

# The Psychological Science Agenda



A PUBLICATION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION SCIENCE DIRECTORATE  
 VOLUME 21, NUMBER 8, SEPTEMBER 2007  
[www.apa.org/science/psa](http://www.apa.org/science/psa)



## Psychologists Receive NIH Pioneer, New Innovator Awards

### TABLE OF CONTENTS

<i>Science Brief: The Rational Mind: Thin Colonies of Reason Amid a Savage World</i>	<b>2</b>
<i>Executive Director's Column: Continuing Education for Scientists</i>	<b>3</b>
<i>From the Science Student Council: Feeling Rejected? Graduate Students and the Journal Article Review Process</i>	<b>4</b>
<b>National Institutes of Health Seeks Applications for Loan Repayment Programs</b>	<b>5</b>
<b>Advanced Training Institutes Provide In-Demand Instruction in Emerging Technologies</b>	<b>6</b>
<b>PsycNET III: All-In-One Search Tool</b>	<b>7</b>
<b>San Francisco Plus Psychological Science: A Great Combination!</b>	<b>8</b>
<b>Psychological Scientists Speak Out on NIH Peer Review</b>	<b>9</b>

In what feels a lot like a slam-dunk, two psychologists were named this week as recipients of two of the most prestigious awards given by the National Institutes of Health (NIH).

Lisa Feldman Barrett, Professor of Psychology at Boston College, with appointments at Harvard Medical School and Massachusetts General Hospital, was among the 12 scientists recognized as Pioneer Award recipients by NIH Director Elias Zerhouni at a symposium on September 19. This is the 4th year the Pioneer Awards have been given. Each recipient receives \$2.5 million in direct costs over a period of five years. The Pioneer Awards are given to scientists at any career stage. Recipients were selected through a special application and review process, using more than 250 experts from the broad scientific community, with final recommendations made by the NIH Director's Advisory Committee.

Sociologist Peter Bearman, Columbia University, was also among the Pioneer Award winners.

The New Innovator Awards, also announced on September 19th, are meant for new scientists who have not yet received an NIH regular research (RO1) or similar grant. Kristen C. Jacobson, Assistant Professor of Psychiatry at the University of



Lisa Feldman Barrett

Chicago, was the only psychologist of the 29 recipients for this award.

"I am beyond delighted to receive this award! It will allow my lab and my collaborators to move forward with several innovative research programs to investigate what are emotions, both as psychological and as natural phenomena," commented Barrett.

"All of the research that we will conduct is inspired by the idea that the psychological events that people call 'emotion' are conceptual acts, emerging from the interaction of two more basic psychological processes that map to networks in the brain. The first is a primitive or core affective

...continued on page 11

## SCIENCE BRIEFS

# The Rational Mind: Thin Colonies of Reason Amid a Savage World

by Edward A. Wasserman



Ed Wasserman is the Stuit Professor of Experimental Psychology at the University of Iowa, where he has taught and conducted research since 1972. Wasserman is a Past-President of American Psychological Association Division 6 (Behavioral Neuroscience and Comparative Psychology) and is the current President of Division 3 (Experimental Psychology). His research and teaching center on the principles of learning, memory, and cognition in humans and nonhuman animals. Ongoing research topics include: visual object perception; associative learning and causal perception; same-different conceptualization; and categorization. Wasserman's research has been funded by: the National Institute of Mental Health, the National Science Foundation, the Human Frontier Science Program, and the Great Ape Trust of Iowa.

### The rational mind: What is it?

"People are smart." That's how a corporate commercial tries to flatter those who would take advantage of its services. There's certainly no disputing humans' ability to profit by experience and to engage in adaptive behavior. There's also no disputing that we are also prone to repeat our errors and to engage in maladaptive behavior. So, how smart are we really? Are we truly endowed with a rational mind, what René Descartes called the "universal instrument?"

To many theorists, the rational mind is a thing or process that: (a) guides sensible or logical action, (b) avoids emotion or bias in judgment, (c) maximizes some good or function, and (d) produces universally optimal results (see Kahneman, 2003 for further elaboration).

A survey of discussions about the rational mind suggests that this idea can be approached from many different angles. My own approach is comparative. It asks: Is the rational mind peculiarly human (see Hurley &

Nudds, 2006 for more on rationality in animals)?

A seed for a comparative approach can be gleaned from the words of Wilford O. Cross. In his 1964 Prologue to *Ethics*, Cross wrote that, "The rational mind of man is a shallow thing, a shore upon a continent of the irrational, wherein thin colonies of reason have settled amid a savage world."

If signs of the rational mind are so unlikely to be seen in a notoriously savage world, then we must ask, "Why?" One answer is that humans and animals have adapted to highly complex and constantly changing environments by deploying behavioral and cognitive processes of a decidedly mechanical sort. These mechanical processes of adaptation are usually, but not always effective; critically, they need not be rational.

### Reason Amid a Savage World

The notion that mechanical processes might join with rational processes in producing adaptive action is far from

new. Indeed, it was advanced by the Greek philosophers Plato, Aristotle, and Galen, and it was advocated by the French philosopher René Descartes.

Plato hypothesized an appetitive soul (emotion or desire), a spirited soul (will or volition), and a rational soul (mind or intellect). The rational soul was believed to be exclusively human; Plato likened it to a "charioteer" who adeptly controls his appetitive and spirited "steeds." Aristotle hypothesized a nutritive soul (characteristic of plants, animals, and humans), a sensitive soul (characteristic of animals and humans), and a rational soul (characteristic of humans alone and residing in the heart). Galen hypothesized a vegetative soul (in the liver), an animal soul (in the heart), and a rational soul (in the brain).

Descartes famously distinguished the involuntary, unconscious, and unlearned reflexes of the body from the rational soul of the mind. Both humans and animals display mindless,

...continued on page 13

# EXECUTIVE DIRECTOR'S COLUMN

STEVEN BRECKLER, EXECUTIVE DIRECTOR FOR SCIENCE

## Continuing Education for Scientists

Continuing education is a professional fact of life for practicing psychologists. Indeed, most state licensing boards require a specified number of continuing education hours each time a psychologist applies for license renewal. The same is true for many fields of professional practice. It is an effective way for practitioners to stay current and in touch with the latest science and newest interventions.

For those of us whose professional life is focused on the science of psychology, and who spend their time doing research rather than practice, the concept of formal continuing education requirements is foreign. We keep up with the latest science and newest interventions by reading journals, writing papers, training students, and attending conferences. We don't worry (nor do we need to worry) about accumulating continuing education hours.

Seen another way, science professionals are constantly engaged in continuing education. That's what we do. The main difference is that no formal professional requirements dictate that we accumulate a certain number of continuing education hours or credits.

Of course, the kind of continuing education pursued by scientists is relatively narrow and self-serving. We keep up with the latest science and innovation within our own, immediate areas because that's what informs our immediate research needs. Once we leave graduate school, we tend to quickly lose touch with advances in other parts of the discipline. We have little time and little need to further develop these aspects of our education.



In fact, researchers do have a need for continuing education that cannot be satisfied through the normal activities of their labor. That's why the APA Science Directorate developed its Advanced Training Institutes (ATIs) – to provide continuing education in new areas of technology, methodology, and theory.

At the risk of aging myself, I'll confess that at the time I was in graduate school we had no idea of how internet technology could be leveraged to collect data; that magnetic resonance imaging technology could be harnessed to learn about cognition, emotion, and behavior; or that geographic information systems could provide powerful tools for understanding complex social phenomenon.

If I want to learn about any of these things, or even understand their potential utility for my own research goals, I would need to go back to school. I would need some formal instruction, homework, and laboratory experience. I can't just pick up a book and expect to learn enough. If I'm lucky, I will have access to some of these resources nearby. But most of do not have such access, and so

the education we seek will require considerable effort, time, and money.

This is precisely what the APA Advanced Training Institutes do. Indeed, we have organized and hosted ATIs on functional MRI, on internet research methods, and on Geographic Information Systems (GIS), among others. These are typically week-long seminars, with expert instructors who also provide specialized facilities. The "students" often travel great distances to attend, leaving their labs and families for a week or more. This kind of continuing education requires a great deal of motivation, planning, and financial support.

It seems to me that our collective needs for this kind of scientific continuing education are underestimated and underutilized. APA will continue to develop Advanced Training Institutes, but we need to find a more efficient way to support them and to make them broadly accessible.

One possibility is to devote more of our professional meetings and conventions to scientific continuing education. The APA annual convention offers a great venue for this kind of education – lots of people already traveling to a central location, availability of meeting space, and tremendous efficiency for organizers. I'm certain that other models can be developed as well.

The point is that scientists and researchers should more completely embrace the concept of scientific continuing education. It will enrich our skills and abilities as individuals, and will it enhance the discipline by expanding the pool of shared knowledge. ■

## From the Science Student Council



The Science Student Council is a group of nine graduate students who spend a couple of weekends a year with the Science staff, advising us on programs and activities that would benefit graduate students in psychological science. This month, and every month for the next year or so, the students will present useful information that other graduate students need to know! Visit the Science Student Council page ([www.apa.org/science/apasscweb.html](http://www.apa.org/science/apasscweb.html)) to learn more about the activities of the SSC.

Front row – Marcy Boynton, Suzi Dean, Kelly Dunn, Janet Tomiyama (chair). Second row – Paul Poteat, Jennifer Brielmaier, Camilla Hileman, Felix Thoemmes, and Marc Berman.

## Feeling Rejected? Graduate Students and the Journal Article Review Process

by Marcella H. Boynton, University of Connecticut

As academics, we have all dealt with rejection, whether it be for a manuscript, grant application, symposium submission, poster submission, or all of the above. Even though we all know what it is like to have our work rejected, in some ways it never becomes easier. Despite reminding ourselves that rejection happens to everyone, this can be of little comfort when feeling the frustration and angst that comes on the heels of a rejection notice. Interestingly, some research indicates that social rejection and physical pain are associated with some of the same regions of the brain (Eisenberger, Lieberman, & Williams, 2003), clear physiological evidence that the pain felt following a rejection is often, to us at least, very real indeed.

After this initial reaction to rejection, the next question often is: What should I do now? The good news is that a lot can be done; rejection is simply one of several steps on the path to ultimately getting your work accepted. Below is our best advice for how to turn the rejections you experience in the publication process into stepping stones that lead to a productive academic career.

*Give yourself some time.* After reading the operative line in an action editor's letter indicating that your paper has not been accepted for publication, it is often advisable to set the reviewer feedback aside for at least a few days. This "cooling off period" allows you to emotionally adjust to the news. Then, when you finally do read the reviewer feedback, you can process it critically rather than through an emotional lens.

*Decide on your next strategy.* Now that you've read the reviewer feedback, re-read the action letter and think about how to proceed. Discuss the feedback with your co-authors (if there are any) and decide what the next strategy should be for getting your paper published. Consider the action letter's words carefully; often the language of the letter strongly indicates whether the editor feels that you should revise and resubmit or submit elsewhere. Even if an editor extends an opportunity to resubmit, careful consideration should be made as to whether you wish to make the changes that would be required (e.g., you may not want to add two more studies to your paper before seeing it in print).

*Respond to all of the feedback in a professional manner.* Whether or not

you decide to resubmit to the same journal, make sure to respond to all of the reviewer feedback. Although some feedback might feel like a personal attack, it is rarely meant that way. Reviewers donate their services as a courtesy to their colleagues, and many put significant thought and effort into their feedback. As a consequence, you owe it to yourself, your co-authors, and the reviewers to respond to all of the comments in some way. This may be accomplished by making the suggested changes, clarifying a particular section, or by adding a point that addresses a reviewer's question or criticism.

If you are resubmitting to the same journal, make sure to describe in your cover letter to the editor how you have responded to each of the concerns. Although a passage may seem perfectly clear or a point self-evident to you, as the first author you are burdened with knowing too much about the research being described. As a consequence, you need to rely on the eyes of others to see the occasional errors, inconsistencies, and disorder of your writing. Also, remember that your reviewers

...continued on page 12

# Got Debt? National Institutes of Health Seeks Applications for Loan Repayment Programs

by Karen Studwell

With growing concerns about attracting and maintaining the next generation of scientists, NIH is undertaking an effort to attract additional applications for its five Loan Repayment Programs (LRPs), which pay up to \$35,000 per year of qualified educational debt as well as the corresponding federal taxes for post-doctoral scientists as they pursue research careers. The new campaign, "Strength in Numbers," seeks to reach out to individuals from a broader scope of biomedical and behavioral disciplines, including psychology. NIH currently funds LRPs in the following five areas: Clinical Research, Clinical Research for Individuals from Disadvantaged Backgrounds, Contraception and Infertility Research, Health Disparities Research, and Pediatric Research.

Since the inception of the NIH's LRPs in 2000, APA's Science Government

Relations Office staff have worked with the NIH Director's Office to track the success of psychologists competing for those funds. Based on the NIH data, psychological researchers have traditionally been well-represented in the LRPs. On average, 22 percent of the new and continuing awardees in the past four years are psychologists and 25 percent of those supported psychologists are minority researchers. Perhaps not surprisingly, psychologists continue to be essentially absent in the area of contraception and fertility research, but they continue to play an important role across the four other programs. Please refer to tables 1 and 2 for details.

When unveiling the Strength in Numbers campaign last week, NIH Director Elias Zerhouni stated, "It is the energy and enthusiasm of promising postdoctoral scientists that pushes forward the frontiers of medical research and discovery. We

hope that our continued investment in new scientists today, through the Sixth Annual Loan Repayment Program application cycle, will provide the support these researchers need to meet the nation's health challenges of tomorrow."

To qualify, applicants must possess a doctoral-level degree, devote 50 percent or more of their time to research funded by a nonprofit organization or government entity (federal, state, or local), and have educational loan debt equal to or exceeding 20 percent of their institutional base salary. Applicants must also be U.S. citizens or permanent residents to be eligible. NIH is currently receiving applications for the LRPs and the deadline for applications is December 1, 2007. More information about the LRP eligibility requirements and how to apply can be found at: <http://www.lrp.nih.gov>. ■

**TABLE 1. FUNDED PSYCHOLOGISTS: 2003-2006**

Fiscal Year	Totals		Clinical Research		Pediatric Research		Clinical Research-Disadv. Bkgds.		Health Disparities Research		Contraception & Infertility Research	
	Total Psych. Funded	Total Funded	Total Psych. Funded	Total Funded	Total Psych. Funded	Total Funded	Total Psych. Funded	Total Funded	Total Psych. Funded	Total Funded	Total Psych. Funded	Total Funded
2003	276	1193	181	727	53	299	4	33	38	121	0	13
2004	308	1407	202	834	46	313	5	43	55	200	0	17
2005	316	1600	191	942	62	393	5	35	57	209	1	21
2006	375	1651	231	945	62	403	7	36	75	245	0	22
<b>Totals</b>	<b>1275</b>	<b>5851</b>	<b>805</b>	<b>3448</b>	<b>223</b>	<b>1408</b>	<b>21</b>	<b>147</b>	<b>225</b>	<b>775</b>	<b>1</b>	<b>73</b>

**TABLE 2. FUNDED PSYCHOLOGISTS MINORITY DISTRIBUTION: 2003-2006**

	2003	2004	2005	2006
American /Alaskan Indian	4	5	5	6
Asian	9	7	11	15
African American	29	29	30	44
Hawaiian/Pacific Islander	0	0	3	0
Latino	13	25	25	28
<b>Totals</b>	<b>55</b>	<b>66</b>	<b>74</b>	<b>93</b>

# Advanced Training Institutes Provide In-Demand Instruction in Emerging Technologies

by Nicolle Singer

In July and August of 2007, the Science Directorate sponsored the final two Advanced Training Institutes of the year. During the summer's five APA training programs, 131 professors, researchers, and graduate students of psychology received high quality, cutting edge training. Most of the summer's ATIs were filled to their limits, and we expect demand to remain high as researchers increasingly embrace the new technologies targeted by these exciting programs. The first three ATIs of the year were reported in the June PSA (<http://www.apa.org/science/psa/jun07atil.html>).

From July 9-13, the ATI on Performing Web-Based Research was held at the University of Northern Iowa. Due to the importance of internet-based research in psychological research, this program attracted an eager group. Attendees could imagine harnessing the power of the internet to enrich their samples by collecting detailed data from the comfort of participants' own homes. They learned ways to avoid common problems in online research, such as insuring independent responses by tracking IP addresses or using high hurdle techniques. The instructors at this ATI drew from their

vast experience conducting net-based studies and coordinating web-based subject pools to discuss web-based research's potential and limitations.

The workshop included lecture, discussion, and lots of hands-on computer time. Even though many attendees had no prior experience with html, they all left with more confidence in their ability to post surveys to the web and a more thorough understanding of this method of data collection. Most participants had created a functioning web survey during the week-long institute. The four expert instructors were on-hand throughout the week to answer questions and provide personalized advice for the use of the web in research.

The Science Directorate offered a new ATI on Geographic Information Systems (GIS) for Psychological Research on August 16 in San Francisco, CA. GIS technology has revolutionized the fields of geography and epidemiology. It offers incredible potential for psychology, but so far this potential has not been deeply tapped. This ATI therefore introduced psychologists to the new methodology and provided numerous examples from

active research programs. This special one-day ATI took place the day before the annual APA Convention. The ATI began with definitions, discussions of fundamental spatial concepts and the nature of spatial data, and the domain of GIScience. Readings and a bibliography were distributed and discussed, as were samples of popular GIS data analysis software.

The four expert instructors discussed the background of psych-geography collaborations and promising areas for the future. More than just mapping technology, GISc can enrich datasets and lead to new research questions. The instructors have pioneered the application of GIS to spatial analysis, wayfinding, and cognitive maps, and used the unique ATI format to stress the technology's potential. Advanced presentations focused on methods of particular interest to social-scientists, such as cognitive cartography, spatial information processing, and the use of Google Earth data in research.

Be sure to check the Science Directorate website (<http://www.apa.org/science/ati.html>) in early December to learn about the 2008 line-up of ATIs! ■

## Deadline for Comments for the Revision of the 1999 Standards for Educational and Psychological Testing Quickly Approaching

The Standards for Educational and Psychological Testing (the Standards) are frequently cited in federal and state legislation, court decisions, and other policy and legal documents as the preeminent professional and scientific guidelines on the development, use and validation of psychological and educational tests and assessments. A management committee has been appointed by the three organizations that sponsor the Standards, the American Educational Research Association (AERA), the American Psychological Association, (APA) and the National Council for Measurement in Education (NCME) to oversee a revision of the document. As a first step in the revision process, the management committee has posted a call for comments at: <http://www.apa.org/science/revisions.html>. Individual APA members and representatives of APA affiliated groups are welcome to submit comments on line through October 15, 2007. Please contact Marianne Ernesto, Director Testing and Assessment, APA Science Directorate at [mernesto@apa.org](mailto:mernesto@apa.org) if you have questions or need additional information concerning the Standards revision process.

# PsycNET III: All-In-One Search Tool

by Janet Soller, APA Office of Publications and Databases

Ever get tired of running the same searches in multiple databases? With the recent launch of APA PsycNET III, you may never have that headache again. In July, 2007 APA's Office of Publications and Databases (OPD) and Information Technology Services (ITS) released this new delivery platform. PsycNET III delivers content from APA's five databases, PsycINFO, PsycARTICLES, PsycBOOKS, PsycEXTRA, and PsycCRITIQUES in one search result.

Designed for the researcher, PsycNET III has specific features to provide and save finely-tuned search results. For instance, at the top of the PsycNET search page are tabs for a variety of search purposes. Besides an "Easy" Google-like search and "Advanced" search tabs, you find a citation finder searchable by either journal or author, a cited reference tool which demonstrates how many times and where works are cited, a place to save and manipulate your searches, and maintains a "list" of your saved records-- just like a "shopping cart" on commercial websites.

The origin for PsycNET platform grew out of APA's desire to bring full-text psychological science to APA members. APA staff spent two years conducting usability studies, watching users search, talking to librarians and designing cross-function specifications.

"The redesigned APA PsycNET is more than just a few new ideas or new technologies," says Eva Winer, an APA product manager, "The new features on PsycNET go well beyond the traditional Boolean search. We hope that this enhanced functionality, coupled with a clean, fresh look and feel, will add an element of discovery to PsycNET search and will allow users to explore the full depth of APA content in new and more meaningful ways."

That's certainly proven to be the case for APA member and PsycNET beta tester, Joel Levin, PhD, who used the platform to conduct literature searches for his research at the University of Arizona and in his role as APA's Chief-Editorial-Advisor.

"I have spent a fair amount of time presenting PsycNET with a variety of bibliographic challenges and it has withstood the challenges," says Levin. "It seamlessly provides access to all requested information with a few keystrokes and a click, including complete author, article, journal, and reference detail, along with citation-history tracking. In years past, integrating all of these components would have been a time- and labor-intensive undertaking for psychological researchers. As the cliché goes: Now that PsycNET is here, how did we ever live without it?"

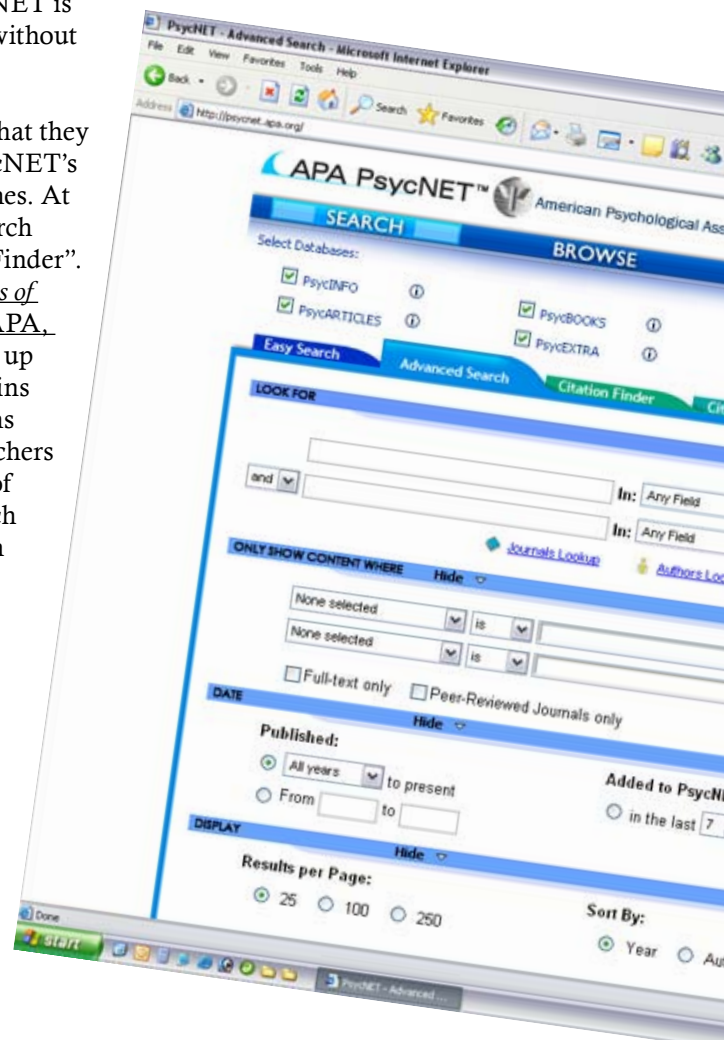
Other users have reported that they particularly appreciate PsycNET's ability to "fine-tune" searches. At the top of the PsycNET search page is a tab called "Term Finder". Connected to the "*Thesaurus of Psychological Index Terms*" (APA, 2007) a researcher can look up terms by what the term begins with, what the term contains and term hierarchy. Researchers can also sharpen their use of terms in the advanced search by using keywords and then pulling from the results articles by categories such as authors, populations, methodologies, date of publication and more.

APA members can access PsycNET III several ways. They can log on through their institution library, or through membership electronic packages. Members who purchase the Gold or

Platinum electronic packages offer members full and immediate access the PsycNET platform, its searching and bibliographic tools as well the full-text content. Visit <http://my.apa.org/access.html> for more information about APA members' pricing options.

"So many people across APA came together to make PsycNET III an extremely productive search platform," says Gary R. VandenBos, PhD, the APA Publisher, "PsycNET III is a fantastic example of what APA members can achieve for its members when we all come together." ■

*For PsycNET III training or customer service, please, contact Susan Hillson at [shillson@apa.org](mailto:shillson@apa.org). Please direct institutional purchase inquiries to Neil Lader at [nlader@apa.org](mailto:nlader@apa.org).*



# San Francisco Plus Psychological Science: A Great Combination!

Participants must have had their weather “blindness” on, because even those remarkable August days in San Francisco did not keep participants from attending exceptional science programming at the APA Convention.

Highlights of the meeting included invited addresses by such notables as

Albert Bandura, Martha McClintock, Martin Seligman, and Paul Slovic, as well as symposia on such topics as working with Institutional Review Boards, opportunities for translational research, and “diversity science.”

Distinguished Scientific Contribution Award recipients Peter Bentler, Marilyn Brewer, Karl Joreskog, and

Paul Rozin received their awards and presented their award addresses (recipient Jean Mandler was unable to attend). Early career awardees Robert Gray, Chris Fraley, and Matthew Lieberman received awards and chaired sessions (recipients Jorn Diedrichsen and Patrik Vuilleumier were unable to attend).

The APA Science Student Council’s long-awaited “data blitz” session was very successful – 18 students summarizing their research papers, each with just two slides and two minutes! Their topics ranged from “Temperament Predicts Stereotypy,” to “Applying Cognitive Psychology to Enhance Educational Practice.” Cheers for all the participants erupted at the end of the session.

The Science Directorate featured a new activity at the Convention: a one-day Advanced Training Institute (ATI), taking place the day before the Convention began. “Geographic Information Systems for Psychological Research” drew 40 participants, who learned some of the basics of this new technology and how it could be applied to their own research projects. The tuition for this training opportunity was kept low (\$50) in order to make it a truly affordable option. A pre-Convention ATI will be scheduled for the 2008 APA Convention in Boston; the topic will be announced in late fall. Visit [www.apa.org/science/ati.html](http://www.apa.org/science/ati.html) for regular updates on all ATIs.

The 2008 APA Convention will be held August 14 – 17 in Boston, Massachusetts. Submissions are due to APA Divisions on December 3 (see [www.apa.org/convention07/](http://www.apa.org/convention07/) for details). Look for news on science programming plans and registration information over the next few months. ■



APA Distinguished Science Award recipients at the award ceremony.



APA Science Student Council “data blitz” presenters.

# Psychological Scientists Speak Out on NIH Peer Review

By Pat Kobor

The National Institutes of Health (NIH) recently asked for comments about its peer review system—what works and what doesn't. APA spread the word through division listservs, encouraging psychologists to respond. Here is a sample of the concerns and suggestions that psychological scientists shared with us.

"My main concern with the peer review process is with the selection and qualifications of the reviewers. I understand it is becoming harder for NIH to attract senior investigators into the peer review process and many times applications are reviewed by reviewers who in reality are not peers of the applicant, either because they are not expert in the field of the application, or because they have never obtained a competitive application, or are in reality junior investigators. My suggestion is that NIH should find a way of providing incentives to senior investigators to form part of the review

process. This could be done in a number of ways; either the criteria for selection of reviewers becomes more specific and stringent, or ways are developed to motivate senior experts." *Glorisa Canino, PhD*  
*University of Puerto Rico*

"... No one without tenure should be on a study section. Takes too much time better spent getting work out. Until the entire system is changed, I think it's cruel to ask an assistant professor to do such a huge service job." *Evelyn Satinoff, PhD*  
*University of Delaware*

"... Although we can certainly offer our personal opinions of what works (and what doesn't) from a consumer or reviewer's point of view, we can also encourage the NIH to make use of the extensive empirical and theoretical work on decision making. One example is the article by Hal Arkes in

Psychological Science that encourages the use of disaggregated ratings...: (<http://www.blackwell-synergy.com/doi/abs/10.1111/1467-9280.01410>)." *Noel Brewer, PhD*  
*University of North Carolina*

"... Reviewers should be paid reasonable consulting rates for both the time spent in reviewing proposals and attending the panel meetings. In exchange, reviewers should not submit proposals to be reviewed by the panel on which they serve during their tenure on that panel." *Norman Hoffmann, PhD*  
*Evince Clinical Assessments*

"The most important aspect of an application is creativity, but it is probably insufficiently rewarded. It is extremely hard to get innovative research funded because NIH is

...continued on page 12

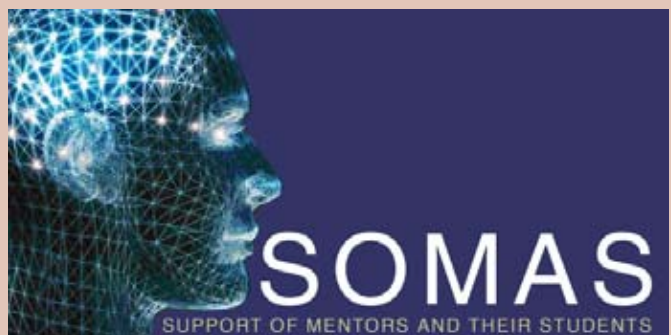
## Summer-Research Grants Program Announced

UP TO \$10,000 PER AWARD TARGETING JUNIOR FACULTY IN THE NEUROSCIENCES AT PREDOMINANTLY UNDERGRADUATE INSTITUTIONS

SOMAS: Support of Mentors and their Students in the Neurosciences

The SOMAS Program is pleased to announce the 2008 SOMAS summer fellowship program designed to support junior faculty (untenured/pre-tenure assistant professors, typically within 5 years of having completed Ph.D. and postdoctoral training) in the neurosciences seeking to launch research programs with undergraduate student collaborators. Faculty from predominantly undergraduate institutions will be eligible for awards of up to \$10,000 to cover a supply budget, summer student housing, faculty and student stipends, and travel expenses to the joint Annual Meetings of the Society for Neuroscience and Faculty for Undergraduate Neuroscience.

Application deadline is December 1, 2007, with awards made in early February for the 2008 summer research effort. Up to six awards will be made for the 2008 program. Faculty members with little experience in grant-writing or those from institutions serving women and minority groups underrepresented in the sciences are particularly encouraged to apply. For more information, go to [www.somasprogram.org](http://www.somasprogram.org).



## Grants Available for Scientific Conferences, Proposals Invited

The Science Directorate is currently seeking proposals for research conferences in psychology. The purpose of this program is to promote the exchange of important new contributions and approaches in scientific psychology. More than 90 conference grants have been awarded to date. The next deadline for applications is **December 1, 2007**.

Grant money ranging from **\$500 to \$20,000** is available for the scientific conference. Proposals will be considered using such formats as “add-a-day” conferences (\$500-\$3,000 available), “stand alone” conferences and festschrifts (both \$20,000 maximum, although the maximum is rarely awarded; more typical maximum is \$15,000). APA is also open to innovative ways of holding conferences. The conference must be additionally supported by the host institution with direct funds, significant in-kind support, or a combination of the two. Please note that a detailed budget including institutional support is required for application.

Conference proposals must meet the following eligibility requirements:

- One of the primary organizers must be a member of APA.
- Only academic institutions accredited by a regional body may apply. Independent research institutions must provide evidence of affiliation with an accredited institution. Joint proposals from cooperating institutions are encouraged.
- Conferences may be held only in the United States, its possessions, or Canada.
- APA governance groups, APA Divisions and other related entities are not eligible for funding under this program.

Conference proceedings and presentation materials (including electronic presentations) must be submitted to APA three months after the date the conference is held. APA will hold the conference proceedings for three years. If a book has not been published by APA or another publisher within the three-year holding period, APA will place the conference proceedings in PsycEXTRA.

Seventy-five percent of funds will be distributed to grantees prior to the conferences, and the remaining twenty-five percent will be released following the conference and after the submission of a final financial report detailing conference expenditures equal to or exceeding Grantee's proposed total budget.

Conference review committee members are: Oscar Barbarin, Anita Davis, Michael Domjan, Kathleen McDermott, Kevin Murphy, and James W. Pennebaker.

For more information on review criteria, proposal contents, and budget guidelines, please refer to the APA website (<http://www.apa.org/science/confer2.html>) or contact Stephanie Cox at [scox@apa.org](mailto:scox@apa.org).

### **PROPOSAL DEADLINE: December 1, 2007**

Please mail proposals to:  
APA Science Directorate  
750 First Street, NE  
Attn: Scientific Conferences Proposals  
Washington, DC 20002-4242

### NIH Awards from page 1...

system that produces neurobiological states experienced as pleasant or unpleasant with some degree of arousal. Core affect is not specific to emotion, but is a fundamental feature of consciousness. The events that people call 'anger' or 'sadness' or 'fear' occur when core affect is categorized, using a conceptual system for emotion," said Barrett.

"The Pioneer Award will not only allow us the opportunity to investigate key questions about the nature of emotion, but we hope the work will have a broader impact on how the field maps psychological constructs to the brain. At its core, our work suggests that some of the commonsense distinctions that people make (e.g., emotion vs. cognition) may not serve psychological science well, and are very likely not respected by the brain. Our work also implies that certain psychological categories (e.g., 'anger') are real because people (at least within a given culture) all agree that this is so (much like pieces of paper called money are real because people all treat them as such). And language may serve as the glue or anchor for these types of psychological constructs, potentially carving joints into nature," remarked Barrett.

Finally, Barrett said, "I was very proud to be a psychologist," when



Kristen Jacobsen

accepting the Pioneer Award.

Jacobson has been on the faculty at the University of Chicago's Department of Psychiatry since 2005. Previously she served on the faculty at Virginia Institute of Psychiatric and Behavioral Genetics at the Virginia Commonwealth University. She earned her PhD in Human Development and Family Studies from The Pennsylvania State University. Jacobson is the recipient of a National Institute of Mental Health Mentored Scientist Career Development Award.

Innovator Award recipients will receive \$1.5 million in direct costs over a five year period. Jacobson will use the Innovator Award to study

the interactive effects of biology and genetics as well as family, peer, and neighborhood characteristics on adolescent problem behavior. She is especially interested in how interactions between risk and protective factors are associated with socioeconomic and racial/ethnic differences in problem behavior, and in how environmental effects, particularly stress, get "inside the body" to influence biological processes.

Jacobson noted that "the field of behavioral science is at an exciting frontier in the 21st Century, with biomedical advances, particularly in genetics and neuroscience, leading to a better understanding of the mechanisms that cause disease and behavioral disorders. Nevertheless, I believe it is extremely important not to discount the effects of social and environmental influences as they relate to individual differences in adolescent development, not only in behaviors and traits, but also in how these contextual influences may alter or interact with the more basic biological processes. I am therefore extremely gratified that among all of the outstanding proposals for basic biomedical research that were selected for funding, that my study, which will try to integrate environmental and biological processes, was one of the ones selected for an Innovator Award." ■

## Study-Abroad Option for Graduate Students!

If you are currently a graduate student and want to take a summer to become immersed in East Asian or Pacific culture, you should apply to the National Science Foundation's East Asia and Pacific Summer Institute (EAPSI)!

US citizens and permanent residents are eligible for the grants of \$5,000 each.

The Summer Institutes provide U.S. graduate students in science and engineering: 1) first-hand research experience in Australia, China, Japan, Korea, New Zealand, Singapore or Taiwan; 2) an introduction to the science and science policy infrastructure of the respective location; and 3) orientation to the society, culture and language. The primary goals of EAPSI are to introduce students to East Asia and Pacific science and engineering in the context of a research setting, and to help students initiate scientific relationships that will better enable future collaboration with foreign counterparts. The institutes last approximately eight weeks from June to August.

Deadline for EAPSI 2008 will be December 12, 2007.

Visit [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5284](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284) for program details.

**Feeling Rejected? from page 4...**

are likely to be members of your manuscript's potential audience. If a reviewer reports trouble understanding your article, it is probable that your intended audience will too. In addition, incorporation of the reviewers' suggestions into your revised manuscript often helps to make your article more accessible to a wider audience, thereby increasing its impact and appeal. When you finally do resubmit your manuscript, make sure to submit a professional draft without comments still in the margin or changes still "tracked" in the word processing program. Taken individually, small errors such as these may seem trivial. Taken together, however, they imply significant carelessness on the part of the author, which is *not* the message you want to send. Fix your mistakes, large and small alike!

*Be persistent.* Rather than repeatedly putting yourself and your work into a critical spotlight, it is tempting to let a rejection convince you not to resubmit. However, if you truly wish to have your work published, you should resist the impulse to give up. Initial rejection does not seem so bad when you realize that it is an expected part of the publication process and that it typically occurs a couple of times before a manuscript becomes a publication. Be persistent in revising and resubmitting, either to the same journal or a new one. With each round of revisions know that your paper is becoming a better product with increasing odds of success.

*Know that you are not alone.* Although your rejection experiences seem unique, many of the most successful academics have encountered a great deal of rejection in their careers. There is useful advice on this topic in *The Compleat Academic* (Darley, Zanna, &

Roediger, 2006). Also, take the time to ask colleagues whom you trust and admire about their experiences with rejection. Hearing tales of rejection from those you view as "successful" academics can serve as a great reality check in terms of realizing that rejection is a natural part of being an academic. These anecdotes can serve as a comforting reminder that the majority of even the most well-cited papers in your field initially experienced rejection. ■

**References**

- Darley, J.M., Zanna, M.P., & Roediger, H.L. (2006). *The Compleat Academic: A Career Guide*. Second Edition. American Psychological Association, Washington, D.C.
- Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, 302, 290-292.

*The APA Science Student Council (APASSC)* is a group of nine psychological science graduate students, each representing a different sub-field of study. The Council reports to the APA Board of Scientific Affairs and is assisted in its efforts by the APA Science Directorate. The members of the Council are keenly interested in representing the needs of research-oriented graduate students within APA and to that end continually develop new resources and programming for graduate students. APASSC has created a number of tools designed to assist new psychological scientists in their endeavors, including a 2007 APA convention symposium that provided advice on how to deal with manuscript rejection. Many of these resources, including a PDF of the rejection symposium slides, can be accessed on the APASSC website: <http://www.apa.org/science/apasscweb.html>

**Psychologists Speak Out from page 9...**

too risk-averse, and you can't have innovation without risk...There is too much emphasis on incremental contributions to science and not enough on creative redirections and reinitiations."

*Bob Sternberg, PhD  
Tufts University*

"...I think it is also important to have behavioral scientists be part of the review process for the multidisciplinary applications, especially for clinical research. Many of the multidisciplinary applications

are reviewed by special study sections, which are appointed by Scientific Review Administrators. Behavioral issues will not get enough attention unless behavioral scientists participate in the review process."

*Karen Matthews, PhD  
University of Pittsburgh*

APA submitted comments on behalf of its member scientists, encouraging that NIH increase training of study section members, including training that adds value to the experience of serving on study sections, and develops pilot data on proposed changes in the peer review system before implementing

them broadly. Comments from APA members helped form the basis of the association's comments.

While the NIH comment period has closed for now, the APA 'comment period' never closes. We remain interested in your opinions about NIH peer review. Please share your views by contacting Pat Kobor at [pkobor@apa.org](mailto:pkobor@apa.org). ■

### The Rational Mind from page 2...

reflexive action; but only humans exhibit mindful, rational behavior which is voluntary, conscious, and learned in the lifetime of an individual. Descartes believed that human mind and body converge in the pineal gland.

Integrating these related notions, we see that the idea of the rational mind has been prominent in Western thought for nearly 2,500 years. Both humans and animals are impelled by biological forces to survive and procreate. Many behaviors of humans and animals promote these aims. But only humans are rational: we alone are capable of using our minds to make prudent decisions that maximize the ends of proper living.

In empirically evaluating the claim that the rational mind is uniquely human, I will focus on two out of many possible illustrative realms primarily because of my familiarity with them: concept learning and causal judgment. I will also explore whether we need the notion of the rational mind to explain either kind of cognition—in animals or humans. And, I will end by commenting on the prospects of a scientific account of behavior, whether or not we deem the behavior in question to be rational.

### Concepts

Concepts epitomize rationality; they are highly efficient cognitive devices or shortcuts that reduce the taxing demands that a complex and changing world places on an organism's limited information processing and storage systems. As well, concepts are universal and effectively control behaviors to new stimuli in new settings. And concepts may be uniquely human—at least, so contended the English philosopher John Locke. "The having of general Ideas, is that which puts a perfect distinction betwixt Man and Brutes.... For brutes have not the faculty of abstracting, or making general Ideas" (1690, pp. 159-160).

Of many different kinds of concepts, one will concern us here: natural kind concepts (often and perhaps more aptly called "basic-level" concepts, because human made things are similarly classified). Basic-level concepts (e.g., tree and axe) are not simply conventional and contrived for mere convenience, but real. To use Plato's words, they "cut nature at its joints."

My specific questions concerning concept learning are these: Do animals too learn basic-level concepts? Must reason be invoked to explain this brand of conceptualization?

Basic-level concepts are easy to learn, even by young children (Wasserman & Rovee-Collier, 2001). They take very little time for both adults and children to report. And, they are based on physical similarity—at least, so claimed American philosopher and mathematician W. V. Quine.

According to Quine, both humans and animals possess an innate standard of similarity; that standard is absolutely animal in its lack of intellectual status. Critically, Quine believed that similarity is the bedrock of basic-level categories.

Of course, humans readily learn and use basic-level concepts. But, what about nonhuman animals? To answer this question, researchers in my laboratory (Bhatt, Wasserman, Reynolds, & Knauss, 1988) endeavored to teach pigeons a four-alternative forced-choice "naming" task, where pecks replaced words as arbitrary report responses. After having been shown a color photograph of a cat, a car, a chair, or a flower, hungry pigeons had to correctly peck one of four different report keys; food was given after correct reports, whereas no food and one or more correction trials were given after incorrect reports.

The pigeons did, in fact, promptly learn to correctly report these four basic-level concepts by pecking four different report keys in the presence of the different classes of photos, with ten or more different photos in

each of the classes. Furthermore, the pigeons reliably generalized this discrimination to new photos of objects from the four classes, showing that these categories were effectively open-ended.

What evidence supports the idea that this conceptual discrimination learning is actually based on an "innate standard" of similarity? First, pigeons learn the just-described discrimination that "cuts nature at its joints" far faster than they learn an otherwise similar discrimination involving the same stimuli that does not (Wasserman, Kiedinger, & Bhatt, 1988). An example of the latter kind of discrimination is one in which equal numbers of photos from each of the four classes are arbitrarily placed into four "pseudocategories;" such pseudocategories lack any "perceptual glue" to bind together members of the different groupings. Second, confusion errors in an altogether different kind of discrimination task (Astley & Wasserman, 1992) unequivocally demonstrate that pigeons do indeed see discriminably different members of a basic-level human language category, like flowers, to be more similar to one another than to members of other categories, like people, cars, or chairs.

It is therefore wholly unnecessary to appeal to reason in order to explain basic-level concept learning. Rather, perceptually homogeneous stimuli are simply associated with arbitrary responses: words for people and pecks for pigeons. Those discriminative responses transfer to new stimuli within the same perceptual classes—a textbook case of what behavior theorists have for a century called primary stimulus generalization.

### Causation

Causation exemplifies rationality. Ascertaining true natural causes can help guide sensible or logical action without the intrusion of emotion or bias as well as help maximize

...continued on next page

### The Rational Mind from page 13...

important goods or functions in any and all circumstances. Causal judgment is fundamental to natural science. Identifying and verifying causal relations between natural phenomena would appear to demand sophisticated logical or statistical thinking. Such highly advanced thinking should surely be uniquely human. Right? “Wrong,” answered the Scottish philosopher David Hume.

According to Hume, utterly mechanical associative processes lead to the impression of causation, which lies not in the environment, but in the mind of the beholder. Furthermore, Hume believed that the same associative processes operate in humans and animals. Why? Because survival in an inherently dangerous world cannot possibly depend on the slowness, deliberateness, and elaborateness of formal logic and deductive reason. The phrase “lost in thought” does indeed have two dramatically different meanings!

My specific questions concerning causal judgment are these: Are there clear empirical parallels between associative learning in animals and causal judgment in people? Must reason be invoked to explain human causal judgment? Can a different sort of theoretical account embrace both associative learning in animals and causal judgment in people?

Hume offered several seminal insights into the psychology of causal judgment. First, causal beliefs arise from the association of ideas. Because that association emerges from the frequent conjunction of events, causal beliefs must ascend to their peak by degrees. So, like associative learning curves, causal judgments should emerge gradually. Second, causal beliefs cannot produce assurance in any single event as the cause unless it proves to be superior to rival causes. So, as in the case of the familiar phenomenon of associative cue competition, the “discounting” of inferior candidates should occur in

causal judgment.

What does the empirical evidence indicate? Causal judgments do indeed rise in strength as a function of pairings of cause with effect (Wasserman, Kao, Van Hamme, Katagiri, & Young, 1996), in clear accord with the acquisition functions typically obtained in Pavlovian appetitive and aversive conditioning. Furthermore, the mere pairing of cause with effect may not be adequate to forge a firm causal association. The putative cause may have to be the best among several rival causes. Similar processes participate in associative conditioning.

One of the most celebrated cases of discounting is the so-called cue validity effect first reported by Wagner, Logan, Haberlandt, and Price (1968). Key to the cue validity effect is that Target Cue X is equally often paired with the outcome in all experimental conditions. Rival Cues A and B are differentially paired with the outcome in different experimental conditions, in each of which only two stimulus compounds are arranged: AX and BX. The critical result is that animals’ conditioned responses as well as humans’ causal judgments display robust discounting: Target Cue X loses associative or causal strength the more valid Rival Cues A and B become. Indeed, the empirical functions in both behavioral realms are strikingly similar (Wasserman, 1990).

Thus, causation and association may be strongly related empirically. Both exhibit acquisition. Both exhibit cue competition. And, both are explainable by associative learning theories, such as the Rescorla-Wagner (1972) model, which mathematically embodies Hume’s laws of causal perception. Reason is not necessary to explain either.

Would Hume be pleased with this state of affairs? Definitely. He, himself, proposed that, “... any theory, by which we explain the operations of the understanding, or the origin and

connection of the passions in man, will acquire additional authority, if we find, that the same theory is requisite to explain the same phenomena in all other animals (1777/1951, p. 104).”

### Reason Amid a Savage World

What then should we make of Cross’s provocative opening quotation? Are we humans hopelessly limited by the bestial cognitive mechanisms with which we are endowed in our quest to understand and adapt to a world which is fraught with change and complexity? What sense, if any, can be made of rationality in humans or animals if even conceptualization and causation are rooted in primordial behavioral processes?

Let’s further explore these challenging questions.

I hope that my earlier discussions of conceptualization and causation have persuasively documented that individually acquired adaptive behavior is not uniquely human. These and many other findings from the study of animal behavior and cognition further suggest that the mechanisms of learning and adaptation are very old and widespread among today’s animal species. In point of fact, the field of comparative cognition has for over a century studied the nature and limits of intelligence in humans and animals; this field continues to treasure up new discoveries which prompt us to confer greater respect to the cognitive abilities of our animal kin (Wasserman & Zentall, 2006).

One especially interesting area of comparative cognition where new insights are emerging concerns tool construction and use. Research with crows (Weir, Chappell, & Kacelnik, 2002) and chimpanzees (Whiten, Goodall, McGrew, Nishida, Reynolds, Sugiyama, Tutin, Wrangham, & Boesch, 1999) strongly suggests that humans can no longer lay claim to being the only tool-wielding organisms.

Arguably fundamental to tool use is the recognition that one's desired ends are unattainable without additional assistance. A mealworm may be wedged into a space that is too narrow to grasp; a nut may be too firm to crack. What to do?

The obvious answer is to fashion a tool. But, which one? And, how should it be constructed and deployed?

Thus, with thwarted goals, the process of invention begins. But, is this process purely logical, devoid of bias, and maximally functional from the outset? Surely not.

Most human tools and contrivances—like forks, mousetraps, and watches—rarely emerge as full-blown successes; instead, they go through prolonged periods of development which are rife with failures and setbacks (Petroski, 1992). The production of even the most marvelous of human inventions seems to be subject to the same trials and errors that led Edward Thorndike to reject rationality as an explanation for the effects of reward and punishment on human and animal behavior. His powerful Law of Effect was positively mindless.

Like animals, we humans do gradually learn from our past successes and failures—both as individuals and as cultures. Such individual acquisitions allow us to tie our shoes, to ride a bicycle, and to peel a banana. Cultural acquisitions enable adaptive actions to be taken by all of us who are fortunate enough to live in those cultures and to profit from our predecessors' labors; we cannot help but be impressed by the ways in which air conditioning, automobiles, and personal computers have improved our lives beyond those of our grandparents.

Science itself represents another key cultural acquisition. Science has produced innovative ways of asking and answering questions of nature that have proven to be of unparalleled incisiveness and effectiveness; it has also led to the very technologies that are responsible for the manufacturing

of air conditioning, automobiles, personal computers, and countless other devices that are now common in industrialized nations.

One especially interesting illustration of the power of science is the development and deployment of instruments and methodologies which can disclose other animals' perception of energies to which we ourselves are oblivious (Hughes, 1999). We are now quite familiar with the fact that bats, whales, and dolphins can sense sounds of extreme frequencies—well beyond the range of human hearing. But how did we discover such ultrasonic perception?

First, we had to build instruments that both generated and detected ultrasonic frequencies. Second, we had to develop suitable behavioral testing methods that allowed animals to sense those ultrasounds and to report their sensations to us.

Our remarkable success at each of these steps attests to the power and flexibility of human cognition. But, the truth behind each of these steps is a far cry from an optimal designer prescribing a detailed plan of action based solely on achieving the task at hand.

Perhaps uniquely, we humans appreciate our own perceptual and cognitive limits. Faced with those limits, we have learned—both as individuals and as cultures—to rise above them. Our range vision is limited; so, we have developed increasingly powerful microscopes and telescopes to expand our range of sight. We are regrettably biased by possibly unreliable and unrepresentative trends in data collection and interpretation; so, we have developed sophisticated statistical tools to guard against such biases of judgment.

Equipped with these and other tools, natural science has continued its inexorable advance to explain and control the inorganic and organic worlds. But, the most elusive of all

of these quests is an understanding of human nature itself. Can we ever comprehend ourselves? The intriguing answer is "yes," but only if we continue along the same path that science has followed in its pursuit of other natural mysteries. ■

## References

- Astley, S. L., & Wasserman, E. A. (1992). Categorical discrimination and generalization in pigeons: All negative stimuli are not created equal. *Journal of Experimental Psychology: Animal Behavior Processes*, *18*, 193-207.
- Bhatt, R. S., Wasserman, E. A., Reynolds, W. F., Jr., & Knauss, K. S. (1988). Conceptual behavior in pigeons: Categorization of both familiar and novel examples from four classes of natural and artificial stimuli. *Journal of Experimental Psychology: Animal Behavior Processes*, *14*, 219-234.
- Hughes, H. C. (1999). *Sensory exotica: A world beyond human experience*. Cambridge, MA: MIT Press.
- Hume, D. (1777/1951). *Enquiries concerning the human understanding and concerning the principles of morals* (2nd ed. edited by L. A. Selby-Bigge). London: Oxford University Press.
- Hurley, S., & Nudds, M. (Eds.). (2006). *Rational animals?* Oxford: Oxford University Press.
- Kahneman, D. A. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist*, *58*, 697-720.
- Locke, J. (1690/1975). *An essay concerning human understanding*. Oxford: Clarendon Press.
- Petroski, H. (1992). *The evolution of useful things*. New York: Vintage Books.
- Quine, W. V. (1969). Natural kinds. In N. Rescher (Ed.), *Essays in honor of Carl G. Hempel* (pp. 5-23). Dordrecht, Holland: D. Reidel.

...continued on next page

**The Rational Mind from page 15...**

- Rescorla, R. A., & Wagner, A. R. (1972). A theory of Pavlovian conditioning: Variations in the effectiveness of reinforcement and nonreinforcement. In A. H. Black & W. F. Prokasy (Eds.), *Classical conditioning II: Current research and theory* (pp. 64-99). New York: Appleton-Century-Crofts.
- Wagner, A. R., Logan, F. A., Haberlandt, K., & Price, T. (1968). Stimulus selection in animal discrimination learning. *Journal of Experimental Psychology*, *76*, 171-180.
- Wasserman, E. A. (1990). Attribution of causality to common and distinctive elements of compound stimuli. *Psychological Science*, *1*, 298-302.
- Wasserman, E. A., & Zentall, T. R. (2006). *Comparative cognition: Experimental explorations of animal intelligence*. New York: Oxford University Press.
- Wasserman, E. A., Kao, S.-F., Van Hamme, L. J., Katagiri, M., & Young, M. E. (1996). Causation and association. In D. R. Shanks, K. J. Holyoak, and D. L. Medin (Eds.), *Psychology of Learning and Motivation: Causal learning*. San Diego: Academic Press. Pp. 207-264.
- Wasserman, E. A., Kiedinger, R. E., & Bhatt, R. S. (1988). Conceptual behavior in pigeons: Categories, subcategories, and pseudocategories. *Journal of Experimental Psychology: Animal Behavior Processes*, *14*, 235-246.
- Wasserman, E. A., & Rovee-Collier, C. (2001). Conceptualization by infants and pigeons. In M. E. Carroll and J. B. Overmier (Eds.), *Animal research and human health: Advancing human welfare through behavioral science* (pp. 263-279). Washington: American Psychological Association.
- Weir, A. A. S., Chappell, J., & Kacelnik, A. (2002). Shaping of hooks in New Caledonian crows. *Science*, *297*, 981.
- Whiten, A., Goodall, J., McGrew, W. C., Nishida, T., Reynolds, V., Sugiyama, Y., Tutin, C. E. G., Wrangham, R. W., & Boesch, C. (1999). Cultures in chimpanzees. *Nature*, *399*, 682-685.

**PSYCHOLOGICAL SCIENCE AGENDA**

*Psychological Science Agenda* is published monthly by APA's Science Directorate. Dedicated to promoting and serving scientific psychology, *Psychological Science Agenda* provides news about national scientific policy developments, examines policy issues affecting and affected by the behavioral research community, and highlights the advocacy efforts of the Science Directorate on behalf of research and academic psychologists. *Psychological Science Agenda* also features news of APA's governance and program initiatives relating to scientific and academic psychology, and provides valuable, timely information about funding opportunities for research psychologists.

*Psychological Science Agenda* is distributed free to 30,000 psychologists, members of Congress and their staffs, key officials in federal agencies that fund behavioral research and use its findings, institutional libraries, and science writers in the national media.

To obtain a subscription to *Psychological Science Agenda*, contact the Science Directorate: American Psychological Association, Science Directorate, 750 First Street, NE, Washington, DC 20002-4242. Phone: (202) 336-6000. Fax: (202) 336-5953. TDD: (202) 336-6123. Email: [science@apa.org](mailto:science@apa.org).

**BOARD OF SCIENTIFIC AFFAIRS**

Ronald T. Brown, (Chair)  
Toni Antonucci  
Patricia Greenfield  
Barbara Landau  
Frederick Leong  
Liora P. Schmelkin  
Norman E. Spears  
Lois Tetrick  
Alice Young

**EXECUTIVE DIRECTOR FOR SCIENCE**

Steven Breckler

**EXECUTIVE EDITOR**

Virginia E. Holt

**SCIENCE DIRECTORATE STAFF**

Steven Breckler  
*Executive Director for Science*  
Howard Kurtzman  
*Deputy Executive Director for Science*  
Virginia E. Holt  
*Assistant Executive Director for Science*  
Geoffrey Mumford  
*Assistant Executive Director for Science*  
Anne Bettesworth  
*Science Policy Associate*  
Stephanie Cox  
*Conferences & Outreach Manager*  
Marianne Ernesto  
*Director, Testing & Assessment*  
Elizabeth Hoffman  
*Legislative & Federal Affairs Officer*  
Stephanie Johnson  
*Director, Applied Psychological Science*

Heather Kelly  
*Senior Legislative & Federal Affairs Officer*  
Patricia Kobor  
*Senior Science Policy Analyst*  
Sangeeta Panicker  
*Director, Research Ethics Office*  
Emily Phelps  
*Science Outreach and Development Coordinator*  
Nicole Singer  
*Science Programs Associate*  
Karen Studwell  
*Senior Legislative & Federal Affairs Officer*  
Kymberly Thornton  
*Administrative Manager*  
Kirk Waldroff  
*Science Website Manager*  
Suzanne S. Wandersman  
*Director, Governance Affairs*

Psychological Science Agenda  
website: [www.apa.org/science/psa](http://www.apa.org/science/psa)  
email: [psa@apa.org](mailto:psa@apa.org)

APA Science Directorate  
website: [www.apa.org/science](http://www.apa.org/science)  
email: [science@apa.org](mailto:science@apa.org)