

# Road Trip! APS Visits UVA

February 01, 2008

It's not often that adults get to take field trips. Once we are grown, the prospect of a day away from the ordinary usually fades along with our memories of the school buses that took us on those adventures. But the APS staff was invited to visit the psychology department of the University of Virginia, and in December we enthusiastically piled into vans and cars to drive from APS headquarters in Washington, DC for a field trip to the UVA campus some 115 miles to the southeast in Charlottesville, VA (Here's one change from our youth – "100 Bottles of Beer on the Wall" has been replaced by "in-flight" movies, at least for those of us lucky enough to get a ride in Lou Shomette's van.)

Divided into color-coded groups by our amazingly organized host for the day, Barbara (Bobbie) Spellman, past APS Secretary and Professor of Psychology at UVA, we toured several labs, saw a wide range of cutting-edge research in process, and experienced first-hand the passion and drive of the psychological scientists we serve. What follows are descriptions of just some of the fascinating research we learned about that day.

## Across the Lifespan

After a brief welcome by Spellman, Department Chair David Hill, and Assistant Chair Donna Hearn, staff divided up for their first set of tours, which focused on understanding cognition across the lifespan. One set of staffers walked a short distance down the hall to visit the lab of Assistant Professor Chad Dodson, who specializes in the cognitive effects of aging. Dodson's work is changing the traditional view of age-related memory decline, the notion that older adults' memory troubles stems from the inability to remember information. Instead, Dodson has shown that older adults are not unable to remember events or information, rather they actively *misremember* them. In addition, they are very confident in these memories, even when they are wrong. Dodson's next project focuses on the links between this kind of memory impairment and possibly early detection of Alzheimer's disease.

While some staff contemplated their impending decline, Judy DeLoache took others back in time.

DeLoache, the William R. Kenan, Jr. Professor of Psychology at UVA, is a leading researcher in the field of child development. Moving toy cars and small chairs aside, staff made themselves at home in her office where DeLoache showed a series of videos of children performing a "scale error."

Psychologists use this term to describe what occurs when children treat a miniature version of an object as if it were its larger counterpart. DeLoache chalks up this error to the child's lack of "dual representation." Young children do not draw on their previous knowledge of the object, and, hence, don't realize that the smaller version is in fact different from the original and should be treated differently.

## Socializing Psychology Style

After contemplating age-related research, APS staff toured several social psychology labs. In one, Jon Haidt, an Associate Professor, and graduate student Gary Sherman study morality and moral emotions, such as awe, gratitude, and admiration. Sherman, who studies the adaptive functions of specific social and moral emotions, had staff members participate in a study on "cuteness." Staff were shown a slide show of dogs and cats, some young and some old, and then asked to play a short round of the game

“Operation.” Sherman’s research shows that women are consistently better at removing the patient’s bones than were men after viewing the cute pictures (e.g. kittens and puppies). He posits an evolutionary basis to these findings, in that women become more alert and their motor movements are more fine tuned in the presence of something cute, as they would upon seeing and subsequently caring for an infant.

Shige Oishi, an Associate Professor in the department, has focused his research on basic issues of happiness such as “what is happiness?”, “what makes people happy?”, and “is happiness a good thing?” Moreover, Oishi sets out to investigate individual, cultural, and even historical variations in happiness. To do so, he uses a wide variety of tools from questionnaires to measuring cortisol levels throughout the day. One popular method among the staff was Oishi’s specialized Palm Pilots, which page participants intermittently throughout the day to fill out a short self-report. Regardless of the methodology, Oishi’s research helps elucidate the foundations and variations of human happiness.

Staffers also met with Implicit Association Test (IAT) innovator and Assistant Professor Brian Nosek. Along with Tony Greenwald and Mazarin Banaji’s labs, Nosek runs the virtual laboratory Project Implicit, where both researchers and the public can participate in and learn about IAT research. Nosek described the development of the site in 1998. The site developers created it to be an educational tool and, according to Nosek, they would have been happy if 100,000 people visited over the life of the site. However, 50,000 people took IATs on the site in the first two days and the IAT was on its way to becoming the psychological research juggernaut it is today. Nosek’s current focus is developing an online international research resource, where researchers from all over the world can share methods, materials, and data.

### Out of the Lab

We regrouped to hear about how UVA psychologists bring empirically driven research to real world settings. Professor Dan Willingham authors a column in *American Educator*, a quarterly magazine published by the American Federation of Teachers. In the column, “Ask the Cognitive Scientist,” Willingham addresses common educational quandaries utilizing sound research in cognitive science. But are readers amenable to receiving advice from a research psychologist? Not always, says Willingham. Unlike medicine or engineering, psychology is susceptible to folk knowledge, and individuals – educators especially – can fancy themselves as experts simply by referring to their own experiences, making his work both more difficult and more crucial.

Professor Dick Reppucci is another faculty member committed to bringing psychology out of the laboratory. Over the years, Reppucci has used psychological science to answer questions about the juvenile justice system, particularly about the incongruity between juvenile crimes and punishment. In past decades, Reppucci has seen public perceptions of children who commit crimes become increasingly negative, as evidenced by the creation of state laws allowing children to be tried as adults. But, as Reppucci’s research shows, “kids are not adults,” and with further inquiry and input from science, policy can be changed to reflect this.

### On the Technological Edge

In the afternoon, several APS staffers were lucky enough to be escorted to the University of Virginia Hospital by Assistant Professor James Coan to see one of the University’s MRI scanners first-hand. Coan’s innovative use of fMRI, as well as EEG, has added new depths to our understanding of the neural underpinnings of emotion. In his most widely disseminated recent work, subjects reported that holding a stranger’s hand lowered their stress while under threat of mild shock in the scanner and that holding a spouse’s hand lowered it even more, a result that was corroborated by the fMRI results. Coan

is currently working to generalize these results to other types of relationships (up next is a study involving gay and lesbian couples) and doing groundbreaking research recording video of subjects inside the scanner. Using a specially designed camera with no magnetic parts (there are only two in the world), Coan will be able to track emotions not only with subject report and fMRI results, but also with their facial expressions.

Back in the psychology department, Professor Steven Boker's lab was bursting with electronics and APS staff members. Boker uses motion tracking equipment to measure the movements of individuals as they engage in conversation to study interpersonal coordination while speaking to another person. A few staffers stepped into a booth to speak with Boker's avatar (a digital representation of himself created using the motion tracking equipment) while the rest of the group watched the facial expressions and movements during the conversation. In his initial research, Boker has found that there are gender differences in movement during a conversation. For example, women tend to nod their heads more often than men do while speaking and being spoken to.

Some of the coolest technology was on display in Professor Dennis Proffitt's Perception Lab. Proffitt asked for a volunteer in the APS group who had a fear of heights. The foolish person who raised his hand was rewarded by being fitted with a virtual reality headset and made to step up on a small platform. The headset then provided a realistic (and terrifying) illusion of balancing on a narrow girder being lifted 12 stories off the ground. Proffitt explained that this particular setup was used in conjunction with Bethany's Teachman's research on fears and phobias. To the amusement of his fellow guinea pigs, the volunteer was then told to jump from his perch (which was really just two inches off the ground). Proffitt's varied research also includes work on how physical exertion, such as walking on a treadmill or carrying a backpack, affects spatial perception. After walking on a treadmill, another blindfolded APS staff member marched halfway across the room, all the while believing he was marching in place. The APS visitors were also given a demonstration of "mind-reading" technology Proffitt and his students are testing to help totally paralyzed individuals communicate, and even paint, via a sensor linked to a computer that detects changes in blood flow on the surface of the brain.

### Clinical Tales

If you have any phobias, especially of spiders, stay clear of Assistant Professor Bethany Teachman's lab. Teachman and her graduate students walked staffers through some of the experiments conducted to understand the cognitive processes that contribute to the development and maintenance of anxiety disorders. Graduate student Joshua Magee showed staff how he uses the IAT to investigate processing of unwanted thoughts. Sheri Steinman, also a graduate student, led staff through an experiment designed to induce the feeling of a panic attack. Teachman casually pulled out one of her many tarantulas and spoke of her work investigating the cognitive processes of patients with spider phobias.

### Let's Talk Bio

Alev Erisir, an Associate Professor ushered staff past the biology wing of the Gilmer Hall into her psychobiology lab, in which she studies the biological mechanisms of brain plasticity. Why do some neurons, like those used in processing visual input, lose their ability to change in response to the environment after a certain period? Erisir uses immuno-electron microscopy, tract-tracing, and confocal microscopy to investigate what makes some neurons endlessly adaptable and others not.

While some staffers toured Erisir's lab, others were down the hall in Associate Professor Cedric Williams' lab. Williams studies the effects of hormones released during emotionally arousing events on memory. Why and how do we seem to remember stressful or exciting events from several years ago better than what we had for dinner last night? By manipulating the arousal states of rats and subjecting

them to a variety of memory tasks, Williams has determined that neuroendocrine hormones released during arousing events, like adrenaline, activate the Vagus nerve, setting off a chain of events that ultimately effects the memory centers of the brain including the amygdala and the hippocampus. Professor Jerry Clore also investigates the effects of emotion on memory, but in humans. After watching a rapid succession of words flash across their computer screens, two APS participants watched a comedy routine by Jerry Seinfeld, and then were asked to hold their hands in a tray of ice water for a few minutes, before being given a memory test for the words they saw. Clore explained that various emotionally arousing experiences (such as a funny video or a painful ice experience) around the time of memory encoding affect the ability to recall items later. His research has shown that positive experiences actually facilitate memory for overall impressions but not details, whereas participants in a less happy frame of mind are more accurate when remembering details.

After all that and a small snack for the road, we collapsed into our cars with our brains and bellies full for the trip back to DC. (Multiple reports of sleeping during the “in-flight” movie reached the *Observer*, but could not be confirmed by those involved.)

This article reflects only a portion of the fascinating research APS staff experienced at UVA. In addition to these researchers, we are also grateful to faculty members Rachel Keen, Tim Wilson, Amori Mikami, Lee Llewellyn, Dave Hill, and Peter Brunjes and to countless graduate and post-doctoral students for sharing their work with us.