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Observer

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KEYNOTE SPEAKERS

Cognitive Evolution: People Are Animals Too
W. Tecumseh Fitch
Department of Cognitive Biology
University of Vienna, Austria

How Infants Break Into Language
Linda B. Smith
Department of Psychological and Brain Sciences
Indiana University Bloomington, USA

Genetic and Brain Diversity in AutismS
Thomas Bourgeron
Department of Human Genetics and Cognitive Functions
Pasteur Institute, France

Pre-Conference Teaching Institute

Opening Plenary
Culture: What It Is, Why It Matters, and How to Teach It
Hazel R. Markus, Department of Psychology, Stanford University, USA

Closing Plenary
Toward a Science of Teaching
Richard Anderson, Department of Educational Psychology University of Illinois, USA

Concurrent Sessions

Essential Technology for Teaching Psychological Science
Susan M. Frantz, Department of Psychology, Highline College, USA

Learning and Teaching of Psychology in Europe: Challenges at the Macro and Micro Level
Stephan Dutke, Department of Psychology, Universität Münster, Germany

What’s New in Social Cognition? An Update for Teachers From Joint Action Research
Natalie Sebanz, Department of Cognitive Science, Central European University, Hungary

Rapid Growth and Internationalization of Psychological Science Programs in the Developing World
Nebi Sümer, Department of Psychology, Orta Dogu Teknik Universitesi, Turkey
Integrative Science Symposia

Our Social Brain: Neurobiology of Human Interactions
Patricia S. Churchland, Department of Philosophy, University of California, San Diego, USA
Christian Keysers, Department of Psychology and Neuroscience, Netherlands Institute for Neuroscience of the Royal Netherlands Academy of Arts and Sciences
Brian D. Knutson, Department of Psychology and Neuroscience, Stanford University, USA
Rebecca Saxe, Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, USA

Who’s In, Who’s Out? Loneliness, Exclusion, and Integration
Jennifer Cole, Department of Comparative Human Development, The University of Chicago, USA
Steve Cole, Department of Medicine and Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, USA
Taciano L. Milfont, School of Psychology Victoria University of Wellington, New Zealand
Frosso Motti-Stefanidi, Department of Psychology, National and Kapodistrian University of Athens, Greece
Alan Teo, Department of Psychiatry and School of Public Health, Oregon Health & Science University, USA

Better Minds: Understanding Cognitive Enhancement
Daphne Bavelier, Department of Psychology, University of Geneva, Switzerland
Arthur F. Kramer, Department of Psychology, University of Illinois at Urbana-Champaign, USA
E. Glenn Schellenberg, Department of Psychology, University of Toronto, Canada
Ilina Singh, Department of Psychiatry University of Oxford, United Kingdom

The Science of Successful Aging
Monica Fabiani, Department of Psychology, University of Illinois at Urbana-Champaign, USA
Denise C. Park, Center for Vital Longevity The University of Texas at Dallas, USA
Karl A. Pillemer, Department of Human Development, Cornell University, USA
Lorraine K. Tyler, Department of Psychology, University of Cambridge, United Kingdom

Emotions in Context
Ralph Adolphs, Division of the Humanities and Social Sciences, California Institute of Technology, USA
Iris M. Engelhard, Department of Psychology, Utrecht University, The Netherlands
Klaus R. Scherer, Department of Psychology, University of Geneva, Switzerland
Jeanne L. Tsai, Department of Psychology Stanford University, USA
Frank H. Wilhelm, Department of Clinical Psychology and Psychotherapy, University of Salzburg, Austria

The Push and Pull of Values and Behavior
Scott Atran, School of Anthropology and Museum Ethnography, University of Oxford, United Kingdom
Chi-yue Chiu, Department of Psychology The Chinese University of Hong Kong, China
Hazel R. Markus, Department of Psychology, Stanford University, USA
Heidi Keller, Department of Psychology Osnabrück University, Germany
Walter Mischel, Department of Psychology, Columbia University, USA (Discussant)

Bridging the Lab and the Real World
Karen E. Adolph, Department of Psychology, New York University, USA
Rick Dale, Department of Cognition & Information Sciences, University of California, Merced, USA
Susan Goldin-Meadow, Department of Comparative Human Development, The University of Chicago, USA
Emiliano Macaluso, Neuroimaging Laboratory, Lyon Neuroscience Research Center, Italy
Hugo Spiers, Department of Experimental Psychology, University College London, United Kingdom

In Sync: The Dynamics of Social Coordination
Nick Chater, Department of Psychology University of Warwick, United Kingdom
Shaun Gallagher, Department of Philosophy, University of Memphis, USA
Marco Iacoboni, Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, USA
Andrzej Nowak, Department of Psychology, University of Warsaw, Poland and Florida Atlantic University, USA
Natalie Sebanz, Department of Cognitive Science, Central European University, Hungary

www.icps2017.org
Hyenas and reptiles and seals, oh my! Psychological researchers increasingly are turning to creatures in the wild to better understand the evolution and mechanisms of human cognition and behavior.

Presidential Column
A Call to Change Science’s Culture of Shaming
In a guest column, APS Past President Susan T. Fiske calls on psychological scientists to tone down the ad hominem research critiques that are spreading across social media.

New Government Reports Showcase Behavioral Science
Evidence-based behavioral strategies are being used to combat everything from tax delinquency to unnecessary antibiotic prescriptions. Reports from the US Social and Behavioral Sciences Team and the UK’s Behavioural Insights Team showcase the latest applications of behavioral science in public policymaking.

Seven Selfish Reasons for Preregistration
Psychological scientists Eric-Jan Wagenmakers and Gilles Dutilh present an illustrated guide to the career benefits of submitting your research plans before beginning your data collection.
## Between Truth and Advocacy

APS James McKeen Cattell Fellow **Phoebe C. Ellsworth** discusses the challenges of conducting unbiased research while advocating for social change.

## Five Tips for Improving Online Discussion Boards

Whether a complement to a standard classroom environment or a cornerstone of Web-based classes, online discussion boards are becoming a staple in higher education. APS Past President **Morton Ann Gernsbacher** discusses how to make those discussion boards as engaging and interactive as possible.

## A Psychology Web Lab for Education: LABPSI

With the help of a grant from the APS Fund for Teaching and Public Understanding of Psychological Science, researchers in Argentina have developed an app that helps professors design experiments around the psychological theories they’re teaching to their students.

## Contaminants Infect More Than Just Eyewitness Evidence

Decades of psychological research have revealed the weaknesses of eyewitness testimony, but APS Fellow **John T. Wixted** points to a real-life murder conviction to illustrate how DNA evidence can be just as fallible.

## Training for Open Science in Kenya

Advocacy for open science is migrating to the developing world, with a recent research transparency workshop in Kenya serving as a prime example.

### Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>7</td>
</tr>
<tr>
<td>Student Notebook</td>
<td>39</td>
</tr>
<tr>
<td>Members in the News</td>
<td>41</td>
</tr>
<tr>
<td>Announcements</td>
<td>45</td>
</tr>
</tbody>
</table>
A Call to Change Science’s Culture of Shaming

New forms of media are making it easier and easier for us to react to, and comment on, research within our community. Although free-flowing comments and criticisms can often push an argument or research program forward in a good direction, they can also derail, and perhaps even threaten, the process. I invited guest columnist Susan Fiske, a former APS president, to think about the impact that the new media are having not only on our science, but also on our scientists. Importantly, Fiske’s column is not intended in any way to be an attack on open science, but rather is a timely reminder that psychological scientists are not immune from using social media in destructive ways.

-APS President Susan Goldin-Meadow

The premature release of an earlier draft of this column provoked an online firestorm. In the spirit of colleagues’ feedback improving one’s work, this revision reflects some of the more constructive responses. The less constructive responses merely illustrate my point and are not acknowledged here. One development in parallel with this column is an independent online statement that people can sign to express concern: “Promoting open, critical, civil, and inclusive scientific discourse in Psychology,” which can be found at www.ipetitions.com/petition/the-tenor-of-discussions/. Thanks to those who express support of mutually respectful discussions of our science.

Our field has always encouraged — required, really — peer critiques. But the new media (e.g., blogs, Twitter, Facebook) can encourage a certain amount of uncensored, unfiltered denigration. In the most extreme examples, individuals are finding their research programs, their careers, and their personal integrity under attack. In a few rare but chilling cases, self-appointed data police are volunteering critiques of our science’s culture of shaming. and well-being, with no accountability for the people engaging in the toxic behavior. Sheer volume of requests and multiple simultaneous critiques can overwhelm any researcher. More than one scientist reports being asked for a different data set every week for months, consuming all their research time for a semester or more. Several others report automatic algorithms generating automatic anonymous emails “correcting” p-values rounded to two places without affecting significance standards. Taking up research time in what often appear to be unnecessary or excessive demands can be one form of harassment.

In other cases, the tone of online critiques sometimes involves inappropriate comments that presumably would not occur face to face. Someone posted that my late father (a methodologist) would be ashamed of me. Others have impugned my motives for writing this plea for civility. Similarly, some targets have reported to me public assertions of their alleged dishonesty, incompetence, or mercenary motives. Personal insults are not scientific discourse. Indeed, speculations about another scientist’s motives would not appear in any respectful form of peer review.

Our colleagues at all career stages have reported leaving the field because of what they see as sheer adversarial viciousness. I have heard from graduate students opting out of academia, assistant professors afraid to come up for tenure, midcareer people wondering how to protect their labs, and senior faculty retiring early, all reportedly because of an atmosphere of methodological intimidation. I am not naming names of alleged victims because, to a person, these dozens of individuals tell me they are afraid to go public for fear of retaliation.

I am also not naming names of alleged bullies because rare but vicious ad hominem smear tactics are already damaging our field,

APS Past President Susan T. Fiske is Eugene Higgins Professor of Psychology and Professor of Public Affairs at Princeton University. Her research focuses on how stereotyping, prejudice, and discrimination are influenced by cooperation, competition, power, and other social relationships. She is a recipient of the 2017 APS James McKeen Cattell Fellow Award. She can be contacted at apsobserver@psychologicalscience.org.
and they do not represent the majority of us. Instead, I am describing a dangerous minority trend that has an outsized impact and a chilling effect on scientific discourse. I am not a primary target, but my goal is to give voice to others too afraid to object publicly.

To be sure, constructive critics have a role, with their rebuttals and letters-to-the-editor subject to editorial oversight and peer review for tone, substance, and legitimacy. Some moderated social media groups monitor individual posts to ensure they are appropriate. Always, of course, if critics choose to write a personal message to the author, that’s their business. If they request the original data, scientific norms demand delivery within reasonable constraints. All these venues respect the target.

What’s more, APS has been a leader in encouraging robust methods: transparency, replication, power analysis, effect-size reporting, and data access. All this strengthens our field, because APS innovates via expert consensus and explicit editorial policies. Individuals’ research is judged through monitored channels, most often in private with a chance to improve (peer review), or at least in moderated exchanges (curated comments and rebuttals). These venues offer continuing education, open discussion, and quality control. These constructive efforts draw on the volunteer talent of many, in the service of the greater good and respecting the individual investigator.

But some critics do engage in public shaming and blaming, often implying dishonesty on the part of the target and other innuendo based on unchecked assumptions. Targets often seem to be chosen for scientifically irrelevant reasons: their contrary opinions, professional prominence, or career-stage vulnerability.

The few but salient destructive critics are ignoring ethical rules of conduct because they circumvent constructive peer review: They attack the person, not just the work; they attack publicly, without quality controls; they have reportedly sent their unsolicited, unvetted attacks to tenure-review committees and public-speaking sponsors; they have implicated targets’ family members and advisors. Most self-appointed critics do not behave unethically, but some do so more than others. One hopes that all critics aim to improve the field, not harm people. But the fact is that some inappropriate critiques are harming people. They are a far cry from temperate peer-reviewed critiques, which serve science without destroying lives.

Let me be clear: This column does not aim to criticize such standard peer-review, or, for that matter, the newer open-science initiatives.

Ultimately, science is a community, and we are in it together. We agree to abide by scientific standards, ethical norms, and mutual respect. We trust but verify, and science improves in the process. Psychological science has achieved much through collaboration, but also through responding to constructive adversaries who make their critiques respectfully. The key word here is constructive.

Look for psychological scientists to share their insights, visions, and concerns about the future of scientific discourse in upcoming issues of the Observer.
Brain-Training Claims Not Backed by Science, PSPI Report Shows

The companies behind many popular brain-training games and apps cite a variety of scientific studies as evidence that their products improve cognition in daily life. A new research report puts those claims to the test, providing a comprehensive review of the studies cited by brain-training proponents and companies. While people may improve on the specific tasks they practice, the researchers conclude that there is no compelling scientific evidence that computerized brain-training programs yield broader cognitive benefits or improve real-world outcomes for their users.

The analysis and an independent commentary on the findings appear in the journal Psychological Science in the Public Interest.

“The idea behind ‘brain training’ is that if you practice a task that taps a core component of cognitive ability, like memory, the training will improve your ability to perform other tasks that also rely on memory, not just in the lab, but also in the world,” explained APS Fellow Daniel J. Simons of the University of Illinois, who led the analyses.

“If you practice remembering playing cards, you’ll get really good at remembering playing cards,” Simons said. “But does that help you remember which medications to take, and when? Does it help you remember your friends’ names? Historically, there is not much evidence that practicing one task improves performance on different tasks in other contexts, even if they seem to rely on the same ability.”

Simons and colleagues Walter R. Boot and APS Fellow Neil H. Charness (Florida State University), APS Fellow Zachary Hambrick (Michigan State University), Christopher F. Chabris (Union College and Geisinger Health System), Susan Gathercole (Medical Research Council, Cambridge, UK), and APS Fellow Elizabeth A. L. Stine-Morrow (University of Illinois) closely examined 132 journal articles cited by a large group of brain-training proponents in support of their claims. The team supplemented that list with all of the published articles cited on the websites of leading brain-training companies that were identified by SharpBrains, an independent market-research firm that follows the industry.

The review found numerous problems with the way many of the cited studies were designed and how the evidence was reported and interpreted. The problems included small sample sizes and studies in which researchers reported only a handful of significant results from the many measures collected.

“Sometimes the effects of a single brain-training intervention are described in many separate papers without any acknowledgment that the results are from the same study,” Simons said. “That gives the misleading impression that there is more evidence than actually exists, and it makes it hard to evaluate whether the study provided any evidence at all.”

Some studies conducted with special groups (such as people diagnosed with schizophrenia, children with language delays, or older adults with dementia) were used as support for broad claims about the benefits of brain training for the general population.

One of the most glaring problems in the cited research was the use of inadequate control groups as a baseline for measuring improvements.

“A control group should experience everything the treatment group does, except for the critical ingredient of the treatment,” he said. “They should be equally engaged and should have similar expectations for improvement, so that if the treatment group improves more than the control group, the difference must be due to the treatment itself.”

Some of the studies had no control group. Some had a passive control group, whose members took the same pre- and posttest as the intervention group but were not engaged in any other way. Some studies had participants in a control group come into the lab and complete crossword puzzles, watch educational DVDs, or just socialize with the experimenters. Such control groups differ in many ways from the intervention group, so greater improvement in the treatment group might be due to those other differences, including differences in expected improvement, rather than to the brain-training intervention itself, the researchers said.

Most of the cited research tested for improvements on simplified, abstract laboratory tasks rather than on measures of real-world performance.

“There are relatively few studies in this literature that objectively measure improvements on the sorts of real-world tasks that users of the programs presumably want to improve — and that the programs’ marketing materials emphasize,” Simons said.

“Based on our comprehensive review of the evidence cited by brain-training proponents and companies, we found little evidence for broad transfer from brain-training tasks to other tasks,” Simons said. “We hope future studies will adopt more rigorous methods and better control groups to assess possible benefits of brain training, but there is little evidence to date of real-world benefits from brain training.”

In a commentary accompanying the main report, researchers Jennifer A. McCabe (Goucher College), Thomas S. Redick (Purdue University), and Current Directions in Psychological Science Editor Randall W. Engle (Georgia Institute of Technology) examine evidence for other interventions that may improve cognitive functioning. Although there is little evidence that skills practiced in brain-training games transfer to other real-world tasks, other learning strategies are backed by decades of scientific research. McCabe, Redick, and Engle highlight three techniques — elaborating on material, repeated testing, and spaced studying — as examples of evidence-based procedures for improving memory.
Improving Research Practices, From Beginning to End

Efforts to promote replication, preregistration, and new analytic approaches now represent just some of the advances psychological scientists have been making toward improving research practices in the field. With the recognition that long-accepted research practices have certain inherent problems comes the question: What now?

As the field tries to answer this question, the important mistake we must not make, says psychological scientist Alison Ledgerwood, is assuming that there will be an easy and obvious fix.

“The single most important lesson we can draw from our past in this respect is that we need to think more carefully and more deeply about our methods and our data,” Ledgerwood writes in her introduction to a special section on improving research practices in the September issue of *Perspectives in Psychological Science*.

“Any set of results, whether empirical or simulated, give us only a partial picture of reality. Reality itself is always more complex,” Ledgerwood notes. “If we want to study it, we need to be honest and open about the simplifying choices that we make so that everyone — including ourselves — can evaluate these choices, question them, and explore what happens when different choices and assumptions are made.”

As editor of the special section, Ledgerwood has underscored this point by assembling a series of articles focused on improving research practices at various points of the process, from deciding how to optimize the design of a single study to conducting a comprehensive evaluation of an entire research topic.

Choosing a Research Strategy

Determining an optimal sample size — one that maximizes statistical power while accommodating practical constraints — is an important step in the design of any research study. In their article, Jeff Miller and APS Fellow Rolf Ulrich propose a quantitative model that enables researchers to calculate the sample size that maximizes “total research payoff” across the four possible study outcomes: true positive, false positive, true negative, and false negative. As part of the model, researchers must explicitly weigh the relative importance of these outcomes and identify their assumptions about the base rate of true effects in a given domain, thereby making clear the values and assumptions that guide their thinking.

Checking Statistical Assumptions

Examining whether data meet or violate the assumptions of a given statistical test is a critical component of data analysis, but it is a step that is sometimes overlooked. Failing to check these assumptions means that the results of these statistical tests and the conclusions drawn from them may be totally invalid. Louis Tay and colleagues offer a tool, “graphical descriptives,” that aims to make this process clearer and easier for researchers.

The tool generates data visualizations that allow scientists to see whether their data meet various statistical assumptions; with these visualizations in hand, the scientists also can clearly communicate rich details about their data set when reporting their results.

Dealing With Data

Each of the choices that researchers make in deciding how to process their raw data — whether variables should be combined or transformed, when data should be included or excluded, how responses should be coded — shapes the resulting data set in a particular way. While there may be best practices that guide certain decisions, scientists aren’t always choosing between an obvious right and wrong answer. Using “multiverse analysis,” an analytic approach proposed by Sara Steegen, Francis Tuerlinckx, Andrew Gelman, and Wolf Vanpaemel, researchers can see how various data-processing decisions would affect their results. The tool enables researchers to understand whether various decisions influence outcomes in meaningful ways and can help them transparently report patterns of results across multiple possible data-processing decisions.

Meshing Meta-Analysis With the Real World

Meta-analysis offers an increasingly popular tool for evaluating the combined research output in a particular domain, but it is subject to particular shortcomings just like any statistical tool. In their article, Robbie C. M. van Aert, Jelte M. Wicherts, and Marcel A. L. M. van Assen present simulations indicating that \( p \)-hacking and effect-size heterogeneity cause two meta-analytic techniques, \( p \) curve and \( p \) uniform, to produce biased estimates of the average population effect size.

On a similar theme, Blakeley B. McShane, APS Fellow Ulf Böckenholt, and Karsten T. Hansen discuss how several common meta-analytic approaches yield biased estimates in the presence of publication bias and effect-size heterogeneity — conditions that the authors note are ubiquitous in psychological research. The authors point researchers toward a meta-analytic approach that does a better job of handling both methodological issues.

Please visit the Special Section on Improving Research Practices: Thinking Deeply Across the Research Cycle at http://pps.sagepub.com/content/current#SpecialSectiononImprovingResearchPractices.
Exploring How Women’s Reproductive Health and Mental Health Intersect

Throughout their lives, women’s risk for various mental health problems fluctuates along with reproductive changes. A special series in the September issue of *Clinical Psychological Science* addresses these intersecting issues directly, presenting a collection of research articles that takes a multilevel, integrative view of women's mental health in the context of reproductive development.

The special series is guest-edited by psychology researchers Jane Mendle (Cornell University), Tory A. Eisenlohr-Moul (University of North Carolina at Chapel Hill), and Jeff Kiesner (Universita di Padova, Italy).

“In women, epidemiological links between reproductive change and risk for psychopathology are clear,” Mendle, Eisenlohr-Moul, and Kiesner write in their introduction to the series. “Psychological symptoms continue to shift in relation to reproductive events — for example, the menstrual cycle, childbirth, menopause — across women’s lives. This occurs not just in America and other Western, industrialized nations but on all inhabited continents.”

Depression provides particularly clear evidence of these strong links. Accumulated research shows that girls are at much greater risk of depression at puberty than are boys — a relatively increased risk that then continues through adulthood, rising during the transition to menopause and falling again after menopause.

Despite this, few psychological scientists include reproductive change as an integral component of their theoretical models. This lack of integration, due in part to societal taboos regarding female reproduction and scientific uncertainty in interpreting biologically based sex differences, has significant consequences for clinical science and for women generally.

“By neglecting one of the most basic facets of women’s lives, our field has left fundamental questions unanswered,” the coeditors argue.

Indeed, researchers and clinicians do not yet have a clear understanding of which women are at greatest risk of experiencing difficulties in relation to reproductive change, nor which tools are most likely to prevent or ameliorate their difficulties.

With the aim of encouraging “a new generation of dialogue and scholarship on women and mental health,” Mendle, Eisenlohr-Moul, and Kiesner have assembled a collection of research articles that introduces readers to the complex interactions between reproductive health and mental health throughout women’s lives:

- Kiesner and colleagues examine how women’s physical symptoms, affective symptoms, and cognitive style change across the menstrual cycle, finding that patterns of change vary considerably among people.
- Taking an innovative approach to the traditional twin-study design, APS Fellow Kelly L. Klump and coauthors investigate how individual differences in estrogen and progesterone moderate the effects that genetic and environmental factors have on emotional eating.
- Presenting longitudinal data collected over the course of multiple pregnancies, APS Fellow Christine Dunkel Schetter and colleagues identify four types of life stressors that may predispose women to recurring postpartum depression.
- Jennifer L. Gordon, Susan S. Girdler, and coauthors provide a novel investigation of the perimenopausal rise in depression, finding links between estradiol fluctuation, dysregulation of the hypothalamic-pituitary-adrenal axis, and women's negative mood.

Mendle, Eisenlohr-Moul, and Kiesner note that addressing and answering core questions about the relationship between reproductive changes and mental health will require new theoretical frameworks that accommodate the complex, multilevel interactions among biology, personal experience, and environmental factors as manifested within individuals across the entire lifespan.

“Building and testing such models is a daunting task. Yet the alternative is to consider simplistic models that ignore cross-level effects and interactions and will likely provide shallow insights and dead-end research endeavors. We believe the field is ready for this challenge,” they conclude.
Effect of Commitment on Forgiveness Investigated in Large-Scale Replication Project

After a betrayal of trust, what motivates an aggrieved partner to try and resolve the problem instead of walking away or seeking revenge? Many studies have indicated that how people respond to a partner’s betrayal is associated with how committed they feel to their relationship, raising the possibility that boosting people’s feelings of commitment may lead them to choose less destructive responses. A new multilab research project aimed at replicating the primary evidence for a causal link between commitment and betrayal confirmed the association between feelings of commitment and responses to betrayal. However, the replication project could not confirm the causal link because the experimental task used in the original study did not effectively alter people’s levels of commitment.

The results of the replication project are published as a Registered Replication Report (RRR) in the September issue of Perspectives on Psychological Science.

The RRR project, proposed by psychological scientists Irene Cheung (Huron University College, Canada), Lorne J. Campbell (The University of Western Ontario, Canada), and Etienne P. LeBel (Berkeley Initiative for Transparency in the Social Sciences), aimed to replicate a 2002 study conducted by APS Fellows Eli J. Finkel and Caryl E. Rusbult, Madoka Kumashiro, and Peggy A. Hannon.

Finkel and colleagues hypothesized that commitment to one’s partner would promote prorelationship motives and, ultimately, forgiveness. In the 2002 study, the researchers designed an experimental manipulation to test their hypothesis. Undergraduate participants randomly assigned to a “high-commitment” group responded to prompts intended to activate thoughts about dependence and commitment (e.g., “Describe two ways in which you feel that your life has become linked to your partner.”). Students in the “low-commitment” group responded to prompts that activated thoughts related to independence and lack of commitment (e.g., “Describe two ways in which you are independent of your partner.”).

The students then completed a second survey, ostensibly for an unrelated study. They read descriptions of 12 hypothetical acts of betrayal (e.g., “Your partner lies to you about something important.”) and rated how likely they would be to respond in certain ways (e.g., feel angry that their partner can’t be honest, talk to their partner to resolve the situation, try to understand their partner’s point of view, come up with ways to get even).

Finkel and coauthors found that students who were prompted to feel high levels of commitment reported less destructive and neglectful responses to the betrayal than did students who had been prompted to feel low levels of commitment. Contrary to the researchers’ hypothesis, students in the high-commitment group were not any more likely than their peers to choose responses aimed at understanding and resolution.

The researchers interpreted the results of the 2002 study as indicating that highly committed individuals may choose not to engage in relationship-destructive reactions with the intent of forgiving their partners’ transgressions.

The study was novel in its use of an experimental technique to induce varying levels of self-reported relationship commitment, and it offered critical insight into the importance of commitment as a potential predictor of relationship outcomes.

Although a number of studies find an association between self-reported subjective commitment and responses to betrayal, this experimental evidence for a causal role had not been directly replicated. Cheung, Campbell, and LeBel developed a protocol for a robust, multilab replication initiative, working closely with Finkel, lead author on the original study, to ensure that the RRR was as complete and consistent with the original study as possible. In total, 16 labs completed independent, preregistered replications of the 2002 study, following the same vetted protocol.

In line with earlier correlational studies, the combined results of the independent replications confirmed the existence of an association between feelings of commitment and responses to betrayal. People who reported feeling more committed to their relationships chose responses that were simultaneously less destructive and more constructive compared with those who felt less committed.

However, the combined results were inconsistent with the findings of the original study demonstrating a causal link; the replications provide no evidence that prompting individuals to think about commitment affects how they respond to betrayal, in either destructive or constructive ways. This may be due to the fact that the commitment prompt did not have the intended effect — that is, the high- and low-commitment groups did not actually report feeling different levels of commitment, in contrast to the original study.

According to Cheung and colleagues, the reason for the discrepancy in how people responded to the commitment prompt between the original study and the RRR studies is unclear, but they note that the results were consistent across the 16 labs participating in the RRR. This suggests that differences in context or cohort across labs are unlikely to account for the difference.

“The findings from this RRR provide no evidence for (or against) the causal role of commitment in the forgiveness process,” Cheung, Campbell, and LeBel conclude in their report. They acknowledge that future research using different experimental techniques may yet reveal a causal link between feelings of commitment and the forgiveness process.

“Although I am surprised by the failure of the manipulation check and disappointed that the results of the RRR did not confirm the causal effects my colleagues and I originally reported, I deeply respect the process,” Finkel writes in a commentary accompanying the RRR. “It has left us with major unanswered questions, but it has also left us wiser than we were before.”

Lorne J. Campbell will speak at the 2017 APS Annual Convention, May 25–28, 2017, in Boston, Massachusetts.
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Submit a poster presentation related to any of these topics before January 31, 2017, and let your work be part of these special discussions. Submissions not accepted for a theme poster session are automatically considered for one of the regular poster sessions.

Symposium submitters will be notified of a decision by December 31.

Poster submitters will be notified of a decision on a rolling basis.

ASSOCIATION FOR PSYCHOLOGICAL SCIENCE
www.psychologicalscience.org/convention
Dozens of collaborations between behavioral scientists and government agencies are on display in two new reports emanating from Washington, DC, and the United Kingdom.

Annual reports from the nascent Social and Behavioral Sciences Team (SBST) and the UK’s Behavioural Insights Team (BIT) are now available online, and they reflect a rise in governments and businesses across the globe applying behavioral science to their operations.

The SBST was established in 2014, and in 2015, President Obama signed an executive order directing federal agencies to incorporate more behavioral science into their activities and services. As noted in the just-released 2015–2016 annual report, SBST’s scope has expanded significantly within the past year to include 40 different collaborations with federal agency partners. Among these new programs, SBST collaborations showed that:

- developing an interactive “Community Action Deck” provided communities with evidence-based steps that help them meet specific goals for improving policing, in alignment with recommendations from the President’s Task Force on 21st Century Policing;
- scheduling a call for a specific appointment time to discuss a student loan default increased the call-in rate by 61% compared with an email emphasizing the consequences of inaction; and
- sending urban HIV patients in Mozambique an SMS reminder to take medications and attend doctor’s appointments increased their likelihood of staying on the treatment and living longer. This was part of a collaboration with the United States Agency for International Development.

In a September 15 summit held in conjunction with the 2015–2016 report’s release, officials lauded the team’s work.

“Great policy only matters if it actually reaches people,” said Cecilia Muñoz, Assistant to the President and Director of the Domestic Policy Council. “Work from this group is where the policy rubber meets the road. The application of this set of ideas and this expertise can improve the lives of all Americans.”

The US government’s intensified emphasis on behavioral science was significantly influenced by a 2013 White House workshop, “Psychological Science and Behavioral Economics in the Service of Public Policy,” which brought together psychological scientists, behavioral economists, and government leaders to discuss how to incorporate behavioral empiricism into policymaking. APS was an organizer of the event, along with the White House Office of Science and Technology Policy, the National Institute on Aging, and the White House Council of Economic Advisers.

The 2013 workshop included presentations from some of the leading figures in psychological science, including APS William James Fellow and Nobel Laureate Daniel Kahneman; APS Past Presidents Walter Mischel, Susan T. Fiske, John T. Cacioppo, and Elizabeth A. Phelps; APS Past Board Members Barbara L. Fredrickson and Elke U. Weber; and APS Fellows Laura L. Carstensen, Robert B. Cialdini, Jennifer S. Lerner, Eldar Shafir, and Stephen J. Suomi.

The SBST was inspired in part by the UK’s BIT, which former Prime Minister David Cameron commissioned in 2010 to test public-policy interventions through randomized controlled trials. The BIT is now a company jointly owned by its employees, the UK government, and the London-based charity Nesta.

Among the highlights in the company’s latest report are results from a set of trials conducted in collaboration with renowned academics such as psychological scientists Geoffrey Cohen of Stanford University, Angela L. Duckworth of the University of Pennsylvania, and Todd Rogers of Harvard University. Those control trials, involving 10,000 students across 19 colleges, test the efficacy of interventions designed to foster perseverance and persistence. Early results show the interventions boosted attendance rates by nearly 4 percentage points. More details on achievement, attitudes, and other outcomes will be reported next year. BIT projects also demonstrated that:

- informing doctors that they are prescribing more antibiotics relative to 80% of their medical peers resulted in 73,000 fewer unnecessary prescriptions, helping to address the threat of antimicrobial resistance;
- getting police dispatchers to pause slightly before answering calls led to a significant drop in inappropriate calls (i.e., those that were more appropriate for a different government service agency); and
- sending text-message reminders to citizens who in previous years had been late paying their taxes increased on-time payment rates by nearly 50%.

Over the past year, the BIT has expanded its presence globally, setting up offices in Singapore and New York City and providing support for behavioral trials in Costa Rica, Poland, Australia, and most recently Mexico and Moldova.

What’s more, the company’s interventions are growing in both scale and complexity, involving an escalating number of citizens, BIT Chief Executive and psychological scientist David Halpern and Managing Director Owain Service report.

“The typical sample size of our trials is now often in the tens of thousands, and sometimes bigger,” Halpern and Service write in the report’s executive summary. “And the interventions reported often involve more complex psychological ideas, or more involved partnerships to deliver them.”

Seven Selfish Reasons for Preregistration

By Eric-Jan Wagenmakers and Gilles Dutilh

“Personally, I aim never again to submit for publication a report of a study that was not preregistered.” —D. Stephen Lindsay (2015, p. 1827) in an editorial for Psychological Science

With preregistration, researchers stipulate their hypothesis and analysis plan in advance of data collection, essentially tying their own hands and letting the empirical chips fall where they may (Peirce, 1883). The theoretical advantage of preregistration is that it sharpens the distinction between two complementary but separate stages of scientific inquiry: the stage of hypothesis generation (i.e., exploratory research) and the stage of hypothesis testing (i.e., confirmatory research). By respecting this distinction, researchers inoculate themselves against the pervasive effects of hindsight bias and confirmation bias (e.g., Nuzzo, 2015). Preregistration does not prevent researchers from conducting and presenting exploratory analyses, but it does prevent them from unwittingly presenting an exploratory finding as if it had been confirmatory.

In discussions about the pros and cons of preregistration, it is rarely mentioned that the procedure includes substantial personal benefits and that it generally enhances one’s potential for achieving academic success. Below, we list seven selfish reasons to engage in preregistration. An annotated list of online materials and articles that highlight the benefits and practical feasibility of preregistration can be found at https://osf.io/fq547/.

1. Preregistration allows you to take credit for your predictions.

Moore (2016) suggests: “Preregister anything you want to get credit for having been able to anticipate.” On datacolada.org, Leif Nelson writes: “In a world of transparent reporting, I choose preregistration as a way to selfishly show off that I predicted the outcome of my study.”

2. Preregistration is exciting.

You have a theory you wish to test. You design an elegant experiment and collect many observations. With preregistration, you cannot tinker with the analysis in a posthoc fashion — at least not in secret. You have asked a clear question, and that means you are more likely to receive a clear answer: Will your theory be confirmed or disconfirmed?

3. Preregistration prevents you from being taken hostage by your own data.

Without preregistration, it can be unclear what the data mean, especially for low-power designs and complex measurement methods. This ambiguity encourages fishing expeditions, and such expeditions can take months to complete. Who does not know the hapless grad student who has turned the data inside out, applying a host of alternative analysis options (kindly suggested by various faculty members at the weekly lab meeting) all with the purpose of producing “the goods” (a publishable result)? Because such results are obtained by cherry-picking, the entire enterprise is as useful as digging a hole and filling it back up.

4. Preregistration is easy.

You can easily preregister your experiments online, for instance on the Open Science Framework (http://osf.io/) or on AsPredicted (http://aspredicted.org/).

5. Preregistration builds your reputation.

When you preregister your experiments, you signal confidence. A strong anvil need not fear the hammer; similarly, you are not afraid to submit your theories to an unambiguous test. Preregistration also signals that you wish to conduct science in a transparent way and that you have done everything in your power to shield yourself from hindsight bias and confirmation bias.

6. Preregistration allows you to have manuscripts accepted “in principle” regardless of how the results pan out.

This benefit of preregistration can be obtained when you submit your preregistration proposal to a journal that offers Chris Chambers’s “Registered Report,” or RR, format (https://osf.io/8mpji/wiki/home/). After a preregistration proposal has been approved, you obtain “in-principle acceptance,” and eventual publication does not depend on the results. Another advantage of the RR format is that it allows you to improve the preregistration proposal based on the reviewers’ comments — that is, prior to data collection and before it’s “too late.”
Preregistration can shield you from posthoc critique.

Without preregistration, when your empirical result is not to the reviewers' liking, they will always be able to find a "crucial" flaw in your experiment — a hidden moderator, an inadequately manipulated check, an unrepresentative population, a subtly different instruction, a lack of power, and so on and so forth. Nosek and Lakens (2014, p. 138) termed this "critiquing after the results are known" (CARKing), and they point out that "[m]otivated reasoning makes it easy to generate stories for why results differed from expectations." Preregistration can protect you from CARKing, but only if the reviewers have signed off on the preregistration proposal — a procedure that is an integral component of the RR format explained above.

Additional arguments in favor of preregistration can be brought to bear. Spirited discussions with senior people in the field, however, suggest to us that experience trumps logic. Therefore, we end by calling on psychological scientists to give preregistration a try — you may discover that there is little to lose and much to gain.  

To learn about how Psychological Science is supporting preregistration, visit www.psychologicalscience.org/index.php/publications/observer/obsonline/what-is-preregistration-anyway.html.

References
Phoebe C. Ellsworth has spent 4 decades applying her expertise as an empirical researcher to hot-button policy debates about decision-making in juries, attitudes toward the death penalty, and eyewitness identification. Like many other researchers bridging the gap between basic science and applied research, the 2016 James McKeen Cattell Fellow has faced the dilemma of balancing her professional values as a researcher with her personal values as an advocate.

“Applied researchers may be more biased because we believe our findings will do good for the world, not just good for science,” Ellsworth said during her award address at the 2016 APS Annual Convention in Chicago. “On the other hand, I think being a scientist is a fundamental part of our identity, and it would be really devastating to most of us to be accused of cheating or even unconsciously biasing science. So that’s what the dilemma is.”

Ellsworth focused her address on the challenges of conducting unbiased research while also working as an advocate on social policy issues.

“This is an award for applied research, so what I want to do today is open a discussion about a dilemma that’s faced by all of us who do applied research, and that’s how to do unbiased research on controversial social issues,” Ellsworth said during her award address. “Our field discovered these biases. We ought to be aware of them.”

**Are You a Plato or a Pericles?**
The debate about whether an individual can successfully balance being an advocate for social change while retaining a fair, unbiased view dates back to the contrasting career choices of Pericles and Plato in ancient Greece.

“According to Plato, you can either be an advocate for policy, like Pericles, or you can be a seeker of truth, like Plato,” Ellsworth explained. “If you’ve ever read Plato, there’s no question which is the deeply inferior choice to make and which is the superior choice to make. And he says you simply can’t do both.”

This point of view is still commonly expressed today. The attitude is that it’s impossible to do scientifically acceptable research on any topic that involves your personal values. This leaves applied researchers with a simple choice: Give up the values or give up the research.

However, scientists often are drawn into policy-focused research specifically because they see an opportunity to correct the biases propagated by earlier so-called “basic” research. Ellsworth experienced such bias firsthand when she was rejected from graduate school at Harvard University for being a woman.

Scientists often are drawn into policy-focused research specifically because they see an opportunity to correct the biases perpetuated by earlier so-called “basic” research, says Phoebe C. Ellsworth.

When she asked why her outstanding academic record wasn’t enough to gain entrance to Harvard’s psychology program, she was told that a study had concluded that “women lack the stamina to make it to the PhD.”

“The attitude was that competence in all its variety — scientific competence and leadership competence — is somehow crammed onto this tiny shriveled-up little Y chromosome,” Ellsworth said. “And although I’m the first to admit that some feminist research has been biased, it’s not more biased than the basic research it was responding to.”

**Applying Science to the Law**
Huge policy decisions are made every day not on the basis of current research, but instead on outdated intuitions about human behavior. When the Supreme Court decided that group decision-making was the same in a six-person jury as in a 12-person jury, they relied on their own common sense, not on any research evidence, Ellsworth said. Two years later, they again used this common sense to conclude that giving up the rule of unanimity would not change the way juries deliberate, she added.

“It’s not that we had tons of evidence one way or the other, but that we had no evidence one way or the other,” Ellsworth said. “That was offensive to many of us. We shouldn’t be making decisions about human behavior without any information on human behavior.”
The reality, she said, is that without the research, it’s impossible to know whether a jury of six people makes as careful and accurate decisions as a jury made up of nine or 12 or 50 people, or whether a jury that doesn’t have to reach unanimity will reason as thoroughly as a jury that does or will give as careful consideration to all points of view.

Even the selection of research questions is fraught with accusations of bias, Ellsworth said.

“I once did a study showing that giving any individuating personal information about somebody who has committed a murder — like, ‘This murderer eats Cheerios for breakfast’ — [causes] people suddenly [to] get a lot more lenient” when deciding whether to mete out a death sentence, Ellsworth said. “This is not diagnostic, I think, of murderous tendencies, although I haven’t done the research to find out.”

Somebody could easily point out that this study has humanized the murderer and therefore is biased, Ellsworth noted. If the study had instead focused on humanizing the victim, people might favor the death penalty more strongly, she said.

“In choosing the research I do, I admit that the choice is likely to be biased, but I don’t think it’s realistic to ask people not to study the questions that interest them,” she said.

Ellsworth doesn’t believe that the pursuit of one’s social values has to bias one’s methodological practices. For those pursuing both scientific rigor and social justice, she has identified three areas where researchers should be especially vigilant about the influence of their values and biases: the evaluation of research, the conduct of research, and the communication of research.

Methods Section Madness
Ellsworth had several practical proposals for steps that all researchers — not just those working on policy-related issues — can take to reduce the role of bias in evaluating research that they read. One idea is to simply read the methods section of an article first.

“Before you know the findings, read the methods and then read the results — forget about the introduction and discussion,” Ellsworth advised. When it comes to evaluating research during the peer review process, she suggested that journal editors consider sending out the methods and results sections for a first pass at review, then sending the whole article for a later final review.

Another simple step to reduce bias, Ellsworth suggested, is actually talking to the people who disagree with you: “When I’ve said this to colleagues, they say, ‘I don’t know anybody who disagrees with me.’ Well, that’s actually part of the problem, sweetie. I’m not entirely persuaded by the argument that it’s impossible to find somebody who disagrees with your brilliant ideas, because they are out there.”

In conducting research, using checklists, a practice that helps make surgeries safer, also could help weed bias out of research, she said. Famously proposed by the surgeon Atul Gawande, checklists in the operating room help ensure that no important safety steps are left out during surgeries. Similarly, a simple checklist could cover basic methodological factors, such as experimenter bias or control groups, when evaluating a research paper.

“You actually become a lot more trustworthy person if you’re willing to admit that even people who agree with you can do quite inferior research,” Ellsworth noted.

**When Reporters Come Calling**

When it comes to communicating applied science, research that directly addresses social issues often ends up reaching a great proportion of the general public and the media. There is already tremendous pressure to overclaim in science, and the added attention from the public and the media can put even more pressure on researchers to make overblown claims.

“Reporters want your research to be earth-shaking. They want to hook their readers by saying that ‘Science will never be the same again after this astonishing scientific breakthrough,’ so you want to dampen that down,” Ellsworth suggested. “Reporters kind of like unanswered questions, [and] raising new questions is sometimes a good way to distract them from the fact that you haven’t actually changed American civilization as we know it.”

Ellsworth also pointed out that exactly who ends up getting their voice heard in the media is itself a very haphazard process. If you miss the reporter’s call, they’re likely to move on to the next expert on their list.

“We can assume that our colleagues will be skeptical about our claims, but people who are not scientists — legislators, judges, reporters, and the public — are more likely to read only the introduction and discussion,” Ellsworth said.

To help battle misinformation about the death penalty, Ellsworth serves on the Board of the Death Penalty Information Center, a reliable database of factual information for both the media and the public. She supports creating similar resources of validated, expert information on topics within psychological science to serve as invaluable resources for both the media and the public.

“What I’m really hoping,” Ellsworth finished wryly, “is to raise ideas among you that you will send to me, and I’ll put them into a paper and take credit for all of them.”

- Alexandra Michel

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**To watch video of Phoebe C. Ellsworth’s award address, visit www.psychologicalscience.org/r/advocacy.**

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SCIENCE ON THE WILD SIDE
INTEGRATIVE RESEARCH IN THE ANIMAL KINGDOM

By Alexandra Michel
Friedrich Max Müller, a former professor of philology and linguistics at Oxford University, United Kingdom, was a famous foe of Charles Darwin's theory of evolution. In one of his public “Lectures on the Science of Language” in 1861, Müller claimed, “language is the Rubicon which divides man from beast, and no animal will ever cross it … the science of language will yet enable us to withstand the extreme theories of the Darwinians, and to draw a hard and fast line between man and brute.”

Darwin responded to Müller in a polite letter arguing “with cordial respect” that, although human language certainly surpasses that of other animals in complexity and scope, animal communication offers a vital window into the early origins of human language.

“With mankind some expressions, such as the bristling of the hair under the influence of extreme terror, or the uncovering of the teeth under that of furious rage, can hardly be understood, except on the belief that man once existed in a much lower and animal-like condition,” Darwin argues in his 1872 book The Expression of the Emotions in Man and Animals. “The community of certain expressions in distinct though allied species, as in the movements of the same facial muscles during laughter by man and by various monkeys, is rendered somewhat more intelligible, if we believe in their descent from a common progenitor.”

Contemporary science is showing that Darwin may have been right all along: The line between human and animal cognition may not be so clear-cut after all.

While rats, chimpanzees, monkeys, zebra finches, and fruit flies may be among the most-studied animals in science, researchers increasingly are turning to the rest of the animal kingdom to better understand the evolution and underlying mechanisms of human cognition. Although the study of these animal models has provided the backbone of our understanding of many cognitive processes, the study of wild animals also can provide tremendous insight into the mechanisms that shape human behavior.

**Beyond the Usual Suspects**

W. Tecumseh Fitch, the cofounder of the Department of Cognitive Biology at the University of Vienna, Austria, is one pioneer who is using the study of animal cognition to answer questions about the evolution of human language. Fitch’s integrative research bridges the divides among linguistics, evolutionary biology, and cognitive science. In order to learn how humans evolved complex cognitive processes — such as language — scientists can look to contemporary animals as a window into the evolution of our own animal ancestors, Fitch says.

A key challenge in studying cognition’s evolutionary history, Fitch argues in a 2002 paper coauthored with APS William James Fellow Noam A. Chomsky, is that unlike bones, “linguistic behavior does not fossilize.” Fitch, who will discuss his research in a keynote address next March at the International Convention of Psychological Science in Vienna, Austria, has collaborated with biologists, ethologists, neuroscientists, and psychological scientists to study the mechanisms of language across a broad range of animal species, from our closest primate relatives to koalas and crocodiles.

Fitch says that “the evolution of speech was closely tied to control over our sound production system: our vocal tracts”; thus, our impressive vocal repertoire must have evolved in tandem with the neurological and cognitive mechanisms required for making a wide array of sounds. Using comparative methods for examining contemporary species provides researchers with valuable tools for tracing the behavioral abilities of our evolutionary ancestors.

Humans are the only animals able to seamlessly integrate the necessary sensorimotor systems, cognitive systems, and computational mechanisms necessary for complex linguistic structures, allowing us a capacity for complex language through speech, gesture, and writing. Darwin proposed that human language is made up of many different components and mechanisms that evolved together over time; according to this “multicomponent” theory, many different motor, neurological, and cognitive mechanisms each play a part in speech and language. While some animals may have well-developed adaptations for some of these mechanisms, others may lack the necessary anatomy or cognitive development.

For example, primates — our closest evolutionary relatives — are largely incapable of mimicking human speech or other novel sounds in their environment. Even with the cognitive abilities of a human (e.g., some symbolic capacity and a desire to communicate), a bonobo or a chimpanzee lacks the voluntary vocal control necessary to produce human-like speech sounds. This is why chimpanzees and other primates can learn gestures or sign language but cannot speak. Parrots and other birds, on the other hand, are famous for their uncanny ability to mimic the sounds of human speech, but with a few exceptions don’t appear to attribute meaning to words. Thus, vocal control and vocal learning can evolve independently of the rich and complex semantics of human language.

Songbirds are some of the most commonly used animal models for studying vocal learning. Birds such as the zebra finch learn complex songs much as human infants learn language, making them excellent models for vocal learning in many ways. However, birds have dramatically different vocal anatomies and brain structures from mammals. Fitch and colleagues are looking beyond the usual suspects of songbirds and primates to help untangle some of the mysteries of human speech.

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The Language of Seals

Most people have heard a parrot talk, but few realize that some seals can do so as well. As one of the only mammalian species capable of vocal learning that uses a human-like sound production system, with larynx, tongue, and lips, seals are some of the best nonhuman animals for research on complex vocal learning, Fitch and colleagues argue.

The last common ancestor of birds and humans lived approximately 300 million years ago; pinnipeds (the clade to which seals, sea lions, and walruses belong) shared a common ancestor with humans only about 65 million years ago. Not only do seals have vocal tracts and larynxes that closely resemble human vocal structures, but some pinnipeds appear capable of mimicking human speech with the same degree of skill as many parrots. Perhaps the most famous example of spontaneous vocal learning in a mammal is a male harbor seal named Hoover.

An orphaned pup raised by a Maine fisherman, Hoover was transferred to the New England Aquarium in Boston in 1971. As an adult, Hoover would mimic phrases such as “Hey! Hello they-uh!” and “Hey! Hoov-ah, come ovah hee-ah!” with an unmistakable New England accent, sounding like the very embodiment of a burly Maine fisherman.

Fitch, along with an international team of psychological scientists, cognitive biologists, and zoologists from Belgium, Germany, and the Netherlands, recently coauthored a paper extolling comparative pinniped research as a field ripe for further study. Not only are pinnipeds capable of vocal production learning (VPL), but new research suggests they also are capable of other forms of sophisticated auditory perception, including the use of rhythm and synchronization.

“We suggest that pinnipeds are ideal species to understand human speech, rhythm, and complex VPL at different levels (including physiology, behavior, neurobiology, and genetics). Pinnipeds’ vocal anatomy, brain evolutionary history, socioecology, and broad range of environmental conditions conveniently map to human biology,” Fitch and colleagues write in the article.

Hyenas Can Count

Seals aren’t the only wild mammals that might offer insight into how and why we developed the uniquely human adaptation of language.

Until recently, the largest colony of captive spotted hyenas in the world resided in Berkeley, California. Berkeley’s Field Station for the Study of Behavior, Ecology, and Reproduction (FSSBER) was started in the early 1960s to support the study of behavior in more natural settings than those provided by the typical laboratory cage. The FSSBER hyena colony was founded in 1985 by University of California, Berkeley, psychological scientist Stephen E. Glickman and wildlife biologist Laurence G. Frank as part of a research project examining sexual differentiation and the role of hormones in creating male and female phenotypes.

Hyenas live in highly hierarchical groups called “clans” that can include more than 90 individuals. Female hyenas are unique among other mammals for their highly masculinized biology; along with having very unusual genital development, female hyenas are typically larger than males and also hold the higher rank in the clan’s social hierarchy. They often hunt in groups, a strategy that allows them to bring down large prey such as wildebeest and zebras. The Berkeley hyena colony provided an exceptional array of diverse researchers with an unprecedented opportunity to study behavior and biology in highly social and intelligent nonprimates. Hyenas also can provide insight into another area of cognition: They have one of the richest repertoires of vocal communication of any mammal.

Although the FSSBER’s hyena facility shuttered in 2014 due to a lack of funding (the hyenas now are housed across several other wildlife parks), the 26-member hyena colony allowed scientists to study the cognitive mechanisms that eventually facilitated our evolutionary ancestors’ development of complex language.

Along with the ability to produce whoops, moans, and their famously human-like giggle, spotted hyenas possess a complex vocal repertoire that far surpasses most primates, providing researchers with an opportunity to study vocal communication in an animal more closely related to our highly social mammalian ancestors than zebra finches.

“Evolution of complex sound perceptions goes hand in hand with complex cognitive ability. Sounds need to be interpreted both socially and cognitively,” says Frédéric E. Theunissen, a University of California, Berkeley, professor of psychology, in a video interview. “Hyenas aren’t primates, but they also have complex social structures and have a communication system that’s as sophisticated as those seen in nonhuman primates. [It] shows what is needed to evolve the capability of language.”

Just as humans communicate a wealth of information through tone, rhythm, pitch, and volume, hyenas are able to communicate an astounding amount of information through variations in sound.

A hyena’s giggle is actually more akin to a human’s nervous chuckle than to a belly laugh (a single giggle is composed of a several short bursts of sound, hence the common comparison to human laughter). In the wild, hyenas make this sound as a signal of submission during close social interactions, such as while feeding. Captive hyenas tend to giggle when they are frustrated, particularly when they are waiting for food.

An integrative team of researchers conducted a study on the Berkeley hyena colony in 2008 demonstrating that, much like human voices encode for distinctive individualizing information, hyenas use their individual “voices” to communicate startling amounts of information. The team included neuroethologist

W. Tecumseh Fitch bridges the fields of linguistics, evolutionary biology, and cognitive science in his studies of animal cognition as a window into the evolution of human language. Fitch is a keynote speaker at the upcoming International Conference of Psychological Science in Vienna, Austria.
Nicolas Mathevon (Université de Saint-Etienne, France) and University of California, Berkeley, psychological scientists Aaron Koralek, Mary Weldele, Glickman, and Theunissen.

Using the same recording techniques traditionally employed to analyze vocal patterns in zebra finches, the research team visited the hyena habitat during feeding time to record the giggles of each of the 26 hyenas in the clan. To elicit giggles, the researchers kept food on the other side of the enclosure’s fence so the animals could see and smell it. They logged recordings for each animal across at least 4 different days. During the experiment, individuals being recorded were isolated from the other animals in their enclosure to prevent fights or injuries.

The scientists found that giggles not only were acoustically unique to each individual animal, they conveyed detailed information about the animal’s age, sex, and dominance position. Just as a human voice provides detailed personal information through tone, volume, accent, and prosody, hyenas rely on subtle elements of sound to communicate socially relevant information. The acoustic analysis focused on several features of each giggle, including the fundamental frequency (pitch), the energy distribution among the spectrum (vocal timbre), and the characteristics of the frequency modulation.

The results showing distinctive acoustical differences between individuals provide strong evidence that hyenas can identify individuals based on the sound of their giggles, similar to the way humans can identify each other by the sound of their voices. This ability to immediately identify which clan members are nearby becomes vitally important for bringing down prey. In the wild, lions regularly use their superior strength and numbers to steal kills away from hyenas. Giggles, which are quite loud and carry across great distances, allow hyenas to rally together to fend off such predators.

“It is known that a solitary hyena has no chance when confronted [by] a lion, whereas a hyena group often can ‘mob’ one or two lions and maintain or gain access to a carcass,” Mathevon and colleagues write. “Thus a lone hyena encountering a kill dominated by lions could use its giggle call to rally its clan.”

Studies conducted by Michigan State University behavioral ecologist Kay E. Holekamp have shown that hyenas can use these individually distinctive vocal cues to estimate how many interlopers are approaching. Holekamp and colleagues played recordings of hyenas made elsewhere in Africa to wild hyenas in Kenya and observed their reactions. When the hyenas heard the recordings in a group, they were likely to approach the source of the sound together. But playing the same recordings to single hyenas provoked very different behavior: When they perceived that they were outnumbered by strangers, they were unlikely to approach the source of the sound.

Holekamp’s colleagues in the Michigan State University Department of Psychology, Joseph Cesario and Carlos D. Navarrete, were intrigued by similarities between threat regulation in hyenas and their own research on threat responses in humans: When alone, humans tend to perceive threats as physically closer than they really are, but this distance bias seems to vanish when people are in groups.

Across two studies looking at more than 300 White participants, Cesario and Navarrete examined responses to racial bias and group threats. Whether participants were alone or in a group influenced their perceptions of the physical distance of an outgroup (in these experiments, Black males).

“Having one’s group or coalition around may change the perceived seriousness of the threat,” Cesario said. “In that situation, they may not see the threat quite so closely because they have their people around to support them in responding to the threat.”

Beyond race, similar studies conducted by APS Fellow Jay J. Van Bavel (New York University) have found that outgroup membership from Major League Baseball allegiances (New York Yankees fans vs. Boston Red Sox fans) to nationalities also can alter people’s judgments of proximity.

Can Turtles Play?

When it comes to animals playing, we might think of dogs fetching sticks or kittens tussling over a ball of string, but play has been described in all kinds of animals, from our nearest relatives (the great apes) to otters, crows, parrots, and even kangaroos. Researchers Sergio M. Pellis and Vivien C. Pellis have dedicated an entire book to describing such behavior in rats. But play may not be limited to mammals — or even to vertebrates.

APS Fellow Gordon M. Burghardt, a professor in the departments of Psychology and Ecology & Evolutionary Biology at the University of Tennessee, Knoxville, has spent decades researching reptiles. In his years of observation, Burghardt had never noticed any reptilian behavior reminiscent of a playful puppy — until he encountered a 50-year-old Nile soft-shelled turtle at the National Zoo in Washington, DC. The turtle, named Pigface, was acquired during the 1940s and kept in a solitary enclosure. When zoo staff added enrichment toys to the tank in the 1980s, Pigface began to interact energetically with them, pushing around basketballs and repeatedly swimming through colorful plastic hoops. A video analysis showed that Pigface spent about 31% of his time interacting with these objects when they were available.

The vast majority of animal taxa do not seem to engage in play behavior, which, until recent decades, was considered to be limited to mammals and some birds. However, just as human children suffer from a lack of play, many species of animals show signs of distress and dysfunction without adequate opportunities for such engagement.

Pellis and Pellis suggest that social play provides numerous advantages for both animals and humans. In a 2007 review article published in Current Directions in Psychological Science, the researchers describe how play fighting in juvenile rats influences both social behavior and brain development. During play fighting, rats will nuzzle the nape of their partner’s neck; in contrast, during a genuine fight, rats will bite each other on the lower flanks and rump. Studies have shown that juvenile rats deprived of social play are more likely to end up with social, cognitive, and neurological deficits than are their well-socialized peers. Without adequate rat social skills, adult rats have difficulty coordinating the complex social behaviors needed for mating, defense of territory, and even getting food.

“If you saw a dog or an otter going around batting a ball, bouncing around and chasing it, and going back and forth and doing it over and over again, we’d have no problem calling it play,” Burghardt explained in a 2010 interview with The Scientist in commenting on Pigface. But identifying exactly what behaviors constitute play is a tricky question for comparative psychologists, even in well-studied animals such as rats and monkeys.
Although Burghardt is cautious to avoid anthropomorphism by labeling certain behavior “play,” he also thinks it’s important for researchers to keep an open mind about the possibility of play in “the so-called ‘lower’ vertebrates.” Identifying the variety of play behavior that might exist across species can provide insights into the mechanisms underlying the behaviors as well as the evolutionary history that led to these adaptations.

To help fellow researchers identify play behavior across species, Burghardt has suggested five minimal criteria for identifying an animal at play. The behavior should be incompletely functional for the context; spontaneous, pleasurable, rewarding, or voluntary; different from other, more serious behaviors in form or timing; repeated, but not in abnormal and unvarying stereotypic form (e.g., rocking or pacing); and initiated in the absence of severe stress.

“In a single sentence: Play is repeated, seemingly nonfunctional behavior differing from more adaptive versions structurally, contextually, or developmentally, and initiated when the animal is in a relaxed, unstimulating, or low stress setting,” Burghardt writes in a 2014 article on evolution and play. These criteria aren’t intended to be comprehensive or the final words on the matter, but Burghardt does emphasize that having basic guidelines can help researchers more accurately identify play in species that are less often studied.

Burghardt and colleagues have observed behavior matching this general definition of play in animals ranging from all classes of vertebrates to cephalopods, insects, and spiders: “Monitor lizards grab and push around all kinds of objects, shaking shoes and retrieving soda cans like dogs. A saltwater crocodile plays with a tethered ball. Dart poison frogs engage in social rough-and-tumble play. Mormyrid fish push around and manipulate balls, and the more social freshwater stingrays play keep-away with them. Octopuses manipulate Legos and play catch with balls using their jets. More recently it has been shown that such behavior does not readily habituate and is motivationally robust.”

**Darwin’s Legacy**

Darwin believed that animal models provided valuable opportunities to research not only the evolution of human biology, but also psychology.

Before publishing *The Expression of the Emotions in Man and Animals*, Darwin circulated a short psychology questionnaire on emotional expressions to his friends and family as well as to far-flung contacts living as far from England as Australia, Borneo, and South America. Inspired by the research on the musculature underlying facial expressions conducted by the neurologist Duchenne de Boulogne, Darwin theorized that not only are many facial expressions shared across human cultures, but that human emotions are the result of neurological mechanisms also present in other animals. “A scream, for instance, uttered by a young animal, or by one of the members of a community, as a call for assistance, will naturally be loud, prolonged, and high, so as to penetrate to a distance,” Darwin wrote. “When male animals utter sounds in order to please the females, they would naturally employ those which are sweet to the ears of the species; and it appears that the same sounds are often pleasing to widely different animals, owing to the similarity of their nervous systems, as we ourselves perceive in the singing of birds and even in the chirping of certain tree-frogs giving us pleasure.”

For more psychological science research on animal cognition, please see the Special Issue on Cognition in Dogs in the October Current Directions in Psychological Science.

W. Tecumseh Fitch will deliver a keynote address, “Cognitive Evolution: People are Animals Too,” at the International Convention of Psychological Science 2017, to be held March 23–25 in Vienna, Austria. For more information, visit www.icps2017.org.

**References**


University of California (2010, June 9). *Hyena’s giggles provide insight into language development* [Video file]. Retrieved from https://www.youtube.com/watch?v=iz6T-AWGCN4

Five Tips for Improving Online Discussion Boards

By Morton Ann Gernsbacher

Online discussion boards are here, whether we like them or not. Whether we're teaching completely online or adding online discussion to a face-to-face class, online discussion boards are increasingly becoming a staple of college courses.

I've been teaching at the university level for more than 30 years; for half those 3 decades, I've been teaching, volitionally, online. I've used online discussion boards in classes with as few as six students and as many as 130 students; I've used online discussion boards to augment traditional lecture courses and as a mainstay of graduate and undergraduate seminars.

I've probably hosted nearly 5,000 online discussion forums, and I've observed scores of other instructors' online discussion boards at various institutions including high schools, 2-year colleges, liberal arts colleges, and 4-year universities. Here are five tips I've gleaned for improving online discussion boards.

1. Divide and Conquer.

Although few of us would ever consider teaching a face-to-face discussion section with 50, much less 100, students, many instructors supply only one discussion board for tens or even hundreds of students to use at once.

I recently observed a colleague teaching an in-person lecture course of 100 students. Prior to each lecture, the instructor posted one online discussion board for all 100 students to discuss the lecture's reading assignment. But when I observed the online discussion board, I saw few, if any, students actually discussing the reading assignment.

Each student was required to post a comment or question, which they did. But none of the students were "talking about (something) with another person or group of people," which is the definition of discussing.

If the pedagogical goal is solely to hold students accountable for a reading assignment, then an online submission box would serve better than an online discussion forum. But if the pedagogical goal is to enable interaction and engagement between and among students about what they read, then you need to divide and conquer.

Divide any class larger than a dozen students into subsections of six to eight students and create a separate but parallel discussion board for each subsection. In this way, students can more easily interact with each other, and a class of 80 can feel like a class of six to eight.

All the online learning management systems (e.g., Moodle, Instructure Canvas, Blackboard) allow students to be divided into groups — automatically generating a unique discussion board for each group. In this way, students can more easily interact with each other, and a class of 80 can feel like a class of six to eight.

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2. Direct Traffic.
The most common shortcoming I see among instructors’ use of online discussion boards is that the instructors aren’t directive enough. Most instructors simply post a prompt and tell all students to respond. The instructors also might tell students to respond to each other.

Hosting effective discussion boards requires directing traffic. You need to specify not only the what (the prompt) but also the who (to respond to) and the when (it’s due).

For instance, to make effective the dual assignment of post-your-own-comment and respond-to-another-student’s-comment, create two separate assignments with two separate deadlines: One assignment and its due date is for everyone’s initial post; the other assignment and its separate due date is for everyone’s responses to other students’ initial posts.

Make the due dates for the two assignments at least 1 day apart. Otherwise, there’s no guarantee that enough students will post until shortly before the first (and only) deadline. There are few things more frustrating to high-achieving students than to submit their initial post early and then have to scramble right up to the deadline while waiting for other students to post.

You can even more directive with regard to whom each student should respond to. For some assignments, I require each student to respond to another student to whom no one else has yet responded. For other assignments, I require each student to respond to the same student to whom they responded on their last assignment (or conversely, a different one).

Other variations can be created, but the notion is to direct the discussion board traffic — just as one directs conversational traffic during face-to-face discussions — rather than having the students going in random directions.

3. Assign Actions.
In wording your discussion board prompts, rather than simply asking students, “What did you think about…?”, hinge your prompts on action verbs.

Phrasing assignments in terms of actions such as “find,” “explain,” “describe,” “identify,” and “compare” gives students a sense that the discussion board is a place where real work gets done, rather than a place where everyone sits around to shoot the breeze.

For example, one of my favorite prompts for discussing a reading assignment is to “Find three quotes that interested you and explain why.” Variations include “Find three quotes that surprised you and explain why” or “Find three quotes that annoyed you and explain why.”

Resist writing prompts for which only one response is acceptable because once one student responds correctly, there’s nothing more for other students to add. If you want to test retrieval of explicit information, consider using an online quiz or an independently completed worksheet rather than an online discussion board.

That’s not to say that online discussion boards can’t query factual information, but the queries need to be varied — which leads to my next suggestion.

4. Incorporate Student Interactivity.
Rather than having all students respond to the same prompt in the same way, incorporate interactivity by requiring variation in students’ responses.

For instance, use jigsaw prompts. Named after social psychologist Elliot Aronson’s jigsaw classroom, these prompts require each student to contribute information that hasn’t been previously contributed (e.g., “Find a ___ that no one else has found”; “Describe the ___ in a way that no one else has described”; “Identify a ___ that no one else has identified”; and so forth).

Snowball prompts also incorporate interactivity and variety. With a snowball prompt, each student is required to build onto the information that a previous student has provided. Jigsaw and snowball prompts have the added benefit of rewarding students who post early.

You also can incorporate student interactivity by requiring that students respond to other students using the 3C + Q method created by Jennifer Stewart-Mitchell. On my online discussion boards, I require that students’ responses to other students always include at least two of the following: a Compliment (e.g., “I like how…”; “I like that…”), a Comment (e.g., “I agree that…because…”; “I disagree that…because…”), a Connection (e.g., “I also have read/seen/heard/thought that…”), and a Question (e.g., “I wonder why/how/who/what/when/where…”).

5. Deter Students From Parachuting Into Discussion.
Most online discussion assignments are made within a larger learning context, be it a unit, lesson, lecture, or module. Unfortunately, some students try to shortcut performance by parachuting into the discussion board without having completed the prerequisite activities.

Such shortcutting isn’t unique to online discussion; some students also show up for face-to-face discussion without completing the prerequisite activities. But one way to deter students from parachuting into an online discussion board is to not place the prompt in the discussion board itself (i.e., the textbox description) but instead in the larger context of the unit, lesson, or module.

In my online classes, I further deter students from parachuting into the discussion board by removing completely the menu item for the discussion board from the course navigation. Instead, I embed links to each discussion board forum in my list of assignments (e.g., “Read X, watch Y, and listen to Z, then go to the Unit 2 Discussion Board and identify a…”).

Thus, with a few modifications, online discussion boards can become more engaging and interactive. They can be a viable complement to in-person classes and a powerful cornerstone of online classes. In fact, many students prefer online discussion to face-to-face discussion, most likely because of the opportunity to communicate asynchronously. I hope these tips will allow many instructors to increase their facility with, if not their preference for, online discussion boards.
A Psychology Web Lab for Education: LABPSI

By Leticia Vivas, Boris Kogan, and Jorge Vivas

The increasing number of students enrolling in national universities in Argentina has created a challenge for institutions that need to provide appropriate practice spaces for an increasing number of students. This forces institutions to design innovative and technological solutions in learning management. In disciplines such as psychological science, it is extremely expensive to create opportunities for practice (such as in laboratories) where students can apply the theoretical contents covered in class. Difficulties arise because of physical infrastructure, equipment, insurance, wages for technical maintenance, and equipment obsolescence.

As teachers and researchers of the School of Psychology at the National University of Mar del Plata in Argentina, we find it urgent to create spaces for practices that contribute to building more meaningful learning environments for our students. It has been widely shown that active learning is essential for an effective and enduring learning process (Hirsh-Pasek et al., 2015). Therefore, we seek to create a tool that can provide a set of experiments and tasks accessible anytime and anywhere by researchers, teachers, and students. Such a tool would fulfill educational purposes without requiring installation of computer laboratories within the institution, which represents very high initial and maintenance costs. Thus, we worked to develop a Web Laboratory with a grant from the APS Fund for Teaching and Public Understanding of Psychological Science.

The development of an online tool such as the one presented here can provide students with a practice space that can be accessed from different devices (e.g., tablet, smartphone) and can be used as a complement during class time. This practice can then be built upon, adding more experiments to the original content and creating a comprehensive library in the Web Lab for the future. The platform allows the inclusion of various teaching resources that otherwise might be used separately, such as videos, the glossary, and links of interest. Implementing these experiments as Web applications allows them to be accessed from any location with an Internet connection.

Web Lab Technical Characteristics

The Web Lab was created as a Java Android app that gives teachers the possibility to create their own applications according to their class needs. Currently, it is part of the official university host, which implies an advantage in terms of availability, space, power, and speed.

The final software was developed following these criteria:

- Device independence;
- Free access and proven sustainability;
- Modular structure to allow growth (e.g., portlet design);
- Task manager for up to 5,000 concurrent tasks per hour to allow the joint use of students from other universities;
- Flexible administration to allow teachers to generate the customer setup for each exercise according to their needs;
- The availability of online apps to take advantage of interaction resources (e.g., chats, wikis, internal blogs);
- User-friendly interface; and
- Multilanguage platform (it currently is being translated into English and Portuguese).

Leticia Vivas is a teacher of learning theories in the psychology department at the National University of Mar del Plata, Argentina. Her research interests include semantic-memory deficits and neuropsychological assessment. Boris Kogan is an assistant teacher of cognitive psychology and introduction to research in psychology in the department of psychology at the National University of Mar del Plata, Argentina. He has an advanced student research fellowship on theoretical issues in cognitive science. Jorge Vivas is a professor of cognitive psychology and learning theories in the psychology department at the National University of Mar del Plata, Argentina. His research interests include cognitive psychology, semantic memory, and technological devices for content analysis.
Web Lab Content
The Lab is organized into the nine categories that are the main cognitive processes usually constituting the chapters of cognitive psychology handbooks, and each category is subdivided into tasks. Each task contains a series of experiments that can be run by the students using the platform. It is important to note that this platform is extremely flexible, so teachers can create new experiments dynamically according to their requirements. For example, if teachers want to show their students the priming task but with another type of semantic relation, they can generate a new experiment from the back end of the lab. They also can modify the time between stimuli to show how a certain effect appears or disappears according to this parameter. The page will be constantly updated and expanded in accordance with educational demands. The following sketch presents the general outline of the cognitive processes we intend to cover and the tasks already developed:

1. Attention
   - Direct digit-span task
   - Backward digit-span task
2. Memory
   - Word-list learning
   - Deep and superficial learning
3. Knowledge and Mental Representations
   - Mental rotation
   - Semantic representations
4. Perception
   - Semantic priming
   - Phonological priming
   - Use of masking
5. Language
   - Letter-sequence reading
6. Emotions
   - Emotional priming
7. Social Cognition
   - Theory of mind
8. Creativity and Problem Solving
   - Einstellung effect (tendency to solve problems in a stereotyped way)
   - Probability test

Reference

Registered Replication Report in the November issue of Perspectives on Psychological Science: Strack, Martin, & Stepper (1988)

Proposing Authors:
E. J. Wagenmakers, Titia Beek, Laura Dijkhoff, and Quentin F. Gronau

Protocol edited by:
Daniel J. Simons

See information on Registered Replication Reports: www.psychologicalscience.org/replication
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Whether Eyewitness Memory or DNA, Contaminated Forensic Evidence Is Unreliable

By John T. Wixted

There is an almost universal impression that eyewitness memory is inherently unreliable, even though research shows that eyewitness evidence is quite reliable so long as proper procedures are employed (see sidebar on p. 31). This misperception may be largely due to public awareness of cases in which people have been wrongfully convicted of crimes on the basis of eyewitness testimony that later was determined to be unreliable. By the same token, DNA evidence is largely viewed as unassailable, in part because of its publicized role in overturning wrongful convictions. But in reality, DNA evidence can be unreliable in the same way that eyewitness-identification evidence can be unreliable — namely, when the evidence is contaminated.

As part of the "Psychology & Law" class that I teach, I set out to illustrate the point that contaminated forensic evidence of any kind (not just contaminated eyewitness evidence) can lead to a wrongful conviction. Because DNA evidence generally is regarded as the gold standard of forensic evidence, I decided to use that as my example. To find an illustrative case, I conducted a Google search using terms like "DNA contamination" and "wrongful conviction." That's how I stumbled upon the story of Gary Leiterman.

The Conviction

The story begins with a tragic event: 23-year-old University of Michigan law student Jane Mixer was shot in the head with a .22-caliber gun in the early morning hours of March 21, 1969, and her body was dumped in a graveyard. She had arranged to meet a stranger named David Johnson at the student union on the evening of March 20, 1969, and he was supposed to drive her home to Muskegon, Michigan (about a 3-hour drive). She never made it. She was initially thought to be a victim of the infamous "Co-Ed Killer" (later found to be John Norman Collins), who was murdering women in the area at the time, but no direct link to him was ever established.

Mixer's murder remained unsolved until a cold-case analysis of DNA from the crime scene was conducted in a Michigan State Police forensic lab in 2002. That analysis uncovered two previously undetected DNA profiles that matched the profiles of two men who were included in a federal DNA database because they had recently committed crimes. One of those men was John Ruelas, who murdered his mother in early 2002. His DNA was found on a blood spot taken from Mixer's hand in 1969. The other was Leiterman, who recently had forged a prescription for pain medication. His DNA was found on a piece of pantyhose that Mixer had been wearing that day. Because Ruelas was only 4 years old in 1969, he was ruled out as a suspect, so only Leiterman remained a suspect. In 2005, he was sentenced to life in prison without the possibility of parole.

The discovery of DNA from Ruelas on the Mixer evidence should have been seen as an indication of potential contamination problems. Instead, the prosecution posed the theory that Leiterman killed Mixer and left his DNA at the crime scene in 1969 and that 4-year-old Ruelas also was there and somehow left a drop of blood on Mixer. (No connection between Leiterman and Ruelas has ever been established.) To this day, Collins is widely believed to have murdered at least seven women between 1967 and 1969, and he was convicted in 1970 for one of those murders. However, because no direct physical evidence linked Collins to Mixer's murder, the prosecution assumed he was innocent of this particular crime.

The Contamination

The prosecution's theory seems unaccountably accepting of the idea that a 4-year-old with no apparent connection to Leiterman was present and also bleeding when Mixer was murdered. Then again, any acknowledgment that the detection of Ruelas's DNA might reflect an error would only help the defense. Indeed, Leiterman's defense attorney, pointing out that DNA samples of all three people were analyzed in the same lab at nearly the same time, proposed that the two samples of DNA appeared on the crime-scene evidence because of inadvertent contamination. According to the defense, the Mixer evidence likely was contaminated with DNA from both Ruelas and Leiterman, and it was the obvious suspect, Collins, who committed the crime.

The timing of the DNA analyses is striking (Fig. 1). On October 24, 2001, the Mixer evidence from 1969 was pulled out of storage and taken to the Michigan State Police crime lab for processing. It was analyzed in March and April of 2002. Independently, evidence from the 2002 Ruelas murder case

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Figure 1

The possibility of contamination looms particularly large in light of the improbable Ruelas DNA evidence. Additionally, the results of lab tests showed that Leiterman’s DNA on the panty-hose was not blood or semen but might have been saliva, such as what was taken in his recent mouth-swab sample. Yet during Leiterman’s 2005 trial, lab technicians and supervisors adamantly maintained that proper laboratory procedures (e.g., sterilization procedures, storage protocols, contamination tests, etc.) had been followed at all times. Moreover, the evidence from the three different cases was analyzed in different physical locations in the lab on different days, thereby rendering cross-contamination (even from unnoticed and thus unrecorded events) a virtual impossibility, in their view.

Here’s the problem: To accept their interpretation of the evidence, you would have to further understand that Ruelas and Leiterman were together on the night that Mixer was murdered (estimated to have occurred between midnight and 3 a.m.), that 4-year-old Ruelas somehow bled on Mixer at that time, and that the independent processing of the Ruelas and Leiterman samples in the same lab within a day of each other 33 years later — close in time to when the Mixer evidence also was being analyzed — actually was just a remarkable coincidence (Fig. 1). To many observers, myself included, it is an inconceivable set of coincidences.

Given the inconclusive nature of the DNA evidence, convicting Leiterman of the premeditated murder of Mixer would only make sense if compelling corroborating evidence of guilt also existed. But there was no such evidence. A handwriting expert testified that two words written on a phone book found in the university union building were, with a high probability, written by Leiterman (thereby establishing the one and only connection between him and the location of Mixer’s abduction more than 30 years earlier), but another handwriting expert testified that it was highly unlikely that Leiterman wrote those words.1 Leiterman, an avid hunter, owned a .22-caliber gun in 1969 (one of the most commonly owned guns at that time; Collins owned one, too); however, the gun was long gone, so there was no way to match it to the bullets that killed Mixer.

And that’s it. Leiterman and his family vehemently maintained his innocence (and do to this day).

The (Many Other) Coincidences

The DNA story alone is disturbing enough because it involves too many coincidences to believe, but there are in fact many more unlikely coincidences that you also are required to believe if you are to accept the prosecution’s theory that Leiterman is guilty (instead of accepting the much simpler possibility of DNA contamination). Don’t forget that Collins coincidentally was killing young women — and coincidentally was picking most of them up near university student union buildings — in that same area and at that same time. Details of his activities — and the evidence pointing to his guilt in most of the murders he is suspected of having committed — can be found in Gregory Fournier’s new book about Collins, Terror in Ypsilanti: John Norman Collins Unmasked. Fournier understandably does not include Mixer among the serial killer’s presumed victims because there is no direct evidence linking Collins to Mixer and because Leiterman is in prison for having committed that crime. But there are coincidences galore that point to Collins.

Collins shot at least one of his victims — coincidentally, another Michigan graduate student and, coincidentally, with a .22-caliber gun — 10 weeks after Mixer was murdered. On the night she disappeared, Mixer was waiting to be picked up by someone named “David Johnson.” No connection between that name and Leiterman was ever established, but, coincidentally, Collins lived with someone named David Johnson, with whom he had known conflicts. Fournier speculates that if Collins did commit the crime, he may have been trying to implicate Johnson in the murder of Mixer.

Some doubt that Collins killed Mixer because there were notable differences between her murder and the murders of the seven women for which he is the prime suspect. Most notably, Mixer was not raped and mutilated, as most of Collins’s other victims were. However, her tits had been pulled down, implying a sexual motive. In addition, a sanitary napkin was still in place, which might explain why an attempted rape was abandoned: Collins was repulsed by menstruation (James, 1991, p. 48). Many other aspects of Mixer’s murder were coincidentally quite similar.

1 Not only did the experts disagree, but the scientific validity of handwriting analysis itself remains an open question (National Research Council, 2009).
Proper Eyewitness Identification Procedures

The police — and the legal system in general — use a variety of identification procedures, but certain common practices are now known to dangerously increase the odds of a misidentification. In the field of experimental psychology, but not in the legal system in general, it is well understood that you have one, and only one, chance to test whether or not the eyewitness recognizes a suspect. The identification test itself contaminates memory (by familiarizing the suspect’s face), and feedback from the police and others (“We thought he was the one”) inflates later expressions of confidence (Wells & Bradfield, 1998). The popular image of an eyewitness testifying in a court of law and confidently pointing to the defendant as the guilty perpetrator is the quintessential example of contaminated memory in action. It is not that seemingly compelling ID that provides the reliable information. Instead, the reliable information is provided by the ID that occurred way back at the beginning of the investigation (i.e., the first one).

Using a properly administered lineup, an initial eyewitness identification made with high confidence is highly reliable, whereas an initial identification made with low confidence is unreliable (Wixted, Mickes, Clark, Gronlund, & Roediger, 2015; Wixted, Mickes, Dunn, Clark, & Wells, 2016). Most of the wrongful convictions in which eyewitness misidentification is known to have played a role began with a low-confidence identification, which means that the witness appropriately signaled its error-prone nature (Garrett, 2011; see p. 64). It was only later, after the witness’s memory had become contaminated, that the witness made a high-confidence mistaken identification in front of a jury, thereby contributing to the wrongful conviction of an innocent person.

The first ID in a police investigation often is made using a photo lineup. A typical lineup contains a photo of the suspect (the person the police believe may have committed the crime) and five or more photos of physically similar foils. It is critical that the lineup be properly administered. For example, even the first ID will be unreliable if the witness described a perpetrator with a large neck tattoo, yet the only individual in a six-person lineup with a large neck tattoo is the suspect. A suspect who stands out in that way is likely to be confidently identified even if he is innocent.

What does a properly administered lineup look like? The general recommendations that have emerged over the years are as follows (Wells et al., 1998; National Research Council, 2014):

- Include only one suspect per lineup
- The suspect should not “stand out” in the lineup
- Caution the witness that the offender might not be in the lineup
- Use double-blind or blinded testing
- Collect a confidence statement at the time of the identification

Contrary to the widespread impression that eyewitness-identification evidence is inherently unreliable, an initial ID made with high confidence from a fair lineup, without undue influence from the lineup administrator, is highly reliable (Wixted & Wells, 2016).

-John Wixted
Mixer), including one who was murdered during a quick trip he made to California. Collins eventually was convicted of the last murder in the series (that of Karen Sue Beineman), and he remains in prison to this day. It is no great stretch of the imagination to suppose that his accelerated murder spree began on March 20, 1969, instead of on March 24, 1969.

The Conclusion
On my first try, I found the example I was looking for to illustrate the point for my students that contaminated forensic evidence of any kind — not just contaminated eyewitness evidence — can lead to a wrongful conviction. You simply have to accept too many unlikely coincidences to believe that Leiterman is guilty, both with respect to events in the DNA lab and with respect to events involving Collins. The alternative explanation — that Leiterman is innocent of the Mixer murder — requires only that you accept the glaring possibility of unnoticed contamination in the Michigan State Police crime lab. That is certainly my interpretation of what happened, and it is what motivated me to write this article. Beyond the tragic specifics of this case, the larger message is one that we, as scientists, already know (or should know) very well: Our confidence in the evidence is only as good as the methods we use to produce that evidence in the first place. 

References
Aimed at integrating cutting-edge psychological science into the classroom, Teaching Current Directions in Psychological Science offers advice and how-to guidance about teaching a particular area of research or topic in psychological science that has been the focus of an article in the APS journal Current Directions in Psychological Science. Current Directions is a peer-reviewed bimonthly journal featuring reviews by leading experts covering all of scientific psychology and its applications and allowing readers to stay apprised of important developments across subfields beyond their areas of expertise. Its articles are written to be accessible to nonexperts, making them ideally suited for use in the classroom.

Visit the column online for supplementary components, including classroom activities and demonstrations: www.psychologicalscience.org/teaching-current-directions.

Visit David G. Myers and C. Nathan DeWall’s blog “Talk Psych” at www.talkpsych.com. Similar to the APS Observer column, the mission of their blog is to provide weekly updates on psychological science.

When Fiction Becomes Fact
By Cindi May and Gil Einstein


Whether you are reading your Twitter feed, a best-selling novel, or a newspaper, you are at risk: Historical and informational errors in our reading materials are more common than you might think. And if you read such errors, you are likely to report them as fact at some point in the future.

This repetition of misinformation occurs because people often encode and remember material they read without engaging in careful analysis or evaluation, and thus incorporate that information into their general knowledge (Andrews & Rapp, 2014; Singer, 2013). The fact that we remember, rely on, and repeat inaccurate information is well documented (e.g., Fazio, Barber, Rajaram, Ornstein, & Marsh, 2013; Jacovina, Hinze, & Rapp, 2014; Marsh, Meade, & Roediger, 2003). It can occur even for information that we know is wrong (Rapp & Braasch, 2014).

In many respects this tendency is a little troubling, as misinformation may influence our judgment and decision-making — perhaps even affecting such important choices as our vote in a presidential election. APS Fellow David N. Rapp (2016) offers important insights into why we make these mistakes and outlines interventions that have — and have not — worked to reduce our reliance on inaccurate information that we have read.

To give students a sense of the pervasiveness of the issue, first ask them to discuss in small groups instances in which they fell prey to inaccurate information, perhaps retweeting or sharing the “news” on social media. Then ask them, while working in those groups, to judge which of the following pieces of information are fact or fiction:

1. Russia has a larger surface area than Pluto.
2. On Jupiter and Saturn, it rains diamonds.
3. The Ebola virus has been shown to be airborne in some cases.
4. An 8-year-old girl was killed in the Boston Marathon bombing.
5. After the November 2015 terrorist attacks in Paris, the lights on the Eiffel Tower were dimmed as a sign of solidarity with the victims.

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6. During Hurricane Sandy, the Statue of Liberty was threatened by violent winds and high waves.
7. Oxford University is older than the Aztec empire.
8. An octopus has three hearts.

The first two and last two items are true. The remaining items are all examples of misinformation that went viral through social media, and students may thus be likely to report them as true despite their falsity.

Relaying misinformation is obviously embarrassing. In some cases, it can damage our personal or professional lives. Ask students to suggest ways to protect against falsehoods we encounter when we read. The following techniques are likely to be suggested, but research demonstrates that none of them are effective:

- Warn people that the material they are reading contains errors. (People warned before reading errors show little reduction in reliance on those inaccuracies; Eslick, Fazio, & Marsh, 2011.)
- Ask people to retrieve accurate information (e.g., have them name the capital of Russia and most will correctly report Moscow) before exposing them to misinformation (e.g., that St. Petersburg is the capital of Russia). (People who retrieve correct information either 2 weeks prior to or immediately before reading misinformation continue to rely on falsehoods; Fazio et al., 2013; Rapp, 2008.)
- Present materials more slowly and reduce the complexity of the information. (Even with easier texts and more time, people persist in their assimilation of false information; Fazio & Marsh, 2008.)
- Test people long after exposure to the misinformation so that it fades from memory. (Delayed testing actually can increase reliance on errors; Appel & Richter, 2007.)

Why do these errors persist? Rapp argues that the human mind is designed for efficiency so that people are quick to perceive, recognize, respond to, and remember stimuli. For example, we tend to rely on recent memories because they are easily accessed (Benjamin, Bjork, & Schwartz, 1998), and we tend not to tag the reliability or quality of sources when reading because that requires time and effort (Sparks & Rapp, 2011). Both of these tendencies improve efficiency, and although that efficiency generally makes us more effective processors when information is accurate, it does leave us vulnerable to misinformation.

How can we mitigate these errors? Rapp and colleagues note that highly implausible errors are less likely to be adopted as true (Hinze, Slaten, Horton, Jenkins, & Rapp, 2014). Furthermore, if misinformation comes from a source known to be consistently unreliable, people are less likely to use it (Andrews & Rapp, 2014). Beyond these observations, Rapp and colleagues have developed two techniques for reducing reliance on misinformation, each informed by an understanding of the way cognitive processing works. See if your students can use what they know about human memory as well as Rapp’s theory about the source of these errors to generate these effective strategies:

1. **Force people to tag information as incorrect.** Asking people to correct inaccuracies in pen as they read reduces the impact of the misinformation (Rapp, Hinze, Kohlhepp, & Ryskin, 2014).
2. **Present false information in a context that is clearly separate from reality.** The fantasy context prevents incorporation of misinformation into general knowledge (e.g., if a historical error occurs in a fantasy novel versus realistic fiction; Rapp, Hinze, Slaten, & Horten, 2014).

This research offers two interesting “step back” lessons. First, human behavior is not intuitive; we need science to understand, predict, and control it. Many of the “obvious” solutions for combatting false information (e.g., warning people that material contains misinformation) do not work. Second, the identification of effective solutions not only is important for reducing the perpetuation of misinformation but also advances our understanding of how the mind works.
Conservatives, Liberals, and the Distrust of Science

By David G. Myers


On many issues, a gulf exists between what the public believes and what scientists have concluded. Is it safe to eat genetically modified (GM) foods? Yes, say 37% of US adults and 88% of 3,447 American Association for the Advancement of Science (AAAS) members (both surveyed by the Pew Research Center; Funk & Rainie, 2015).

Is climate change “mostly due to human activity”? Yes, say 50% of US adults and 87% of AAAS members, not to mention 97% of climate experts (Cook et al., 2016).

The public-opinion-versus-science divergence continues: Have humans evolved over time? Are childhood vaccines such as the measles, mumps, and rubella (MMR) vaccine safe? Is it safe to eat food grown with pesticides? (Yes, yes, and yes, say most scientists, but no, no, and no, says much of the public.)

What gives? What drives the widespread rejection of scientific findings?

In some instances, note Stephan Lewandowsky and Klaus Oberauer (2016), the public is simply misinformed. A fraudulent but widely publicized report of a link between the MMR vaccine and autism led to a drop in MMR vaccinations and an increase in measles and mumps (Poland & Jacobson, 2011). People may doubt climate change based on the weather they are currently experiencing plus a lack of education about greenhouse gases, rising global temperatures, retreating glaciers, increasing extreme weather, and rising seas — albeit all with imperceptible gradualness. (Some misinformation, Lewandowsky and Oberauer remind us, is funded by corporate interests, as when the tobacco industry worked to counter smoking research.)

In many other instances, contend Lewandowsky and Oberauer, “scientific findings are rejected ... because the science is in conflict with people's worldviews, or political or religious opinions” (p. 217). A libertarian who prizes the unregulated free market will be motivated to discount evidence that government regulations serve the common good — that gun control saves lives, that livable minimum wages and social security support human flourishing, that future generations need climate-protecting regulations. A liberal may be similarly motivated to discount science pertaining to the toxicity of teen pornography exposure, the benefits of marriage versus personal freedom, or the innovations incentivized by the free market. Partisans on both sides may, thanks to the ever-present confirmation bias, selectively attend to data and voices that confirm their preexisting views.

Voices from the right and left both may dismiss scientific expertise, but on different issues:

- From some on the right: “Global warming is an expensive hoax!” (Donald Trump, 2014).
- From some on the left: GM foods “should not be released into the environment” (Greenpeace International, n.d.).

To explore this association of political views with acceptance of scientific conclusions, instructors can (a) mine survey data and (b) conduct a simple class experiment.

The National Opinion Research Center at the University of Chicago makes data from its periodic General Social Survey of adult Americans easily available. Visit www.tinyurl.com/generalsocialsurvey and note that a click on the “search” box at the top will enable you or your students to search for variables of interest (as I did by entering the words “climate,” “gun,” “nuclear,” and “genetically modified”). Then, as a class demonstration or out-of-class exercise, you can investigate the following:

1. **Political views and climate-change concerns.** Enter “temppgen1” in the row box. Enter “polviews” in the column box. Click “run table” and you will see that “temperature rise from climate change” is a big concern for liberals, but not for conservatives. (To see the complete question text, click on “output options” before running the table.)

2. **Political views and gun safety**. Repeat the exercise, this time with “gunlaw” or “gunsales” in the row box.

3. **Political views and nuclear energy as dangerous**. Enter “nukegen” in the row box.

4. **Political views and GM foods**. Enter “eatGM” in the row box — and note that, unlike in the three previous analyses, there is actually, in this sample, little association between political views and attitudes toward GM foods.

Lewandowsky and Oberauer also report on an experiment by Dan M. Kahan, APS Fellow Ellen M. Peters, Erica C. Dawson, and APS Fellow Paul Slovic (2013) that lends itself to a class replication. Show half the students the data on the left side of Figure 1 (see next page), from a hypothetical study of the outcomes in various cities of banning or not banning concealed handguns. Ask each student: What result does the study support? Compared with cities without handgun bans, did cities that enacted a concealed handgun ban fare (a) better or (b) worse?

Then ask students whether they would describe themselves as tending to be generally more conservative or liberal.

Note that in the data on the left, the ban yielded a 3-to-1 increase versus decrease in crime, compared with a 5-to-1 increase without the ban (thus the ban was effective). Shown

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these data, most liberals recognized the result ... but failed to draw the parallel conclusion (e.g., that the ban was ineffective) if shown the mirror-image data on the right. Conservative interpretations were reversed. Are your students’, too?

Given that people’s personal biases filter the science they accept, how can we increase critical thinking, science literacy, and acceptance of evidence? In the case of climate change, we might

- relate the evidence to people’s pre-existing values (e.g., clean energy boosts national security by reducing dependence on foreign oil);
- connect the topic with local concerns (e.g., the threat of drought matters to Texans, Californians, and Australians; the risk of flooding affects Floridians and the Dutch);
- frame the issues positively (e.g., “carbon offsets” are more palatable than “carbon taxes”; reducing carbon emissions is healthy, regardless of how a person feels about climate change); and
- make communications credible and memorable (e.g., use credible communicators, including conservative messengers to conservatives; underscore the broad-based scientific consensus; show climate-change doubters pictures of rising seas and extreme weather).

Distrust of science runs high among some who are religiously conservative (Pew, 2007). To increase enthusiasm for science among such students, I remind students of religion’s support for the founding of science, which was rooted in a spirit of humility that recognizes human fallibility. In that spirit, I suggest, let us welcome whatever insights science has to offer. As St. Paul advised, “Test everything; hold fast to what is good.”

References
The benefits of transparency in scientific research are clear. Sharing the data and code underlying published studies enables others to check the results and also can be very useful for carrying out further research. Yet in spite of the benefits, many fields have a long way to go when it comes to data sharing (Alsheikh-Ali, Qureshi, Al-Mallah, & Ioannidis, 2011; Gherghina & Katsanidou, 2013; Vines et al., 2014).

Why is this? Researchers cite lack of time and funding as major barriers (Tenopir et al., 2011). In a culture where sharing isn’t yet always professionally rewarded by tenure-review committees, making time to publicly share data in addition to getting articles accepted into journals is a costly commitment. There are a few major ways of addressing this incentive problem. One way is to find mechanisms of rewarding data sharing rather than publications alone; another is to help researchers by providing training and resources that can make it easier for them to share data.

Research Transparency Workshop

Innovations for Poverty Action (IPA) and the Center for Effective Global Action (CEGA) are organizations that work with academic researchers to carry out high-quality research studies on programs ranging from education to financial inclusion to health, primarily in developing countries. Staff at both organizations working on sharing data from studies have found that it is much more difficult to prepare data and code after the analysis and publication are complete than beforehand. Files easily can become messy and disorganized; unlabeled variables can be difficult to interpret later on (especially for those who didn’t create them!); lack of documentation about which statistical code produces tables in a publication can make it difficult or impossible to replicate the study. The solution is to think early and often about how to prepare materials so that others can understand and use them (where “others” also includes oneself in 6 months).

This past year, IPA and the Berkeley Initiative for Transparency in the Social Sciences (BITSS), housed within CEGA, teamed up to hold a 2-day research transparency workshop outside of Nairobi, Kenya. BITSS was established in 2012 to strengthen the quality of social science research and evidence used for policymaking. The initiative offers resources and support to psychologists, economists, and political and social scientists in promotion of research transparency, reproducibility, and openness. IPA and BITSS each have research transparency initiatives, but this was the first time that we came together to coorganize a workshop.

Workshop participants included researchers from African institutions and universities such as the University of Rwanda and the Ethiopian Economics Association as well as research staff from IPA offices around the world. The workshop provided an overview of research transparency, hands-on sessions on best practices for managing code and data, advice on learning to use Git (a version-control software) for version control of code, and a tutorial on using Markdoc, a tool for writing dynamic documents. The workshop also included a demo of the Open Science Framework (OSF), a collaborative workflow platform created by the Center for Open Science (COS), and gave participants time to work on improving their own data and code. Finally, Paulin Basinga, who works with the Bill & Melinda Gates Foundation...
as well as the Ministry of Health in Rwanda, discussed the importance of replication for providing a strong evidence base for policy. Full materials from the workshop are available in a public repository page on OSF at https://osf.io/45286/.

The Wider Research Transparency Movement

Psychological scientists have been leading the way on several initiatives within the research transparency movement — for example, COS led the way on the Reproducibility Project, a collaborative project in which hundreds of researchers attempted to replicate studies from psychology journals in their own labs. COS also is providing leadership on initiatives aimed at tackling the incentive problem mentioned above. The initiatives include the Transparency and Openness Promotion guidelines and Open Badges that reward researchers for providing open data, open materials, and preregistration. Recent research suggests that adopting badges increases data sharing (Kidwell et al., 2016).

Next Steps and Further Resources

BITSS offers regular workshops on research transparency and hosts an annual summer institute (see the 2016 agenda and materials at www.bitss.org/events/summer-institute/). Software Carpentry, Data Carpentry, and COS are other groups offering workshops covering reproducible research. Johns Hopkins University offers an online course in reproducible research through Coursera.

On your own, you might consider how thinking about transparency and reproducibility in your own research may affect your workflow and the tools you use. Here are some questions to ask:

- As a study progresses, are you keeping track of versions of your code used to clean and construct variables and to analyze data, ideally using software such as Git?
- Are you leaving comments in your code and/or naming files to make it clear which parts of the code produce tables in your paper?
- Are you labeling variables clearly so that you can understand them later and others can reuse them when the data is publicly shared?
- Have you considered what sort of de-identification or anonymization of the data may be required to share it publicly? How might these efforts affect replication of your analysis from the public-use data file?
- Have you considered storing your materials in an established repository such as Dataverse or OSF rather than on your own website to make them more widely accessible? (If materials are archived in a repository rather than on a researcher’s website, they will be stored sustainably and will receive a unique digital object identifier so that others can cite the data and other materials if they use them.)

For the research transparency movement to succeed, there must be significant change in norms and practices surrounding transparency in research. From funders requiring and offering support for data sharing to journals adopting new data-sharing policies and researchers changing their workflow to make reproducibility a priority, there are many aspects of the transparency movement. While much work remains, the good news is that the shift is well underway.

References and Further Reading


Minds for Business

A Blog on the Science of Work and Leadership

www.psychologicalscience.org/minds
How to Get in: Applying to Psychology Grad School
by Derek M. Novacek

So you think you want to be a psychological scientist? Well, the first step is applying to graduate school — a long, but exciting, process! To be a competitive applicant, you’ll want to have been involved in research, which is the reason many people pursue graduate school in the first place. It’s typical for applicants to have 2 to 3 years of research experience before applying to graduate school. Some gain that experience by working full-time as lab coordinators or research assistants after graduation; others get involved in research early in their undergraduate education. It’s also becoming increasingly common to take a gap year or two to continue working in a research lab before applying to graduate school. Outlined in this article are some questions to consider and strategies to implement when you begin the process.

What kind of graduate program do you want to pursue?
If you realize you enjoy research and want to continue doing it, the next major question to ask yourself is: What do you want to study? Based on your coursework, prior research, and other relevant life experiences, you will want to decide which discipline within the psychological science field you would like to pursue. That decision likely will be based on your specific interests, but you also might consider the type of training you would like to complete. The specific direction you decide to go in also may be influenced by a particular methodology or approach that you want to learn and use.

How do you choose where to apply?
Unlike students applying to undergraduate programs, most graduate school applicants base their decision about where to apply on whether there is a faculty member with overlapping research interests at that school. I knew when applying to graduate school that I wanted to research schizophrenia and other psychotic disorders, so I applied only to schools where I knew someone was doing such research. After you have compiled a list of schools and professors whose research you’re interested in, I would highly recommend emailing those professors in the early fall — not only to introduce yourself, but also to ask if they plan on interviewing and accepting students to their lab the following year. You may be a competitive applicant, but if the professor you want to work with isn’t accepting students, you likely won’t get very far in the admissions process; thus, emailing professors before submitting your application can save both time and money. After you hear back from professors who will be accepting students from the upcoming application cycle, I would recommend narrowing your final list to about 10 to 12 schools. Your list might be somewhat smaller if you’re geographically limited.

Tips for putting together your application materials
As soon as — or even before — you have your final list of schools, you should email professors, advisors, research mentors, and anyone else from whom you would like a letter of recommendation. It’s best to contact your letter writers as early as possible; professors get numerous requests to write letters, so they often have a lot on their tables. After my contacts agreed to write recommendations for me, I provided them with a packet of my application materials (i.e., a draft of my personal and/or research statement, CV/résumé, and transcript) for their reference while they wrote my letters. You may even want to encourage your letter writers to speak to certain aspects of your application (e.g., research experience, conference presentations) to make sure they are emphasized. You even could consider asking your letter writers to briefly discuss apparent weaknesses in your application (e.g., a lower grade in a relevant course or lower GRE scores) and then follow up with why your strengths compensate for the weaknesses. Several faculty members who review applications have told me that they are impressed when applicants address their potential weaknesses. Of course, you want to keep this brief and focus on emphasizing your strengths. Check in with your letter writers a couple of weeks before the application deadline to see if they have any questions regarding your application, and also to make sure your letter hasn’t become lost in their huge to-do list!

As you wait for your letters of recommendation, continue to work on the rest of your application. Seek feedback on your personal and/or research statement(s) from as many people as possible. There’s a particular benefit to having friends or family members who do not have backgrounds in psychology read your essays for clarity, organization, and flow. When you are finished, check the policies of the schools you are applying to: Many schools allow you to submit your portion of the application...
before your letter writers have submitted their recommendations. Continue to monitor whether your schools have received your GRE scores and transcripts. Once everything is in, celebrate! Go out to eat at your favorite restaurant, see the movie you’ve been waiting to see, or do something else to reward yourself for your commitment and time. At this point, everything is out of your hands, and all you can do is wait to hear back from the schools.

Starting around January, you hopefully will start to hear back from some of the schools you applied to, requesting that you visit for interviews. Going on interviews can be expensive, so be sure to budget and plan ahead. Some schools will provide some financial assistance — usually reimbursements — toward your expenses, but rarely are they fully covered. Preparation for interviews includes reading the latest papers of the professor you’re applying to work with and generating a list of questions to ask faculty and students. Most importantly, always ask questions, even if you’ve already asked the same ones several times of other people. If you don’t, people will assume that you’re not very interested in the program, and it could hurt their perceptions of you.

Within a few weeks of your interview, you should receive a decision on whether or not you’ve been accepted to the program. Should you be lucky enough to receive multiple admission offers, you now have a big decision to make! Among other things, factor in the research fit with your potential advisor, funding (e.g., tuition, stipend), your impressions of the graduate students and other faculty in the program, and location when you make a decision about which school to attend. Can you see yourself working with this professor for multiple years? Is this a place where you can see yourself living and working? Does it seem like you will get along with the other graduate students? Is the stipend sufficient to offset enough of your living expenses? These are all questions you can ask yourself to help make your decision. Below are some resources that I found helpful during my graduate school search. Good luck!

Further Reading

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For authors interested in submitting a proposal for the series, please visit www.Cambridge.org/CTP2016 for more information.


**Francesca Gino**, Harvard University, NPR, September 7, 2016: Social Science Researchers Explore ‘Unethical Amnesia.’


**Dacher Keltner**, University of California, Berkeley, NPR, September 6, 2016: The Perils of Power.


**Maryam Kouchaki**, Northwestern University, NPR, September 7, 2016: Social Science Researchers Explore ‘Unethical Amnesia.’


**Tina Malti**, University of Toronto, Canada, *The Conversation*, September 21, 2016: Here’s How to Raise a Child to Be Sympathetic.


**Matthew K. Nock**, Harvard University, *PBS*, September 18, 2016: Can Technology Help Predict Who Will Attempt Suicide?


**Coverage of research from an APS journal**

**Podcast included in coverage**

**2017 APS Convention Speaker**

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15, 2016 and will continue until the position is filled contingent on available funding. An offer of employment will be conditional on background verification. Georgia State University is an Equal Opportunity/Affirmative Action Institution. Women and minorities are especially encouraged to apply.

HAWAI I

U.S. Department of Veterans Affairs

Pacific Islands Division, National Center for PTSD

Director

POSITION ANNOUNCEMENT Director, Pacific Islands Division, National Center for PTSD, Honolulu, HI. U.S. Department of Veterans Affairs The National Center for Posttraumatic Stress Disorder (NCPTSD) seeks a dynamic, academically-oriented leader for the position of Director, Pacific Islands Division, Honolulu, HI. We are seeking a senior doctoral-level individual with a strong background in clinical psychology, psychiatry, social work, public health, and/or related field with a solid research and publication record in the area of mental health disparities within a multicultural context. A focus on PTSD or trauma is preferred, but applicants working on other mental health disorders are encouraged to apply. A demonstrated record of publication, national leadership, and research grant funding are essential. Experience with program or policy development is preferred and recognition within the scientific and academic community is required. The Director advances innovative programs and national collaborations in research and education, as well as promotes staff development and scientific productivity. Mentorship/teaching/training experience in the academic and/or clinical applied fields are desirable. Strong communication and interpersonal skills are essential, including sensitivity to issues related to the stigma of mental illness and minority mental health. Full salary and benefits package are competitive and commensurate with experience (GS-15). Credentials should be commensurate with faculty appointment at the associate or full professor level at the University of Hawaii. The Pacific Islands Division, and of NCPTSD is a seven-site consortium mandated by Congress to study reactions to traumatic stress and develop model educational programs. The Division has a nationally-recognized program that specializes in the development and evaluation of tele-mental health methods for treatment delivery. We are eager to build a new research program that addresses health disparities among veterans with PTSD and provides leadership on this topic to other NCPTSD divisions. There are many potential opportunities to collaborate with NCPTSD colleagues locally and across the country. The Division is located the VA Medical Center in Hawaii, which is the principal tertiary care referral center for Veterans from throughout the Hawaiian Islands, American Samoa, and Guam. The VA Medical Center provides a full spectrum of inpatient, residential, and outpatient medical-surgical and mental health services. The Division also has an affiliation with the University of Hawaii. The Director would be expected to take a leading role with regard to both the VA and university relationships. Please send curriculum vitae and a cover letter to Matthew J. Friedman MD, PhD at Matthew.Friedman@va.gov. Three references may be requested later. For questions, please contact Dr. Friedman at the above email address. Applications will be reviewed as received and will be accepted until the position is filled. Department of Veterans Affairs provides equal employment opportunities (EEO) to all employees and applicants for employment without regard to race, color, religion, sex, national origin, age, disability or genetics. VA also encourages persons with disabilities to apply.

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Cognitive Science

Assistant Professor, Psychological Science

The Cognitive Science Department at RPI invites applications for a tenure-track faculty position at the Assistant Professor level. We seek applicants with a theoretically motivated program of research that makes use of experimental approaches and complements the department's existing strengths in cognition, perception, and/or action. Priority will be given to applicants who are using innovative techniques from statistics or machine learning to analyze, model, and interpret data. Outstanding candidates using more conventional methods in cognitive science, neuroscience, or a related field. The incumbent will develop an externally supported research program and teach courses on statistical and/or mathematical methods in psychological science. Application screening will begin on October 20, 2016. Applications will be accepted until the position is filled. To apply, please complete the short on-line application at http://rpijobs.rpi.edu/postings/4134. Rensselaer Polytechnic Institute is an Affirmative Action/Equal Opportunity, Race/Gender/Veterans/Disability Employer.

OHIO

The Ohio State University

Psychology

Quantitative Psychologist

The Department of Psychology at the Ohio State University seeks a Ph.D. quantitative psychologist or scholar with related training to join our nationally recognized program in quantitative psychology. Ideally, the successful candidate will be a specialist in one or more of the following: psychometrics and psychological testing (e.g., measurement theories and test construction, reliability and precision of measurement, types of validity, test norming, test and item bias), statistical modeling of measurement-related research topics (e.g., item response theory, factor analysis, structural equation modeling), and/or development of methods for longitudinal and time-series models, with special interest in applications for data analytics, functional neuroimaging, and other cross-cutting areas. Applicants must have earned a Ph.D. in psychology or a related field prior to the time of application. All applicants are expected to have very strong and notable research programs and to contribute to both graduate and undergraduate supervision and instruction. Appointment is contingent on the university's verification of credentials and other information required by law and/or university policies, including but not limited to a criminal background check. Apply to Academic Jobs Online at: https://academicjobsonline.org/ajo/jobs/7839. A complete application consists of a cover letter, curriculum vitae, statement of research and teaching interests, and the names of three individuals from whom letters of recommendation could be solicited. Applications received prior to November 15, 2016 will receive priority consideration. Inquiries may be directed to Azuena De Los Santos (delossantos.10@osu.edu).The Ohio State University is an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation or identity, national origin, disability status, or protected veteran status.
Oregon State University

School of Psychological Science

Assistant Professor

The School of Psychological Science at Oregon State University is accepting applications for a full-time, 9-month, tenure-track position as Assistant Professor in Health Psychology. Although candidates in any area of Health Psychology will be considered, we would be particularly interested in applicants with expertise in health disparities and/or underserved or minority populations or who study psychological distress or problems across the lifespan in relation to health psychology. This position will be effective Fall 2017. The candidate’s duties will include teaching, research and service. Minimum qualifications include: Ph.D. in health psychology or closely related field, evidence of excellence in graduate and undergraduate teaching and student mentoring or potential for excellence in same, evidence of an active and productive research program or the potential for developing same, a demonstrable commitment to promoting and enhancing diversity. For further information and to apply visit oregonstate.edu/jobs Applications should include a cover letter, a curriculum vita, and a statement that outlines research interests, provides evidence of teaching and mentoring skills, and indicates how the criterion of a commitment to promoting and enhancing diversity is met. Letters of reference are required for this position. Reference posting P00592UF. For full consideration applications should be received by November 18, 2016. OSU is an AA/EOE/Vets/Disabled.

Presbyterian College

Psychology

Tenure-Track Assistant Professor of Psychology

The Position: The Department of Psychology at Presbyterian College invites applications for a tenure-track assistant professor of psychology beginning fall 2017. The area of expertise is open, although the successful candidate is expected to teach service courses (e.g. introductory psychology), systems and theories of psychology, and some combination of social psychology, industrial/organizational psychology, and/or psychology of religion. Depending on department needs, there may also be the opportunity to teach periodic special topics courses in the candidate’s area of expertise. While a Ph.D. is preferred, ABD candidates are also encouraged to apply. Review of applications will begin on October 10th and will continue until the position is filled. For more information on position go to: http://www.presby.edu/about/offices-services/human-resources/job-opportunities/ Application: Interested individuals should send a letter of application, curriculum vitae, statement of teaching experience and philosophy, college and graduate school transcripts, and three letters of recommendation to Dr. Brooke Spatta, Psychology Search Committee Chair, Presbyterian College, 503 South Broad Street, Clinton, SC, 29325. Electronic submissions are encouraged, and emails should be sent to socialpsych@presby.edu. Presbyterian College is an Equal Opportunity Employer. The College seeks to hire the most qualified candidate and does not discriminate against any legally protected class.

APS WIKIPEDIA INITIATIVE

More than 3,300 psychological scientists and their students have joined the APS Wikipedia Initiative (APSWI).

Students are learning about scientific writing by improving Wikipedia articles about psychological science instead of writing traditional research papers.

Get Started With Your Class

For classroom resources, APS has partnered with the WikiEd Foundation. For more information, visit www.psychologicalscience.org/apswi

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CLINICAL PSYCHOLOGIST

$87,972 starting annual (Non-Licensed)
$103,848 starting annual (Licensed)

California Correctional Health Care Services is leading the charge to redefine the quality of health care delivered in our State’s correctional facilities. Our path to better results is simple: We hire exceptionally skilled clinicians who provide first-rate care.

We are seeking Clinical Psychologists to provide high quality mental health care as part of one of the largest, most innovative, interdisciplinary treatment teams in the nation. The ideal candidate enjoys complex diagnostic evaluation and collaborating with experienced staff to implement effective clinical treatment. Your career can include individual and group psychotherapy, crisis management, psychological testing, working with patients with developmental disabilities, or work in an inpatient psychiatric setting.

With opportunities available throughout California, we have a location that will be a perfect fit for you and your family!

For more information on this exciting career opportunity, please contact us at 877-793-4473. MedCareers@cdcr.ca.gov


REHABILITATION CALIFORNIA DEPARTMENT OF

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Scan here to apply online
ANNOUNCEMENTS
Send items to apsobserver@psychologicalscience.org

MEETINGS

39th Annual National Institute on the Teaching of Psychology
January 3–6, 2017
St. Pete Beach, Florida
www.nitop.org/

2nd International Convention of Psychological Science
23–25 March 2017
Vienna, Austria
www.icps2017.org

29th APS Annual Convention
May 25–28, 2017
Boston, Massachusetts
www.psychologicalscience.org/convention

25th Biennial Meeting of the International Society for the Study of Behavioral Development
July 15–19, 2018
The Gold Coast, Queensland, Australia
www.issbd2018.org/

GRANTS

SRCD Policy Fellowships for 2017–2018 Year
The Society for Research in Child Development (SRCD) is seeking applicants for SRCD Policy Fellowships for 2017–2018. Fellowships run from September 1, 2017, through August 31, 2018. Applicants must have a doctoral-level degree in a relevant discipline (e.g., PhD, MD, EdD), must demonstrate exceptional competence in an area of child development research, and must be a member of SRCD. Both early-career and advanced professionals are encouraged to apply. The deadline to apply is December 15, 2016. To apply for the fellowships, visit https://apps.srcd.org/login.

NSF Seeks Grant Proposals for Research Program
The National Science Foundation is seeking grant proposals for its Smart & Connected Communities program. Applicants for funding are expected to pursue research activities studying how inhabitants of communities are increasingly connected by smart technologies. Proposals must meaningfully integrate across both behavioral science and technological research dimensions. Preliminary proposals are due November 30, 2016. For more information, see the program solicitation at https://www.nsf.gov/pubs/2016/nsf16610/nsf16610.htm.

Learning
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▶ Four or five general sessions on cutting-edge research and practice, including talks by Robert Sternberg, Toni Schmader, Roberta Golinkoff, and David Daniel
▶ Fourth Annual Teaching Slam: a fast-paced, dynamic session in which multiple speakers share their best teaching tip, assessment idea, or class activity
▶ Third Annual Demo Demo: great instructors microteach their favorite class demonstrations—original, ready-to-use demos and new twists on old favorites

Networking
▶ Three poster sessions
▶ Three participant idea exchanges
▶ Informal networking sessions

Exploring resources
See the newest psychology textbooks and learn how to use instructional software to enhance your students’ learning

Registration includes admission to all conference events, breakfasts and lunches, an evening buffet, and handouts for all presentations, which will be available online during and after the conference.


Contact: Joanne Fetzner, jfetzner@illinois.edu or 813-973-6969.
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