Moods do matter
Study ties mental abilities to interaction of emotion, cognitive skills

By GERRY EVERDING

I n a study of how human emotional states influence higher mental abilities, University cognitive neuroscientists have shown that watching even just 10 minutes of classic horror films or prime-time television comedies can have a significant short-term influence on areas of the brain critical for reasoning, intelligence and other types of higher cognition.

"To have the best mental performance and the most efficient pattern of brain activity, you need a match between the type of mood you are in and the type of task you are doing," said Jeremy Gray, Ph.D., a research scientist in the Department of Psychology in Arts & Sciences and lead author of the study.

"This is one of the first studies to really show that performance and brain activity are a product of an equal partnership or marriage between our emotional states and higher cognition."

Published March 19 in Proceedings of the National Academy of Sciences, the study is co-authored by Gray and University colleagues Todd S. Braver, Ph.D., assistant professor of psychology and director of the laboratory where the study was conducted, and Marcus E. Raichle, assistant professor of medicine and director of the Laboratory for Neuro Imaging and Physiology.

And they’re off! A pack of runners takes off from the starting line at the 15th annual Thurtene 5K Road Race. All proceeds from the March 23 event in Forest Park will help benefit Epworth, a St. Louis organization providing essential youth development services that help children overcome severe emotional and behavioral challenges. The first-place male runner was junior Brandon Middleton; the top female runner was Helen Alexander-Kratz, an alumna of the physical therapy program in the School of Medicine.

Thurtene Carnival moving to Athletic Complex lot

Thurtene Carnival, April 13-14, is celebrating its 68th anniversary. Due to construction on the east side of the Hilltop Campus, the oldest student-run charitable carnival in the United States is moving to its original home on the parking areas adjacent to the Athletic Complex and Aubusson-Bush Hall. Thurtene Carnival, April 13-14, is celebrating its 68th year as an important part of the University community.

Starting April 6, some parking areas will be closed to accommodate construction for the event. The parking areas in front of the Athletic Complex and the law school will be closed to all vehicles and foot traffic until April 16. Many of our students expect a great deal of time and energy to make this charitable carnival an event of which we are proud, and we appreciate the patience and understanding of the entire community for any inconvenience," Chancellor Mark S. Wrighton said.

Although Millbrook Garage and other parking areas will remain open, parking in the lots in front of Brooks Hall or at West Campus is recommended.

Chief of University Police Don Strom said, "The carnival is actually using fewer parking places at the Athletic Complex than it did at Brooking's."
5 faculty honored by St. Louis science academy

The Academy of Science of St. Louis will honor five faculty members at its annual Outstanding St. Louis Scientists Awards ceremony on Wednesday, May 1, at the Ritz-Carlton Hotel.

University President John S. C. Tersonberg said the honorees will be "vital to our understanding of the world and our role in it." He noted that their work is "essential to all areas of science, engineering and technology."

The five recipients are Carl Bender, professor of physics in Arts & Sciences; James H. E. Ternberg, professor of computer science in the School of Engineering and Applied Science; Pertti Virtanen, Ph.D., the Edward Mallinckrodt Professor of Chemistry; Karen L. Wooley, Ph.D., professor of anthropology in Arts & Sciences; and Karen L. Wooley, Ph.D., professor of chemistry in Arts & Sciences.

Bender is an expert in the field of quantum mechanics and has contributed to the understanding of the properties of elementary particles. He has received numerous awards for his work, including the Wolf Prize in Physics.

Ternberg is a distinguished scientist who has made significant contributions to the field of theoretical physics. He has been awarded the Nobel Prize in Physics for his work on the development of the renormalization group.

Virtanen is a leading researcher in the field of computer science, particularly in the areas of computational complexity and algorithm design. He has received several awards for his work, including the ACM Award.

Wooley is a renowned anthropologist who has made significant contributions to the understanding of human evolution. She has received numerous awards for her work, including the MacArthur Fellowship.

The awards ceremony will take place at 6:30 p.m. at the Ritz-Carlton Hotel in St. Louis. Tickets are available for $100, and proceeds will go to support the Academy of Science of St. Louis.

The Academy of Science of St. Louis was founded in 1899 to foster interest in science and to promote the advancement of scientific knowledge. It is one of the oldest continuously operating scientific societies in the United States.
Alzheimer’s-type changes in mice identified by blood test

BY GILA Z. RECHER

Researchers have for the first time used a blood test to identify Alzheimer’s-type changes in mice.

The test, developed by researchers at the School of Medicine and Eli Lilly and Co., predicts the amount of amyloid plaque in an animal’s brain, a hallmark of Alzheimer’s disease. The test may someday be able to definitively diagnose this disease in humans by examining a person’s brain after death.

“We don’t know if this finding is in the same ballpark as human Alzheimers disease,” said David M. Holtzman, M.D., the Charlottesville and Paul Hageman Associate Professor of Neurology and associate professor of molecular biology and pharmacology in the School of Medicine. “It does, however, provide a noninvasive means of detecting Alzheimer’s pathology even before clinical symptoms arise.”

Holtzman led the University’s research team, and Steven M. Paul, M.D., group vice president at Lilly Research Laboratories, led the Lilly team. University research fellow Ronald B. DeMattos, Ph.D., was first author; Lilly’s Kelly R. Rees, Ph.D., and Justina M. Strobel were second authors. The study was published in the March 22 issue of the magazine Science.

Recent studies have revealed pathological changes that can begin in the brains of Alzheimer’s patients 10-20 years before symptoms arise. For reasons not entirely understood, potentially dangerous amyloid beta (Ab) plaques begin to form in the brain. If enough Ab clumps together in the brain, it forms amyloid plaques, a key hallmark of Alzheimer’s disease.

The team examined 49 mice that had been genetically engineered to resemble the genetic abnormality similar to the genetic abnormality found in some families with a strong history of Alzheimer’s disease. All the mice developed plaques within a year, though to varying degrees. The researchers took advantage of these differences to investigate potential factors that predict the extent of plaque formation.

First, they measured baseline levels of two types of Ab in the animals’ blood, Ab and Abc. The mice were injected with m266 — an antibody that the team previously discovered draws Ab out of the brain and into the surrounding blood without harming the animals — and were periodically retested for blood Ab. After 24 hours, the researchers examined each animal’s brain tissue for plaques, focusing on two key regions involved in Alzheimer’s disease: the hippocampus and the cingulate cortex. Before m266 injection, the amount of Ab in the animals’ blood did not correlate to the number of plaques in their brains. But within five minutes of m266 injection, Ab levels increased dramatically and did correlate with the amount of brain amyloid. This suggests that blood Ab levels may reflect the progression of the disease unless the animal has been given m266.

According to DeMattos, blood Ab levels in humans also do not reflect amyloid plaques in the brain. “The truly novel part of our experiment is that a simple injection of m266 altered the metabolism of Ab and unmasked important correlations with brain pathology. Hopefully, we will be able to develop clinical tests using this technology.”

The team used its data to develop potential models for estimating amyloid levels in the brain. Several factors, including overall levels of Ab after m266 injection and Ab levels 24 hours after injection, accurately predicted the number of plaques in the brain. "This has obvious implications for developing a similar blood test for brain amyloid load in humans," Holtzman said. 

“Because we will not be able to detect an amyloid plaque in someone who has not begun to accumulate amyloid, we hope to predict the disease well before symptoms appear. Such a test also could distinguish individuals suffering from dementia caused by Alzheimer’s disease from people suffering from other conditions with similar neurological symptoms and might help us evaluate an individual’s response to particular medical therapies.”

Brain stimulation offers relief from Parkinson’s

BY GILA Z. RECHER

A family of St. Louis cardiologists broadcast Jack Buck’s idea to parkinsonian patients who participate in Parkinson’s disease now have another option for alleviating the disorder’s debilitating symptoms.

Neurologists in the School of Medicine and Barnes-Jewish Hospital are using a relatively new procedure based on deep brain stimulation to disrupt the signals that cause some of Parkinson’s disease’s most aggravating symptoms, including tremor, stiffness and its other symptoms.

The implanted device delivers continuous, high frequency electrical impulses to the brain. Buck had this device surgically implanted into both sides of his brain in 1998 at Barnes-Jewish Hospital South.

Previously used in the brain to control tremor, the new bilateral use of deep brain stimulation targets the subthalamic nucleus, one of the regions of the brain that controls movement and is overly active in people with Parkinson’s disease.

“People who have shown dramatic improvement, but who have also seen these other symptoms of the disorder,” said Fredy J. Revello, M.D., a neurologist in the University’s Movement Disorder Center. He noted that those patients who have undergone the procedure have shown dramatic improvement, but he cautioned that too many patients are good candidates for the surgery.

Drugs help to “unfreeze” the muscular system but often cause frequent, exaggerated involuntary movements. These side effects limit the functional benefit of medications. However, deep brain stimulation of the subthalamic nucleus relieves Parkinson’s symptoms with much lower doses of medication, reducing the risk of side effects.

“We’ve had remarkable success using this device to treat Parkinson’s patients,” said Joshua L. Dowling, M.D., assistant professor of neurological surgery. “Many return to a relatively normal, active life, with a significant reduction in their medication.”

Dowling and Keith M. Rich, M.D., associate professor of neurological surgery, already have implanted the device in more than 100 patients with Parkinson’s disease and other forms of tremor. They hope this new surgical option will become more accessible to patients and that insurers will more readily pay for the procedure now that it has gained FDA approval.

The device consists of a battery-operated generator implanted near the collarbone, which delivers an electric current through thin, coiled wires placed through each side of the brain. The generators, which are roughly the size of a chocolate-chip cookie, can be turned on and off or removed if necessary. Stimulation levels are adjusted according to individual needs.

In addition to its clinical uses, the deep brain stimulator provides a unique way to study the underlying causes and manifestations of Parkinson’s disease. Researchers at the medical school are combining angiography and deep brain stimulation to find out more about how the disease causes tremor, stiffness and its other symptoms.

Liposuction’s impact on type 2 diabetes examined in study

BY JIM DREYSEN

Excess abdominal fat increases the risk of hyperlipidemia, obesity, cardiovascular disease, diabetes and heart disease. School of Medicine researchers want to learn whether removing fat from the midsection might help reduce the risk of developing these chronic diseases.

Holtzman led the University’s research team, and Ronald DeMattos, Ph.D. (left), research fellow in neurology, and David M. Holtzman, M.D., the Charlottesville and Paul Hageman Associate Professor of Neurology, look at brain tissue of mice with Alzheimer’s-like plaques. Holtzman also is associate professor of molecular biology and pharmacology and an investigator in the Alzheimer’s Disease Research Center.

attempts to disrupt the subthalamic nucleus, one of the regions of the brain that controls movement and is overly active in people with Parkinson’s disease.

“Brain plaques are somewhat analogous to the plaques characteristic of atherosclerosis,” Paul said. “If you have a heart attack at age 65, the atherosclerotic process that caused that event probably started decades beforehand. Since we now know that Alzheimer’s pathology starts well before symptoms appear, we’re hoping it may be possible to develop a test that predicts the presence of amyloid plaques and, ultimately, the risk of dementia similar to performing an angiogram to predict an impending heart attack.

The team examined 49 mice with a mutation in the gene for neprilysin procyrine protein (APP) similar to the genetic abnormality found in some families with a strong history of Alzheimer’s disease. All the mice developed plaques within a year, though to varying degrees. The researchers took advantage of these differences to investigate potential factors that predict the extent of plaque formation.

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Copenhagen, winner of three Tony Awards, at Edison Theatre

By LIAM OTTEN

Tested loyalty and suspected betrayal among Old Friends crossing enemy lines with the fate of mankind at stake. In the few years that the stuff of fiction. In October 1941, German physicist Werner Heisenberg, a leader of Hitler’s atomic weapons program, made a covert trip to see his former mentor and colleague Niels Bohr, a half-Jewish Dane, at Bohr’s home in Nazi-occupied Copenhagen.

Reasons for the visit have long been speculated. Did Heisenberg seek to follow the Nobel laureate, and perhaps through him the Allies, of German progress? To uncover knowledge both might have had of the United States’ rival Manhattan Project? To reach some private understanding?

These questions lie at the heart of Michael Frayn’s tense, intellectual thriller Copenhagen, winner of three 2000 Tony Awards (including best new play) as well as best play honors from the New York Drama Critics’ Circle and The Drama League.

At 8 p.m., April 7-8, the Edison Theatre OVATION! Series and the Department of Physics & Arts in Science present a special two-evening engagement by the show’s leading company. Bohr (1885-1962) and Heisenberg (1901-1976) were central figures in the development of quantum physics. Bohr won the Nobel Prize in 1922 for his “twin style.” Heisenberg, a few years later, received the Nobel Prize in 1937 for his contributions to quantum theory and development of the Uncertainty Principle.

Yet when Hitler took power in the early 1930s, Heisenberg was one of the few top theorists to remain in Germany, despite the Nazi’s inclination of relativity and quantum theory as “Jewish physics” and personal attacks on Heisenberg himself as being “Jewish.” Over the years, there has been much debated speculation about whether Bohr and Heisenberg intended to slow or otherwise undermine the German bomb project and, after the war, it was even discovered that his energies were mainly directed toward building a nuclear reactor, rather than a weapon. Still, other accounts suggest Heisenberg was frankly uninterested in the Manhattan Project’s success.

Frayn, without pretending to solve any historical riddles, offers a variety of possible scenarios for what may have occurred between two old friends who found themselves on opposite sides of World War II.

Frayn is the author of 16 dramatic works, and Copenhagen is his eighth collaboration with director Michael Blakemore. Together they have received five Olivier Awards, and Frayn’s plays have won five Evening Standard and Evening News Awards. Frayn has also written nine novels, most recently Bloodline, shortlisted for the Booker Prize, as well as numerous screenplays and translations.

Blakemore made theater history at the 2000 Tony Awards by winning for his direction of both a play (Copenhagen) and a musical (Kiss Me, Kate). He has five previous best director Tony nominations, for Egg, Noises Off, City of Angels, Lettuce and Longing and Life."
Fiction writer Baker to read April 4
Be ILM OPEN
F iction writer Nicholas Baker will read from his work at 8 p.m. April 4 for The Writing Program Reading Series at the University.

The reading, which is free and open to the public, will be held at the Harlow Lounge, Duncker Hall, Room 201. A book signing will follow the reading, and copies of Baker’s works will be available for purchase.

Baker, originally from Palestine, is now living in his choice subject as his matter-in-residence — in both his fiction and his nonfiction,” said Marshall Klaiman, assistant professor of English.

“I simply don’t know of anybody anywhere else who does this. He’s a very beautiful, startling precision, but what he’s precise about is so minute, mundane and unexpected — overlooked by literature yet so essential to the way that at least some of us live our lives that his work and his agenda seem oddly winning, almost politically subversive.”


Baker is the editorial board of The American Scholar magazine and in 1997 received the Madison Grant Fund of America’s "Innovation Award from the National Endowment for the Humanities."

The Reading Series is sponsored by the Writing Program.

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Law school

—from Page 1

address the heavy debt loads students often bear and the extent to which these debt loads make it more difficult for our students to pursue public service careers. In May 2003 some 74 percent of the graduating law class bore a median debt load of $77,700. Our students were able to afford law school by other means. This decision was an aspiration of the School of Law's 1999 Strategic Plan. As our students and faculty and our alumni leaders in the School of Law have told me, implementing this program I greatly benefited from a detailed proposal to fund the project by Bob O'Hearn, a St. Louis businessman.

The Ad Hoc Committee recommended, and I adopted, the principle that LRAP funds be only available to students who work for employers who comply with the law school's nondiscrimination policy. This, among other matters, prohibits discrimination based on sex or sexual orientation. As an alternative, this principle would mean that students who work for the military, which does discriminate on the basis of sexual orientation, would not be eligible.

The backdrop of this issue was my desire to support the broader possible LRAP program. I sought to give any possible support for our students at the reduced interest rate loans for the School and to include all students (with the exception of those taking short-term jobs as judges). Had our School, like many others, provided limitations to eligible to a more discrete set of jobs, the issue would not have arisen.

The nondiscrimination policy at the law school was an aspiration of the School of Law's 1999 Strategic Plan. Plans, unusually, were not developed by our faculty and our alumni leaders in our school. In order to implement this program I greatly benefited from a detailed proposal to fund the project by Bob O'Hearn, a St. Louis businessman.

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**Notables**

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**Chao-ping Yang, M.D.,** assistant professor of medicine, has received a three-year, $100,000 grant from the Arthritis Foundation for research titled "Role of Dipeptdyl Pepti-"dases and Serine Proteases in Inflammatory Diseases."

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"Using a psychological technique called functional magnetic resonance imaging, Gray and colleagues recorded brain activity as people performed difficult cognitive tasks just after watching short, emotional videos. The lingering effects of the videos had remarkably specific influences on the levels of brain activity."

"The prefrontal cortex was jointly influenced by a combination of mood state and cognitive task, but not by either one alone. Located just under the temple and slightly higher, near the corner of the forehead, this influence was thought to be critical for higher mental function."

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**Obituary**

Nelson I. Wu, professor emeritus, 82

Nelson I. Wu, Ph.D., an internationally recognized authority on East Asian language and culture, died Tuesday, March 19, 2002, in Brookline, Mass. He was 82. Wu, the renowned Mallinckrodt Distinguished University Professor of the History of Art and Chinese Culture in Arts & Sciences, came to the University in 1965, becoming a key figure for the promotion of Asian art at St. Louis and, in 1971, a founder of the Asian Art Museum. He was named professor emeritus in 1984.

A native of China, Wu was a best-selling author in China and Taiwan, writing under the pen name Lu Chia-ying, "Never Long in Evil" (1958), about the lives of four young people during the Second Sinop-...
But the architectural designs of Adrian Luchini are also committed to the functional needs of each project.

By LIAM OTTEN

Adrian Luchini designs buildings the way an artist sketches or scientists run experiments carefully observing, responding to conditions, and allowing explanations to fit results — rather than the other way around.

Over the past decade, Luchini, the newly appointed Raymond E. Maritz Professor in the School of Architecture, has emerged as one of St. Louis' most distinctive practitioners, employing bold angles and unexpected geometries to create contemporary architectural environments for clients around the world.

Gesture and movement are communicated with draftsmen-like clarity, yet Luchini is committed to fundamental questions of site and program: Where is the building located? Who is it for? What activity does it house?

"Talk of personal "style" is dismissed as "missing the point altogether."

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Unexpected geometries, bold angles

Adrian Luchini, the Raymond E. Maritz Professor and director of global studies in the School of Architecture, works in studio with architecture student Jessica Morgant. "The phenomenology of a place, the experience of it — these principles inform what I do as an architect," Luchini says.

Adrian Luchini's latest work, now under construction, is a sleek array of glass and steel that also will include a new Greyhound/Amtrak terminal — and a bullet train ready for launch. Situated downtown near Union Station and Sardis Center, the structure — part of a $27 million complex that also will include a new Greyhound/Amtrak terminal — will link those services with MetroLink and B & St. Louis buses as well as train, rental cars and even an airline ticketing and baggage check.

"It's not philosophy in an abstract way, it's much more, a social, a positive, an instructive way of thinking and doing."

Luchini began his architectural education at the Universidad Catolica in Santiago, Chile, the father of the modernist movement in Latin America, a university that "is a place of great theoretical ferment." And "there wasn't a lot of work," he remembers. 

"I knew that I wanted to teach," he recounted, adding with a smile, "and I don't even think it's fair to say my first semester was a disaster, in a way. ... Within a couple of years, though, Luchini had taken second prize in the Manhattan Waterfront International Competition and received, with Harvard classmate Dirk Denison, his first significant architectural DNA. Yet the building activity while floating gracefully was of the contemporary world.

The result? "Urban design jobs, large planning commissions, international work ... It was fascinating and I think that's very different — an inquiry that continues today."

Architects sketch or scientists like a lookout's nest and plainly visible to officers in secure sections like a bullet train ready for launch. Situated downtown near Union Station and Sardis Center, the structure — part of a $27 million complex that also will include a new Greyhound/Amtrak terminal — will link those services with MetroLink and B- St. Louis buses as well as train, rental cars and even an airline ticketing and baggage check.

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Luchini's latest work, now under construction, is a $5.6 million, 25,000-square-foot police station for the city of Wentzville, Mo., and the graceful lines and protectively swooping roof clearly bespeak his architectural DNA. Yet the building is perhaps best characterized by its glass-enclosed dispatch area, perched over the main entranceway like a loft's nest and plainly visible to officers in secure sections as well as visitors in the main lobby.

Luchini's hands, that small feature that appears as an almost philosophical statement of democratic ideals of freedom between the public and those who serve them are clear and transparent, every day reminder of the human face on either side of authority's divide. It's not philosophically a great abstract way, but the kind of conclusive feeling you have when you lay eyes on it.

"It's not philosophy in an abstract way, it's much more, a social, a positive, an instructive way of thinking and doing."

Luchini observed. "The work, if it is genuinely universal and of its own time, will be autobiographical as well, so you don't need to wonder about everything else."

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Published in several architectural journals.

"That put me back into the world of practice, although my fundamental occupation was still teaching," Luchini remembered.

"And that's how a building became sort of marginal thing on the side."

Nevertheless, Luchini and Denison trained again for science. lakefront Pk. Station in Detroit — which has a dual identity by shaping the building and I like being here."