

INsight

News From Notre Dame's **Department of Psychology**

Faculty Grant Proposals Being Funded at Impressive Rate

It's something of a "chicken or the egg" scenario: Do many scholars apply for a grant because it's prestigious, or is it prestigious because many scholars apply for it? One thing is for certain, though: Getting chosen doesn't come easy.

"The success rate varies from one government program to another, but all are highly competitive," says Ken Garcia, who is associate director of the Institute for Scholarship in the Liberal Arts, a research and teaching support office that serves faculty in Notre Dame's College of Arts and Letters. "At the National Institutes of Health [NIH], for example, only those researchers whose review scores put them in the top eight to 10% of applications are funded."

This makes the frequency with which Notre Dame Psychology faculty have been winning external awards—both from government sources like the NIH and private foundations—particularly noteworthy. In the last five fiscal years, over 50% of the proposals with a Department faculty member serving as principal investigator received funding. The 90 awards won during this time have translated into more than \$24 million for faculty research.

In addition to the NIH, the funding agencies have included the American Psychological Association, the National Science Foundation, and the U.S. Department of Education.

Just Getting Started: Quantitative Program Continues Rapid Rise



Maxwell

No matter what the subject, "youngest" and "best" aren't two adjectives that regularly associate with each other, as how long something has been around tends to place an upward bound on how highly we're willing to value it.

But that hasn't stopped the Department of Psychology's Quantitative Program from giving the old "Rome wasn't built in a day" mentality a run for its money.

Consider that when Scott Maxwell, Matthew A. Fitzsimons Professor of Psychology, came to Notre Dame in 1982 as an associate professor, he was the Department's lone quantitative faculty member and would be for some years to come. It wasn't until Fall 1999 that the Program was formally organized, which, according to Maxwell, makes it one of the youngest in the country.

In its short existence, however, it has seen three of its faculty recognized with the Society of Multivariate Experimental Psychology's prestigious Cattell Award for early career accomplishment, including 2007 winner Gitta Lubke; since 1990, no other university has had more than two recipients of this honor.

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Lubke

"If you look at the list of names who have won that award previously, it's a great recognition that my name would be included in this list," says Lubke, an associate professor. Notre Dame has had a total of four winners—Maxwell, Steve Boker, Ke-Hai Yuan, and Lubke, although Boker accepted a position at the University of Virginia last year. Even so, the Department is home to more

recipients of the award than any other psychology department in the United States.

"It says the obvious, I think, that we are one of the leading programs in the country with respect to the faculty we have..." Lubke notes about the distinction. That cohort also includes Anre Venter and Guangjian Zhang, and with the addition of three assistant professors this fall, the Department now has one of the largest quantitative groups among its peers.

"I think the year has come that the Quantitative Program at Notre Dame is going to be very much on the map in the U.S.," Lubke says.

Because of the increasing level of methodological sophistication required in all branches of psychological research, quantitative expertise is at a premium. The new faculty have specific interests within their diverse research agendas that make them particularly good fits for the Department.

Hiring Alison Cheng, for instance, addresses the area in which the Program has had the most difficulty adding a specialist: item response theory, which is more or less the math behind the measurement of psychological traits. Cheng, who completed her doctorate at the University of Illinois at Urbana-Champaign, primarily uses the theory to examine latent traits, focusing on aptitude and proficiency in an educational context.

Lijuan Wang received her Ph.D. from the University of Virginia. Her work in longitudinal data analysis will contribute both to what has become a defining aspect of quantitative psychology at Notre Dame and to the Department's strong Developmental Program.

Like Wang, Johnny Zhang earned his Ph.D. from Virginia and will play a central role in the Department's efforts in longitudinal research. He's also part of a small contingent of psychologists using cutting-edge Bayesian methods, a computer-intensive alternative to classical statistics that allows researchers to integrate new findings with what they already know.

It was no small feat attracting these three scholars in one recruiting season. Maxwell says a recent American Psychological Association task force reported there were twice as many faculty openings in quantitative psychology as there were new Ph.D. recipients. This, he believes, makes it even more important to maintain an environment that engages all faculty but especially those just starting out in their careers.

"The whole Department is a very collegial group of people," Maxwell says, "and from the day I arrived, I think everybody supported everybody... It's always been a place that has appreciated what junior faculty have to offer and has high standards but also provides support that helps people to meet those standards."

That the quantitative faculty and their counterparts in the more applied areas do indeed get along is a point Lubke feels is worth emphasizing. Historically, the field of psychology has been characterized by tension between the two. At Notre Dame, she's found that the Quantitative Program truly is "embedded" in the Department.

She has similar praise for the University in general. Quantitative psychologists often must branch out beyond their own departments to gain access to the data they need, and she describes Notre Dame as "very flexible" when it comes to allowing faculty to take research leave and collaborate with scholars elsewhere.

"I can see the benefits for my career," Lubke says. "They are tremendous."

In addition to the current faculty, Maxwell credits Boker and Cindy Bergeman, chair of the Department and a professor in the Developmental Program, for helping set the Quantitative Program on such a firm foundation. As it continues to grow, he'd like to see the Program become more involved in undergraduate education and other quantitative initiatives, ideally enhancing opportunities for interdisciplinary teaching and research in statistics.

Given how much progress has been made since he first set foot on campus, those seem to be relatively modest goals.

"Now, I think we really have developed a reputation around the country of training [graduate] students in our own Program and in the other programs in the Department in a way that makes them distinctive on the job market," Maxwell says. "Several of our students in other programs are now teaching graduate-level quantitative courses at places where they've taken academic positions. And the idea that that could've happened in 1982 was just unthinkable."

Instant Insight: News and Notes From Around the Department

The Department is home to faculty and doctoral programs in cognitive, counseling, developmental, and quantitative psychology. Here's a quick look at recent highlights in each area.

Cognitive

- One of 18 Notre Dame faculty members to receive a 2008 Rev. Edmund P. Joyce, C.S.C., Award for Excellence in Undergraduate Teaching, Professor **Laura Carlson** was recently appointed an associate editor of the American Psychological Association's (APA) *Journal of Experimental Psychology: Learning, Memory, and Cognition*. Carlson is also an associate editor of the journal *Memory & Cognition*.
- Supported by a grant from the U.S. Army, graduate student **Windy McNerney** spent the past summer as an intern at the NASA Ames Research Center in Mountain View, Calif. There, she worked on the development of both new cockpit display symbology to help pilots land in situations when they cannot see and methods to improve the control interface of unmanned aerial vehicles. At Notre Dame, McNerney and her advisor, Professor **G.A. Radvansky**, are involved with a project studying the molecular basis of memory formation (see "Making Memories," page 4).

Counseling

- A content analysis article published in the APA's *Journal of Counseling Psychology* recognized Professor **Don Pope-Davis** as one of the leading scholars of multicultural counseling over the past two decades. Vice president and associate provost at Notre Dame, he ranked as the third-leading contributor to the multicultural counseling competencies literature between 1986 and 2005.
- **Scott Monroe**, William K. Warren Foundation Professor of Psychology, served as president of the Society for Research in Psychopathology for 2007–08. He gave his presidential address on "Life Stress and Depression: A New Era for Stress-Biology Interactions" this fall at the organization's annual meeting.
- Associate Professor **David Smith** was recently awarded a four-year, \$450,000 National Institutes of Health grant for his part in a project titled "Spousal Expression of Criticism: Hostility and Adjustment among Chronic Pain Patients."
- After spending a year as a lecturer there, **Mike Lau** (Ph.D. 2008), who also completed a quantitative minor, accepted an assistant professor position at Teachers College, an affiliate of Columbia University.

Developmental

- Associate Professor **Darcia Narváez** has been elected a fellow of the American Psychological Association.
- Together with Notre Dame colleagues Ronald Nuzzi and Clark Power as well as the University of Dayton's Thomas Hunt, **Narváez** and Professor **Dan Lapsley** edited *Moral Education: A Handbook* (Praeger Publishers, 2007). In addition, Narváez and Larry Nucci of the University of Illinois at Chicago co-edited the *Handbook of Moral and Character Education* (Lawrence Erlbaum Associates, 2008).
- **Elizabeth Blodgett Salafia** (Ph.D. 2008) won both an Eli J. and Helen Shaheen Graduate School Award as Notre Dame's top graduating doctoral student in the social sciences and a Dondanville Family Graduate Award for excellence in teaching in the University's College of Arts and Letters. Completing her Ph.D. in only five years, she accepted an assistant professor position at North Dakota State University.
- The Program's recent graduate placements also include those for **Carol Akai** (Ph.D. 2008), who is Martha Bennett '73 Assistant Professor of Early Childhood and Developmental Disabilities at Connecticut College, and **Peggy Keller** (Ph.D. 2006), now an assistant professor at the University of Kentucky after completing a postdoctoral fellowship at Auburn University.

Quantitative

- An associate editor from 2001–2007, **Scott Maxwell**, Matthew A. Fitzsimons Professor of Psychology, became editor of the APA journal *Psychological Methods* earlier this year.
- Former graduate student **Pascal Deboeck** (Ph.D. 2007), who spent the past academic year as a postdoctoral research associate in the Department, started as an assistant professor at the University of Kansas this August.
- For more information on the Program and its **three new faculty members**, see "Just Getting Started" on page 1.

Making Memories: The Science Behind Our Past

One way to introduce you to Professor G.A. Radvansky's research is to ask a simple question:

What did you do last weekend?

Fortunately, this isn't a Monday morning interrogation, so if the highlight was doing laundry or mowing the lawn, you won't encounter any disappointed faces.

So, have your answer? That's good, although Radvansky wouldn't be concerned so much with what you did as he would be with what is allowing you to remember it.

A specialist in mental model theory, which seeks to explain how we understand situations and events, he is especially interested in the way memory works. His expertise in this area is helping to advance a project at Notre Dame that is using nanotechnology to learn more about the molecular basis of memory formation.

The overall process is fairly well-documented. To describe it, Radvansky starts by focusing on the relationship between two neurons, the cells that make up the nervous system and communicate with each other via chemical and electrical impulses. He points out, however, that transmission of these neural messages is not automatic, as the triggering of neuron A by an external stimulus—say a football game on television—does not guarantee neuron B will fire.

In those instances when the first neuron is successful in stimulating the second, their connection is strengthened in what is known as long-term potentiation (LTP). Radvansky says that for information to stick as a memory, such as recalling the sight of the ball as it moved through the air on a touchdown pass, it must be spread across thousands of these enhanced connections, which represent a complex of reactions among many more neurons.

It's something that happens during LTP that motivated this particular project, which he is pursuing with colleagues from the

Departments of Biological Sciences and Chemical and Biomolecular Engineering.

A neuron doesn't touch the one next to it but instead sends its signals over the synapse, a small gap that functions like a one-way street, meaning an impulse can only move from neuron A to neuron B and not the other way around. Radvansky notes that this suggests that B would change during LTP while A would stay the same. That's at least half right; it turns out they both change, and this project aims to figure out how neuron A knows to do so.

Paul Bohn, Schmitt Professor of Chemical and Biomolecular Engineering, and his team are building an instrument called a zero mode waveguide that Radvansky says uses principles of light waves to monitor individual molecules directly, an ability previous neuroscience

techniques have lacked. It will be used to observe molecular activity within rat hippocampus cells, which are being grown by Windy McNerney, a graduate student in Psychology's Cognitive Program.

Radvansky says the group is exploring two potential explanations for changes in the neuron sending the impulse, including the possibility that after the reaction, it takes back in less of the neurotransmitter glutamate than would otherwise be expected.

Whatever the answer, finding it will improve our understanding of what goes on in the nervous system when memories are created. Among its applications, that knowledge could be useful not only in developing strategies to lessen the impact of learning disabilities but also more severe memory problems, such as dementia.



Bergeman

doing so would be akin to describing a two-hour movie after missing the first 90 minutes.

"Many of the diseases of old age—e.g., heart disease, diabetes—may be due to combinations of...stress experiences that in fact happened much earlier in the life course," says Bergeman, who is studying 40- to 60-year-olds to learn more about how people approach the complex demands of midlife. "It is also the case that the protective mechanisms that we are interested in are also developed much

Bergeman Extends Research on Aging In

earlier in life and are maintained and expanded as we age."

Her "Notre Dame Study of Health and Well-Being," to which she's added the midlife component, initially focused on people in the 60 to 75 age group. Having received funding for preliminary data collection from the University's Institute for Scholarship in the Liberal Arts, it is currently supported by two multiyear grants—totaling \$1.8 million—from the National Institute on Aging.

The study tracks participants for five years, asking them to complete annual questionnaires that assess characteristics such as health, psychological well-being, and perceptions of stress. In the first, third, and fifth years, each participant also keeps a daily diary for 56 days.

Bergeman, a developmental psychologist and the Department's

For Clinical Psychologist, Culture Counts

As clear as it may be that we're not all exactly alike, the field of psychology has often been characterized by a "one-size-fits-all" approach when it comes to theory, research, and practice. That is changing, however, with the growth of the multicultural subfield, in which scholars like Assistant Professor Irene Park are showing, as former U.S. Surgeon General David Satcher put it, that "culture counts" in clinical/counseling settings and in how psychologists study human behavior.

"Granted, there are some psychological concepts that may be found cross-culturally," Park says, "but more often than not, there are important within-group and between-group variations that must be considered. These variations may be due to gender, ethnicity, class, religion, etc., and all of these influences are broadly encompassed by culture.

"We all live in a cultural matrix, and unraveling that complex matrix to

understand its influence on behavior—that is what my research begins to touch upon."

The director of the Department's Culture and Family Processes Lab, Park says its work primarily focuses on ethnic minority or at-risk groups. The lab's current studies fall into two main areas, exploring emotion regulation as it pertains to mental health among Asian-American adolescents and the attitudes of Asian-American high school and college students toward mental illness and treatment.

"Ultimately, this research is geared toward building the knowledge base on culture, family functioning, and mental health so that prevention and intervention efforts targeting underserved populations can be improved," says Park, who received funding for one of the studies from the National Institute of Mental Health.

Her lab provides numerous opportunities for undergraduates to work both with her and graduate students,



Park (front, second from right) with students

including Paul Youngbin Kim, a fifth-year doctoral student who coordinates the lab's day-to-day operation. Undergraduates typically assist with participant recruitment as well as data collection and entry but also occasionally present workshops and research findings to community and professional audiences.

These kinds of experiences are invaluable preparation for graduate school, and Park has seen her students meet with a great deal of success when applying to Ph.D. and M.A. programs in psychology.

"I attribute this to the high caliber of students at Notre Dame who seek out research opportunities in not only my lab but in the Psychology special studies program in general," she says.

In addition to her work at Notre Dame, Park has served as visiting assistant professor and visiting research fellow at Vanderbilt University. There, she collaborated on a study of 240 sixth graders and their mothers, which was designed largely to test whether four different methods commonly used to assess the family environment really measure the same thing, a comparison she says had been missing from the empirical research literature.

Earlier this year, she and her three coauthors published their results in the *Journal of Family Psychology*, concluding that the methods converge and likely tap into similar constructs related to the quality of the family environment. They also found that this environment is significantly associated with levels of depressive symptoms among moms and their adolescent children.

to Midlife

chairperson, says faculty in its "world-class" Quantitative Program (see related story, page 1) provide the tools necessary to unearth trends indicated by the raw data collected through the questionnaires and diaries. This type of analysis is innovative in and of itself; combining it with insights gained from in-person interviews, which she and her student team periodically conduct with a subset of the participants, makes for a truly distinctive brand of research.

"Most studies use one or the other approach," Bergeman says. "Few studies use both."

Preliminary findings, which will soon be available at <http://adalab.nd.edu>, suggest strategies to help people age better have to be tailored to specific circumstances and aren't universal.

"Our work has shown that it is the fit between the attribute of the individual...

such as personality, and the aspects of the environment—familial [and] community support factors—that may result in the most optimal health outcome," Bergeman says.

She notes, however, that getting midlife participants is a challenge because, ironically enough, they're too busy handling all those competing demands, the very dynamic she wants to explore.

"For all we know about the aging process, we still don't know very much," Bergeman says. "Is it the luck of the draw? The spin of the roulette wheel? Or is it something that we control?"

If you're between the ages of 40 and 60 and interested in participating in Bergeman's study, please e-mail her at cbergema@nd.edu for more information.

Nicholson Wins Graduate Fellowship While Helping Families “Get the Lead Out”



Nicholson

Jody Nicholson first learned about the Department’s Developmental Program when she was writing an honors thesis as an undergraduate at the University of Texas at Austin. In that paper, she widely cited the work of Mark Cummings, Notre Dame Professor of Psychology and a driving force behind the University’s Center for Children and Families (see related story, page 7).

Less than six years later, Nicholson is now a Psychology doctoral candidate leading her own research through the Center.

“Get the Lead Out” is a community-based project which aims to assess the effectiveness of lead-poisoning intervention for families with young children who have low levels of lead exposure,” she says. The study made an impression on the American Psychological Foundation, which earlier this year awarded her a prestigious Elizabeth Munsterberg Koppitz Child Psychology Graduate Fellowship.

Her project, the findings from which will form the core of her dissertation, involves 140 low-income families. Of these, 80 have children whose blood-lead levels were above the national average but still below the minimum needed to qualify for government assistance to reduce them. She says that although such levels aren’t deemed significant enough to require intervention from local health departments, they have been associated with developmental difficulties in young children.

“Get the Lead Out” has provided these families with cleaning kits and professional environmental risk assessments—paid for by nearly \$60,000 in research funding received by Nicholson—as well as basic education about ways to prevent lead exposure. The kids’ blood-lead levels are being tracked for six months following the introduction of these measures. At the end of the data collection period, Nicholson will also analyze parents’ understanding of risk factors to see what they’ve gained from participating.

The children of the other 60 families, who did not have elevated levels, form a comparison group and will allow her to isolate the effects of the “sub-threshold” lead amounts on development.

“Another ‘product’ of my project that won’t be published in a journal is all the students that have worked on the project with me,” says Nicholson, who has been guided throughout the process by John Borkowski, Andrew J. McKenna Family Professor of Psychology. “Watching them learn through this applied experience and learning through their perspectives has been one of the things I’ve enjoyed most.”

Nicholson will receive her Ph.D. this May and has started applying for postdoctoral fellowships. She sees herself staying in an academic setting so she can teach undergraduates while building upon the research program she’s started at Notre Dame.

“I am very interested in continuing to work with families in poverty, and I would like to expand beyond just examining lead...into looking more broadly at the home environment and the effects of environmental neurotoxins such as mercury and radon on development.”

Incoming Graduate Students, Fall 2008

Cognitive

Susan Gundersen—B.S., Florida State University (2007)

Jeremy Hillyard—B.S., Susquehanna University (2008)

Jared Miller—B.A., Baylor University (2008)

Megan Trucano—B.A., University of Notre Dame (2006)

Counseling

Rebecca Cheung—B.S., Michigan State University (2004)

Elizabeth Hendriks—B.A., Michigan State University (2006)

May Kim—B.A., UCLA (2007)

Megan Nava—B.A., California State University, East Bay (2007)

Developmental

Kathleen Bergman—B.A., Calvin College (2007)

Jeff Brooks—B.A., Indiana University South Bend (2008)

Sara Fulmer—M.A., Brock University (2008); B.A., Brock University (2006)

Christine Guasto—B.A., University of Colorado at Boulder (2003)

Brenda Jackson—B.A., Northwest Nazarene University (2008)

Marie Claire Keultjes—B.S., Hillsdale College (2007)

Paul Stey—B.A., Ohio State University (2008)

Autumn Wyant—M.A., Villanova University (2008); B.A., University of Notre Dame (2006)

Quantitative

Zijun Ke—B.S., Peking University (2008)

Keke Lai—B.A., Guangdong University of Foreign Studies (2005)



Inside the eMotion & eCognition Lab

The Department of Psychology's eMotion & eCognition Lab, led by Associate Professor Chuck Crowell and Research Assistant Professor Michael Villano, studies the impact of facial dynamics—how faces look and move—on our ability to recognize, remember, and respond to others during normal conversations and interactions.

1. The process starts with the recording of a face engaged in conversation.
2. The next step is to “train the face” by entering information about it into the computer. Because facial features differ, this has to be done individually for each person.
3. Face-training creates a model consisting of 68 points that allows the computer to recognize the face and track how it moves in real time.
4. Understanding how faces move and how people react to those movements makes it possible to design more effective non-human entities, like robots and avatars. The team is also interested in how humans interact with such creations. Rudy, the lab's own robot, is shown here.

Center Uses Scholarly Knowledge to Help Children and Families

Ever since it began in 2002, Notre Dame's Center for Children and Families has drawn on the Department of Psychology's expertise to provide programs that help people.

“We're trying to help families function better,” says Mark Cummings, Notre Dame Professor of Psychology, who started the Center along with John Borkowski, Andrew J. McKenna Family Professor of Psychology.

That aim has focused the Center's attention as far away as Northern Ireland, where it's involved in a joint study examining the impact of ethnic and sectarian conflict on children, and as close as the local community, where it's exploring how families handle internal conflict and helping them to communicate more effectively.

The Center is particularly concerned with marital relationships, Cummings says, because they have a significant impact on the overall health of families. That's why a main focus of its applied psychology is to improve marital communications, giving partners more happy, stable, and supportive relationships.

Cummings says good marriages also promote good parent-child relationships, which in turn help young people better navigate their adolescent years and the temptations posed by alcohol, drugs, and sex.

“We just want to help the happiness and well-being of children and their parents,

as well,” he says, adding that conflict resolution plays a key role in that happiness.

“With regard to marital conflict, how do you handle conflict now?” he asks. “It's not an easy thing. You have to be careful of how you express anger. You have to be supportive of your partner. But also address conflict; you can't just try to avoid it. It's better to be angry, but in a constructive way.”

Cummings says the Center, which is affiliated with the Department, holds itself to a high standard when helping people. Each recommendation it makes—and each program it sponsors—draws on rigorous research that in 2007–08 was supported by more than \$3 million in multiyear grants.

Take, for example, a program it has used to serve families with children in elementary school. Over several weeks, families come to see PowerPoint presentations, play games, and test their newfound knowledge on *Jeopardy!*-style quizzes, all of which are tailored to train them in conflict resolution and hone their relationship-building skills.

Couples also receive individual training in constructive conflict management, Cummings says, before they are given a topic to discuss and subsequently observed.

After a family has finished all its sessions, representatives conduct evaluations. They've found that the

program has continued to help children some two years after they and their parents have participated in it.

The Center is currently working on several projects, including a study on childhood development that has followed youngsters from ages five to 14. It hopes to expand its programs to serve a broader range of clients, including single-parent families.

“Every single thing we say to parents is based on a study or multiple studies,” Cummings says. “It's all about giving them research-based information that will help them. We help them work through things better; we talk about how to resolve conflicts, and we walk them through it step-by-step.”

Mark Cummings, Notre Dame Professor of Psychology, was one of two faculty members University-wide to win a 2008 James A. Burns, C.S.C., Graduate School Award, which recognizes distinction in graduate teaching or other exemplary contributions to graduate education. He and members of his Me and My Family Lab, including several current and former graduate students, published more than 20 articles in peer-reviewed journals in 2007–08.



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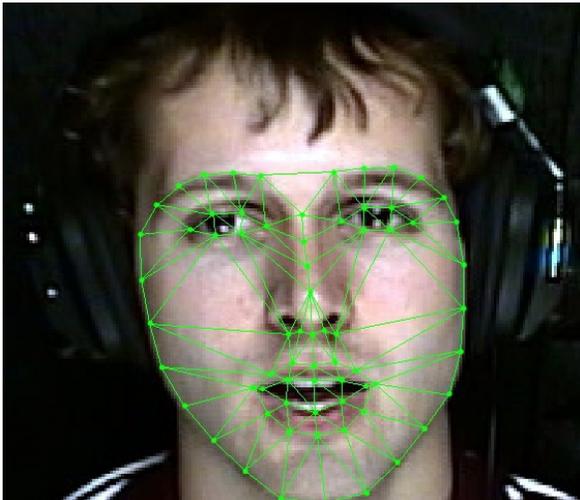
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