, Overton, Putnam, Warren, and White counties. For information, see www.pacesetterstn.com.

The Vanderbilt Kennedy Center sponsors a series of exhibits of art by or about people with disabilities. For information, contact Teresa Turnbo, (615) 936-5118, teresa.turnbo@vanderbilt.edu. ●

Outreach News

Reading Clinic Success

The Vanderbilt Kennedy Reading Clinic provides intensive, one-to-one instruction for children in kindergarten through fourth grade who are experiencing serious reading problems. Clinic tutors use reading instructional methods that have been proven to help children acquire reading skills. Instructional methods stress the connections between letters and sounds, how sounds fit together to form words, the development of fluent reading performance, and the achievement of strong comprehension of narrative text.

Students in the Department of Special Education provide one-to-one tutoring to children. These Peabody College tutors are supervised closely by Caresa Young, an experienced reading specialist and coordinator of the Clinic. The Reading Clinic has a strong track record in improving reading performance of children who previously were struggling in school.

The Vanderbilt Kennedy Reading Clinic directly served 63 students in 2003-2004.

Student Progress. On the Woodcock Reading Mastery Test, Clinic students showed an average



increase of nine standard score points for Word Identification (reading words in isolation) and 16 standard score points for Word Attack (reading nonsense words to indicate ability to sound out words). It is difficult for children to improve their standard scores because they must improve their performance just to maintain them. Increasing their standard scores requires considerable improvement. Reading Clinic students increased

from below average scores to average scores.

All students also are monitored at each tutoring session using Curriculum-Based Measurement. Students read a story, read words in isolation, or say sounds for one minute. The number of words or sounds read correctly are counted and graphed. These graphs help the children and tutors see when instruction is effective or when it needs to be modified.

Training. As part of Peabody's master's program in special education, all graduate students in the high incidence disabilities program (i.e., learning disabilities and behavior disabilities) complete at least one semester of Clinic tutoring. For 2003-04, 40 graduate students and 11 undergraduate students were trained.

Parents have been pleased that the Clinic has helped their children. Children enjoy the attention and the sense of satisfaction that comes from working hard to learn.

"Jacob's reading is now above grade level (thanks to one semester at the Clinic), and he no longer requires tutoring this year," said parent Janet Applin. "Had it not been for the Reading Clinic, I know he would still be struggling, but the program allowed him to 'crack the code.' The Reading Clinic was a godsend for us."

For 2004-05, Clinic goals include serving more children by increasing tutorial capacity and providing more tuition scholarships.

For information, contact (615)936-5123, caresa.l.young@vanderbilt.edu. ●

Congressional Visits



(Left to right) Faye Head and Kristin Bannerman of U.S. Senator Lamar Alexander's staff, Elisabeth Dykens, associate director, and Elizabeth Roof, Prader-Willi Syndrome Project coordinator

Congresswoman Marsha Blackburn, R-Tenn, visited the Vanderbilt Kennedy Center on July 28. Center director Pat Levitt, Ph.D., led the visit, outlining research areas and community outreach activities. She toured the Vanderbilt Kennedy Family Outreach Center and visited the Explorers Unlimited Academic Camp for youth with Down syndrome, where she spoke with campers. "I loved seeing the children take part in activities they enjoyed and having fellowship and relationship-building," she said of the camp sponsored by the Vanderbilt Kennedy Center and the Down Syndrome Association of Middle Tennessee.

Faye Head and Kristin Bannerman, staff of Senator Lamar Alexander, R-Tenn, toured the Vanderbilt Kennedy Center on August 26. They met with Elisabeth Dykens, Ph.D., Vanderbilt Kennedy Center associate



U.S. Representative Marsha Blackburn and Pat Levitt talk with Explorers Unlimited campers Ryan Pittman (right) and Matthew Moore.

director, who provided an overview of the Center's research and studies of the genetic syndrome Prader-Willi as an example of ways that families taking part in research are supported. They also toured the Vanderbilt Kennedy Family Outreach Center with Carole Moore-Slater, director of Tennessee Disability Pathfinder. ●

Spotlight

Committed to Children

ANN BERNARD



Ann Bernard has a strong sense of commitment to children. Her contributions to the children of the various programs at the Vanderbilt Kennedy Center have been profound and thoughtful. She became a member of the Nicholas Hobbs Society in 2000 and shortly after was invited to

join the Kennedy Center's Leadership Council.

"I have never been quite this involved in any organization prior to the Kennedy Center. My participation has been extremely gratifying, primarily because of the children," Bernard said.

"The Kennedy Center has given me something very positive in my life. To be able to make a contribution involving many fields of research,

which are making a significant difference in so many lives, warms my heart," Bernard continued.

"Anything that can be done to improve these children's lives, their communication skills, their social activities, and to allow them to simply enjoy life—I want to be a part of it. It is terribly important to get the message out in Nashville and surrounding areas of how important the Kennedy Center is to the community."

Bernard was a member of the 2004 Leadership Dinner Planning Committee and an avid promoter for the dinner and the silent auction.

When Bernard's husband had a stroke sixteen years ago, she naturally became interested in the Center's neurological research studies.

"The Kennedy Center and their ongoing research and programs for children and adults spoke to me. The Center has educated me on endless possibilities and opportunities that are now available to children and adults with and without developmental disabilities. The Center has made a difference in the lives of my family members, and I feel proud to say that my family is involved with the Vanderbilt Kennedy Center."

Bernard's daughter JoAnn has a background in special education. Her son Tommy, of Nashville, also has supported the Kennedy Center over the years.

Bernard believes that all the programs at the Center are important. "There is no other place like the Kennedy Center," Bernard said. ●

Thanks to Our Littlest Donors

In lieu of birthday gifts, celebrants gave gifts to the Vanderbilt Kennedy Reading Clinic Scholarship Fund. ●



Amelia Lauren McLaughlin Stanwood and Luke Lytle

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For information about joining the

Nicholas Hobbs Donor Society or making

Honor or Memorial gifts, contact the

Development Office, (615) 343-5322.

Every effort has been made to ensure the

accuracy of this report, which reflects

Hobbs Society membership, Honor, and

Memorial gifts July 10 – November 1,

2004. If an error has been made, we offer

our sincerest apology and ask that you

bring it to our attention by contacting the

Development Office. ●

Come Play

Over 250 Nicholas Hobbs Society members and friends attended the sixth annual Vanderbilt Kennedy Center Leadership Dinner on October 21 at Loews Vanderbilt Hotel. Chaired by Ann Eaden, vice president of Beaman Automotive and active community leader, the dinner's theme was "Come Play," focusing on the universal importance of play as the center of life and learning for children.

Children and young adults who took part in the program were Lauren and Natalie Gregg, Kathryn Lawton, Katie and Matthew Moore, Bernadette Resha, and Jason Sharbel. The Children's Choir from the W. O. Smith School of Music performed. Centerpieces of children at play sculpted in bronze by internationally renowned sculptor Gary Lee Price decorated the tables and were available for purchase. A silent auction was held raising over \$13,000.

The Dinner Committee included Ann Eaden, Chair, Ann Bernard, Linda Brooks, Judy Claverie, Annette Eskind, Carol Henderson, Lorie Lytle, and Laurie Lee Sisk.

Table hosts included Beaman Automotive Group, Mr. and Mrs. Jobe Bernard, Mrs. Linda Brooks, Mr. and "Mrs. Roy E. Claverie, Sr., Mr. and Mrs. Glenn Eaden, Dr. and Mrs. Irwin Eskind, Fridrich & Clark Realty and Relocation Services, Barbara Gregg and Associates, Mrs. Carol Henderson, Mr. and Mrs. Richard C. Houseworth, Mapco Express, Inc., Pinnacle Financial Partners, Regions Morgan Keegan Trust, and SunTrust Bank.

Appreciation is expressed for the contributions of Alyssa Capucilli—author of the Biscuit books, The American Artisan, Tom Black, Chancellor Gordon Gee and Dr. Constance Gee, Gary Lee Price, Sylvia Hyman, Horizon Wine and Spirits, Jamie Inc., Ilex Flowers, Natural Creations, The Palm Restaurant, Peppermill Catering, Portrait Photography by Dennis Wile, Randy Rayburn and the Sunset Grill, Darlene Shadden, Vanderbilt Dyer Observatory, Vanderbilt University, Vanderbilt University Medical Center, and Debbie Walker. ●

Photography by Tommy Lawson



Jason Sharvel, Natalie Gregg, and Lauren Gregg, with Biscuit, created by children's author Alyssa Satin-Capucilli



Gary Lee Price



Matthew and Katie Moore



Ann Eaden, Harry Jacobson, Jan Jacobson, and Annette Eskind



Pat Levitt, Ann Eaden, Barbara Gregg, and Harla Levitt



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Tommy Bernard, Harla Levitt, Ann Benard, and Robert Henderson, Jr.

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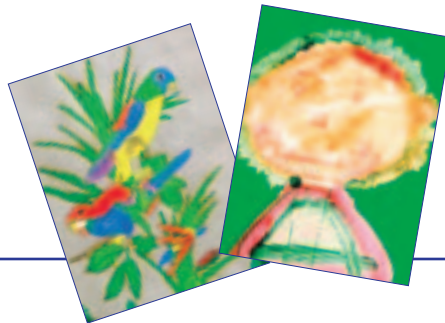
Tribute and Note Cards



Tribute cards featuring original work by artists with disabilities are an excellent way to make a gift to the Vanderbilt Kennedy Center in memory or honor of an individual. The Development Office will mail a card to honor/memorial recipient or donors can complete the card. Tribute cards are available for a suggested \$25 contribution.

Blank gift cards featuring this year's selection of art by persons with disabilities are available in packages of eight for a suggested \$10 contribution to the Center.

Contact (615)343-5322 or jon.preston@vanderbilt.edu to request tribute or art note cards.



Discovery is a quarterly publication of the Vanderbilt Kennedy Center for Research on Human Development designed to educate our friends and the community, from Nashville to the nation.

The Vanderbilt Kennedy Center is committed to improving the quality of life of persons with disorders of thinking, learning, perception, communication, mood and emotion caused by disruption of typical development. The Center is a university-wide research, training, diagnosis, and treatment institute; and a National Institute of Child Health and Human Development designated National Mental Retardation and Developmental Disabilities Research Center.

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Editors and Writers: Stephanie Comer, Traci Fleischman, Jan Rosemergy, Ph.D.

Art Director: Melanie Bridges, B.F.A.

Photography: Melanie Bridges, B.F.A., Tommy Lawson

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JIMMY ABEGG



Spring 2005 Calendar of Events

Unless otherwise noted, events are free and open to the public. Events are subject to change. Please check the calendar on our Web site kc.vanderbilt.edu or call (615) 322-8240. For disability-related training and other events statewide and nationally see www.disabilitytrainingtn.org.

January

JANUARY 5

Special Lecture

Dopamine Genes and Children's Disruptive Behavior Disorders

Irwin Waldman, Ph.D., Associate Professor of Psychology, Emory University
Wednesday 12 noon
Room 241 Kennedy Center/MRL Building

JANUARY 15-MARCH 30

Arts and Disabilities Exhibit

The Fat Cat - artwork inspired by the Danish folktale
Co-Sponsor Pacesetters Inc.
Monday-Friday 7:30 a.m.-5:30 p.m.
Lobby Kennedy Center/MRL Building

JANUARY 12

Developmental Disabilities

Grand Rounds

Demystifying the Mental Health Care of Persons with Developmental Disabilities

Laura D'Angelo, M.D., Psychiatrist, Centerstone Community Mental Health Centers, Inc.
Light breakfast provided
Co-Sponsor Center for Child Development, Pediatrics
Wednesday 8 a.m.
Room 241 Kennedy Center/MRL Building

JANUARY 19

Neuroscience Graduate Seminar

Progenitor Diversity in the Embryonic Telencephalon: Causes and Consequences

Laura Lillien, Ph.D., Assistant Professor of Neurobiology, University of Pittsburgh
Co-Sponsor Vanderbilt Brain Institute
Wednesday 4 p.m.
Room 1220 MRB III Lecture Hall

JANUARY 20

Martin Luther King Jr. Commemorative Lecture and Special Lecture Series on Family Research Improving the Lives of Low-Income Parents and Children with Prenatal and Infancy Home Visits by Nurses

David Olds, Ph.D., Professor of Pediatrics, Psychiatry, and Preventative Medicine, University of Colorado Health Sciences Center
Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building



February

FEBRUARY 2

Grand Rounds

Developmental Stuttering: Its Speech, Language, and Emotional Origins

Edward Conture, Ph.D., Professor of Hearing and Speech Sciences and Vanderbilt Kennedy Center Investigator
Tedra Walden, Ph.D., Professor of Psychology and Human Development and Vanderbilt Kennedy Center Investigator
Light breakfast provided
Co-Sponsor Center for Child Development, Pediatrics
Wednesday 8 a.m.
Room 241 Kennedy Center/MRL Building

FEBRUARY 3

Special Lecture Series on Family Research The Family Contexts of Children's and Adolescents' Sibling Relationships

Susan McHale, Ph.D., Professor of Human Development, The Pennsylvania State University
Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building

FEBRUARY 10

Bridging Research to Policy and Practice Learning Disabilities Identification in Reading and Math

Doug Fuchs, Ph.D., and Lynn Fuchs, Ph.D., Nicholas Hobbs Chair in Special Education and Human Development and Vanderbilt Kennedy Center Investigators, and Donald Compton, Ph.D., Assistant Professor of Special Education and Vanderbilt Kennedy Center Investigator
Co-Sponsor Tennessee Council on Developmental Disabilities
Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building

FEBRUARY 17

Special Lecture Series on Family Research An Unanticipated Life: The Impact of Lifelong Parenting

Marsha Seltzer, Ph.D., Professor of Social Work and Director of Waisman Center, University of Wisconsin-Madison
Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building

FEBRUARY 23

Neuroscience Graduate Seminar Patterning Binocular Vision: Molecular Directives in the Developing Eye and Optic Chiasm

Carol Mason, Ph.D., Professor of Pathology, Columbia University
Co-Sponsor Vanderbilt Brain Institute
Wednesday 4 p.m.
Room 1220 MRB III Lecture Hall

March

MARCH 2

Grand Rounds

Developmental Disabilities Autism in Children Under 24 Months: Can We See It?

Wendy Stone, Ph.D., Professor of Pediatrics and Psychology & Human Development and Vanderbilt Kennedy Center Investigator
Light breakfast provided
Co-Sponsor Center for Child Development, Pediatrics
Wednesday 8 a.m.
Room 241 Kennedy Center/MRL Building



MARCH 16

Michael Meaney, Ph.D., James McGill Professor of Psychiatry and Neurology & Neurosurgery, McGill University, Quebec
Co-Sponsor Vanderbilt Brain Institute

Vanderbilt Brainstorm Community Lecture Genes, Parents, and Brain Development

Tuesday March 15 7 p.m.
Adventure Science Center

Vanderbilt Brainstorm

Lectures on Development and Developmental Disabilities

Maternal Care Stably Alters Chromatin Structure, Gene Expression, and Individual Differences in Defences

Wednesday March 16 4 p.m.
Room 241 Kennedy Center/MRL Building

MARCH 31

Special Lecture Series on Family Research Autism and Families: Genes and Environment

Susan Folstein, M.D., Professor of Psychiatry and Behavioral Sciences, Johns Hopkins University

Co-Sponsor Vanderbilt Center for Human Genetics Research
Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building

April

APRIL 1-JUNE 3

Arts and Disabilities Exhibit Untitled Group organized by Lain York

Monday-Friday 7:30 a.m.-5:30 p.m.
Lobby Kennedy Center/MRL Building

APRIL 3-9

Nashville Week of the Young Child

Vanderbilt and community sponsors
Events to be announced. See
kc.vanderbilt.edu/kennedy/woyc
Contact NAAEYC (615) 383-6292

APRIL 6

Grand Rounds Developmental Disabilities Sleep in Children with Autism

Beth Malow, Ph.D., Associate Professor of Neurology and Vanderbilt Kennedy Center Investigator

Light breakfast provided
Co-Sponsor Center for Child Development, Pediatrics
Wednesday 8 a.m.
Room 241 Kennedy Center/MRL Building

APRIL 6

Neuroscience Graduate Seminar Aneuploidy and Chromosomal Mosaicism in Brain Development and Function

Jerold Chun, M.D., Ph.D., Professor of Molecular Biology and Pharmacology, University of California-San Diego
Co-Sponsor Vanderbilt Brain Institute
Wednesday 4 p.m.
Room 1220 MRB III Lecture Hall

APRIL 21

Lectures on Development and Developmental Disabilities

The Autistic Brain: Perspectives from Affective Neuroscience

Richard Davidson, Ph.D., Vilas Professor of Psychology and Psychiatry, Director of the W.H. Keck Laboratory and Laboratory of Affective Neuroscience, University of Wisconsin-Madison

Thursday 4 p.m.
Room 241 Kennedy Center/MRL Building

APRIL 27

Ninth Annual Britt Henderson Training Series for Educators

Designing a Positive Behavior Support Plan to Better Serve Elementary School Students

Conclusion of year-long workshops for elementary schools.
Poster presentations and reception
Contact Elise McMillan, J.D. (615) 343-2540
Wednesday 4-6 p.m.
Room 241 Kennedy Center/MRL Building

May

MAY 4

Grand Rounds Developmental Disabilities International Adoption: The Child and the Family

Alice Rothman, M.D., Assistant Professor of Pediatrics

Co-Sponsor Center for Child Development, Pediatrics
Wednesday 8 a.m.
Room 241 Kennedy Center/MRL Building

MAY 4

Neuroscience Graduate Seminar A Basal Ganglia Circuit Essential for Vocal Learning

David Perkel, Ph.D., Associate Professor of Biology and Otolaryngology, University of Washington

Co-Sponsor Vanderbilt Brain Institute
Wednesday 4 p.m.
MRB III Lecture Hall

MAY 7

Cinco de Mayo Benefiting Susan Gray School

Fiesta, food, drinks, live music, live and silent auction!
Information Susan Gray School
(615) 322-8200
Saturday 7 p.m.
Vanderbilt Magnolia Circle Lawn

Sibshops

Sibshops

Children ages 7-12, with a brother or sister with a disability
Lunch provided. Advanced registration required.
Contact Teresa Turnbo, (615) 936-5118
teresa.turnbo@vanderbilt.edu
Saturday 10 a.m. – 2 p.m., Feb. 5 and April 16
Room 241 Kennedy Center/MRL Building

Community Events

Down Syndrome Association of Middle Tennessee

FEBRUARY 5, MARCH 5, APRIL 9, AND MAY 7 Circle of Friends

Recreational and social skills development program for individuals with Down syndrome ages 12 and over. Registration required.
10 a.m. – 3 p.m.
Westminster Presbyterian Church
Information DSAMT (615) 386-9002

Take Part in Research

The Vanderbilt Kennedy Center welcomes the participation of children and adults, with and without disabilities, in research studies. To view a list of projects seeking participants, see kc.vanderbilt.edu/studyfinder/ or call (615) 936-5118.