The APS Board Discusses Research Integrity

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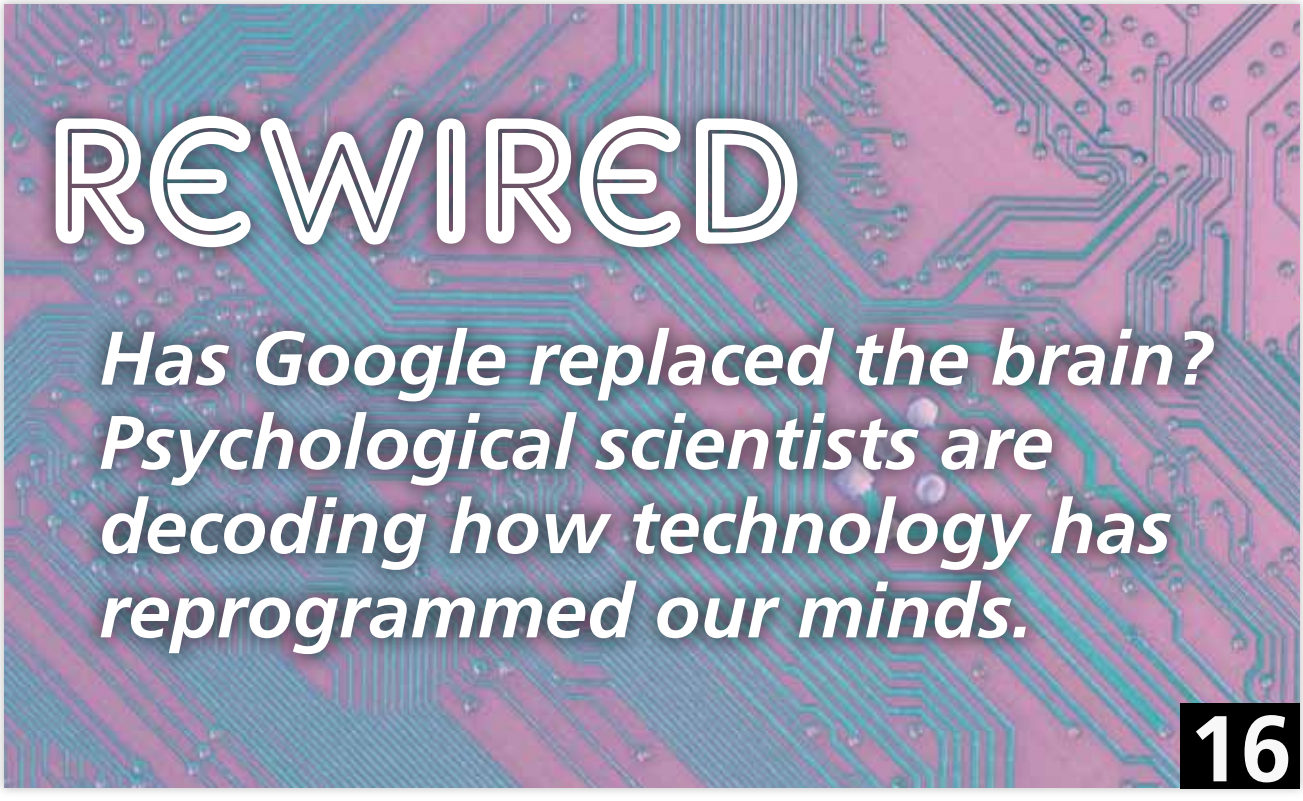

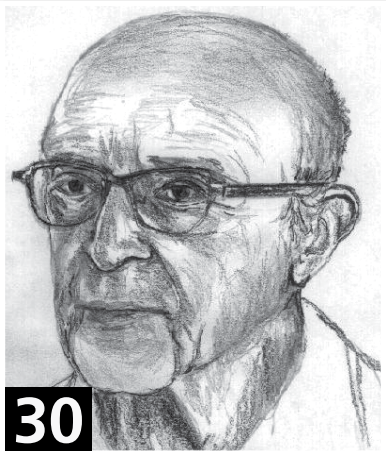

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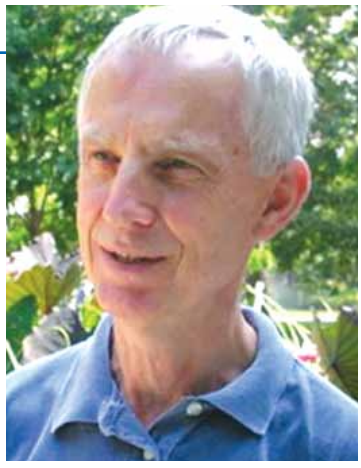

Rigor Without Rigor Mortis: The APS Board Discusses Research Integrity

Please excuse this further sidetrack from the road we were on in my previous columns. Two months ago, the column I had planned was displaced by a response to the considerable attention that various media paid to a social psychologist's faking of data and the attendant questions about whether psychology was especially susceptible to cheating. The implication seemed to be that many, if not most, of the most striking results in psychology might be bogus.[1] I argued in my previous column that there is nothing special about psychology when it comes to fraud, that meta-analyses suggest that fraud is rare (about 2 percent of researchers admit to it), and that tools intrinsic to the practices of science, such as replication, help root out "false positives," or Type I errors (concluding that some effect is present when in fact it is not), and produce a science we can believe in.

But can we do better, at least in the sense of encouraging practices that allow science to function more efficiently and effectively? The APS Board took up this and related questions at our retreat in early December. The discussion was animated and (in my opinion) very productive, so we decided that this "Boardologue" should be shared with the broader APS community. Here's the plan we came up with: I would write a column outlining a few of the issues and possible recommendations and then we would begin spilling ideas over to the APS website by having board members share their perspectives. The third step intended is an open forum, refereed for relevance, redundancy and respect for our community. So here goes step one.[2]

More than two decades ago, I was one of the people invited to help celebrate the 25th anniversary of the University of Minnesota Center for Research in Learning, Perception and Cognition. The speakers were invited to speculate on how the field of learning might or might not change 25 years in the future. The only thing I remember about my own talk was the tongue-in-cheek prediction that in 25 years counter-balancing would still be a good idea. The audience laughed (probably politely), but later on, a graduate student from my lab, David Thau, told me that after the laughter died down, the graduate student next to him turned and asked, "What's counter-balancing?"

Well, I still think counter-balancing to control for order effects is a good idea and should be used when the study design permits it. Furthermore, the fact that it may be inconvenient to do so doesn't strike me as a good excuse for not counter-balancing. Yes, you may have to cut and paste parts of your questionnaire six times when it seems like one order would do, but I think it's worth it. First, if you find no order effects, you're on your way to a more robust pattern of results. Second, if you do find order effects, you may open a new line of inquiry, perhaps regarding some sort of priming effect. If you don't counter-balance but obtain statistically significant results anyway, you won't know whether you have lucked into the one question order that can produce the result of interest. So the issue is less about "false positives" than it is about a false sense of security surrounding the generality of the results and your interpretation of them.

Let me now turn to other suggestions from my wish list.

1) Counter-balancing (see above).

2) More on methods and procedures. At a time when journals seem to be pushing for streamlined everything, including methods sections, there is a danger that potentially relevant procedural details will be missing. If we know (or think we know) that a messy versus neat experiment room or the presence of an American flag can affect participant's performance, it seems odd to skimp on details just because the factors are not of current interest. There are tons of studies on priming effects, but we seem to be unperturbed about writing that experimental probes were part of a larger set of tasks that (we assume) are not relevant to present concerns. Given that supplemental materials can be placed online, why not insist on providing the details and letting the entire scientific community judge their relevance?

3) In an earlier column, I suggested that attention to experimenter expectancy effects seems to have fallen out of fashion. Why not require that authors report whether or not the experimenter was blind to the hypotheses? [3]

4) As was noted last month, Barbara Spellman, the editor

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[1]Given that our field is an empirical science, I'll just note that this (dubious) claim can be tested.

[2]The recommendations listed at the end of the recent Simmons, Nelson, and Simonsohn (2011) paper also constitute good material for discussion. For example, they suggest that authors should be required to decide the rule for terminating data collection before data collection begins and report the rule in their article. I can see the value of this principle in certain areas of research, but it may not be so practical in other ones. For example, in the cultural research conducted in my lab, our informal rule is something like "let's run a few pilot participants to see how variable the data are going to be and then interview enough informants so that we can detect fairly large differences."

[3]Of course, there are many situations where blindness or double blindness is not feasible. My aim is just to increase the practice when it can be done.

of *Perspectives on Psychological Science*, and others are working to develop an archive of attempts to replicate experimental phenomena.[4] Why not require authors, again in supplementary materials, to describe any related studies they have conducted for the same hypothesis but have chosen not to publish? [5] (I would make an exception for studies that have blatantly flawed designs.)

5) Another rule with lots of exceptions [6] might be to include the actual data in supplementary materials. Some journals, such as *Judgment and Decision Making*, already have this rule.

Well, I'm going to stop here because I don't want to consciously or unconsciously plagiarize other board members. My tentative bottom line is that we could add a touch more rigor to our empirical efforts and that it may be feasible to do so by some slight shifts in publication policies.

But we don't want rigor mortis.

Some well-established areas of research may be like Phase III clinical trials, in which the methods and measures are settled issues and the only concern is with assessing effect size. Other areas, however, may rely on open-ended tasks in which the dependent variable cannot and typically should not be specified in advance. For example, to analyze people's sortings of (pictures of) different species only in terms of taxonomic relationships would leave researchers blind to alternative organizational schemes (such as sorting according to the habitats where species are found). In her dissertation studies, my former student Sara Unsworth [7] got a great deal of mileage out of asking rural Wisconsin Native-American and European-American adults to tell her about "their last encounter with deer."

This sort of work raises different challenges with respect to rigor, as typically it just isn't feasible to specify a coding scheme in advance. I'm not sure what we know about the science of developing coding schemes, and our standards for establishing inter-rater reliability, in my opinion, remain underdeveloped.[8]

I guess this is all part of what makes our field so exciting. We have a large advantage over other sciences in that our focus on human cognition and behavior naturally includes researchers and the psychology of their practices. We are intrinsically part of that which we study, and that is why rigor without rigor mortis not only advances our science but is part of it as well.

All of the Board members participated in the December discussion. Here are representative comments from a few:

Reference

Simmons, J. P., Nelson, L. D. & Simonson, U. (2011). False-positive psychology: undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22, 1359-1366.

[4]I should have added that Harold Pashler and Barbara Spellman are collaborating in this effort, coordinating what started out as two independent projects.
[5]A postdoctoral fellow in my lab, Sonya Sachdeva, told me about attending a talk where at some point the speaker mentioned that "it took me ten studies to finally produce this effect."
[6]A case in point involves rich data sets (e.g., video observations) that might be analyzed in multiple ways for different purposes or to ask different questions. Here authors should probably be given some reasonable amount of time to explore their own data before making them publicly available.
[7]Sara is now an Assistant Professor at San Diego State University.
[8]For example, "acceptable reliability" standards strike me as a bit arbitrary. I wonder, for example, if some variation on signal detectability theory might be applied to adjust for inter-rater differences in criteria for saying some code is present.

Popularity Shouldn't Define Scientific Significance

1) Recently, there has been a premium on "innovation," "transformation," and "paradigm-changing" research. This is important, of course, but it overlooks the importance of "normal" science, in the Kuhnian sense. Grant applications are now not being funded, merely because they are incremental. Not everything has to be paradigm shifting to be valuable.

2) There seems to be a blurring of boundaries between popular and scientific impact. Until recently, most scientists did not care whether or not their work was communicated to the public. This was a problem of course, but now the pendulum seems to have swung in the opposite direction: sometimes it appears as if we care too much, and the science suffers for it.

Scientists now have competing goals. One is to publish work that is newsworthy (e.g., to be mentioned in the *New York Times* science section). A second is to publish work that is theoretically important and makes a significant contribution to the scientific question at hand. These are not necessarily the same and so should not be confused. But they often are. Findings in papers are often hyped in a way that is more appropriate in a press-release than in a scientific paper. Students now cite popular books as evidence of some finding or effect (which are, at best, a secondary source), instead of citing the scientific papers. Often papers are triaged (in *Science* for sure, and some even claim this is happening in *Psychological Science*) because they are not newsworthy or splashy even though they are quite scientifically important.

Often, when we try to communicate things to the public (e.g., calling freezing behavior "fear" and calling the acquisition of freezing to a tone via classical conditioning "fear learning"), this filters back into the science itself in a way that is not helpful (e.g., the belief that "fear" has a unified biological cause).

3) The public still does not have a good grounding in the value of science and science education. Hence, they believe that there should be applied value in research that delivers right away. They often don't understand that a *theory* is not a speculation or a hypothesis — it is a scientific explanation that is well established with data — or they confuse an *effect* with a *theory*.

4) Many psychology students no longer receive education in philosophy of science, and this limits the scope and validity of their theory building attempts.

Lisa Feldman Barrett

Technology Could Help

In the interest of encouraging replication and promoting transparency in evaluating methods, I suggest that each published paper include a video of the experimental protocol (faithfully reproducing the context, stimuli, spatial layout, experimenter intonation, gaze, pacing, feedback, etc.). This would essentially serve the purpose of what current methods

sections are intended to do (permit others to replicate one's research), but would use current technology to capture much more detail and nuance than is possible with a brief verbal description. This small step would potentially have several benefits: (a) replication attempts would be more uniform, and the effects of slight procedural variations would be easier to measure; (b) methodological flaws in items or procedure would be more apparent; (c) unconscious cuing of participants may be detectable; and (d) researchers may be encouraged to be more accountable in ensuring that procedural details are thoughtfully considered in the design phase of the research and uniformly followed during data collection. There are serious issues to be addressed regarding how to maintain realistic fidelity without introducing IRB concerns re: confidentiality, but I think these issues are solvable.

Susan A. Gelman

Universal Rules Could Be Problematic

I'm all in favor of rigor and view my own work as high on the appropriate scales, whatever they may be. That said, I think that attempts to capture best practices by a set of rules are almost certainly doomed to fail, given the diverse nature of psychological science. Psychophysical experiments, for example, have been published with an N on the order of 2, possibly with only the authors (who obviously know the hypotheses) being willing to undertake the tedious hours of data collection with a repetitive task. That may not be the norm, but it illustrates why restrictions shouldn't be expected to apply universally. My own work often uses instruments that can measure the positions and forces people exert over time, with the possibility of dependent variables exploding accordingly. If I discover that a variable affects jerk (the second derivative of position) rather than acceleration (the first derivative), am I prohibited from publishing?

Roberta L. Klatzky

Impact Factors Have Too Much Influence

There are three main criteria by which we judge scientific work: rigor, importance in the sense that it makes a significant empirical and theoretical contribution, and general interest. It is right to focus on the first of these criteria because it essentially is the only one to which a set of rules or procedures can be applied — but it is the one that causes the least trouble. Fraud or failures to replicate do not arise because the studies were lacking in rigor, at least not insofar as a panel of experts could judge. Many of the suggestions regarding practices that would facilitate judgment of scientific rigor are good ones, such as publishing raw data (though we already have a system in place which requires us to make raw data available on request). However, allocating journal space or cyberspace to indicate failures to replicate adds noise to a system (how are we to distinguish poorly executed studies from proper ones?), and requiring a statement from authors as to whether the successful study was accompanied by many nonsuccessful ones would seem to invite evasion, if not mendacity.

The more difficult problem concerns the other two criteria, since there is a strong subjective element to both. In order to deal with this subjectivity, the scientific community has tried to introduce a measure of objectivity. Citations and their derivatives, such as the *h*-index and impact factors, have assumed a measure of importance out of all proportion to their usefulness, so that rather than merely taking the pulse of scientific discoveries, they are used to prescribe a scientific regimen.

It is easy to see how we've arrived at this state of affairs. Citations, which are meaningful indices only *after* an article has been published, have been subverted to determine the fate of an article *before* publication. Here's how it works. Journal editors and publishers used citation counts as a way of determining the impact an article published in a given journal has on the field and derived impact factors based on that. Once this was in place, articles were judged not only on their own merit, but on the impact factor of the journal in which the article was published. Because of competition among journals to keep impact factor high, articles came to be judged not only on the basis of the first two criteria — rigor and importance — but also on the basis of the third — general interest, which has little scientific merit aside from drawing public attention to the article. As an analogy, consider a criminal trial in which the jury is instructed to take into account the effect their verdict would have on public opinion before rendering a decision. This mind-set is reflected in a journal style in which all or part of the Method section, where rigor is judged, is relegated to the back of the paper and, more recently, to a supplementary section that is available only online and for which a separate search is required. In addition, to entice high-impact scientists to contribute to high-impact publications, reviews had to be rapid and turn-around short, both militating against careful scrutiny of the publication. We quickly went from using citations as a (imperfect) measure of a paper's impact to having them determine ahead of time what kinds of papers will be published.

Most scientists can tell which way the wind blows, and if some are obtuse, tenure committees, granting agencies, and government ministries will make sure their senses are sharpened. Promotion and funding to individuals, departments, and universities (see the example in the UK and France) is

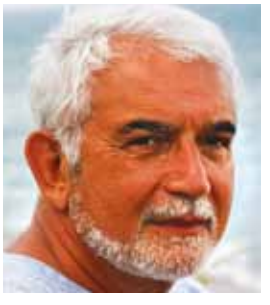
based increasingly on these measures. Knowing that they are judged by these "objective" measures, many scientists, myself included, have succumbed to the lure of publishing short, eye-catching papers that will get them into high-impact journals, rather than submitting a paper with an extended series of experiments. We have seen this trend in our own flagship journal, *Psychological Science*. Our boast of having over 2,000 submissions a year reflects not only the quality of the journal, which is high, but also the fact that its impact is high and its articles are short. One or two experiments, rather than a series of them, will get you in.

When I was a post-doc, an eminent psychologist who sat on the scientific review panel of the Canadian equivalent of NIH told me that in the 1950s and 60s a publication in *Science* or *Nature* was given no more credit than a book chapter and far less than a publication in a specialty, archival journal. The reason was that it was difficult even then to know on what basis the article was accepted for publication in *Science* or *Nature*, and given how short it was, it was difficult to judge the rigor of its methods. I doubt we can return to that time, but we can downplay the importance we attach, not to citations, because they occur after the fact, but to journal impact factors. To increase rigor, we can return to requiring a series of experiments on a topic before we accept it for publication, even in a journal like *Psychological Science*.

Morris Moscovitch

We Need to Work on the Bigger Questions

The majestic production of papers based on fictive data produced by someone who was assumed to be a very respectable member of our community and published in very "respectable" journals has been a major source of reflection.



I shall take this opportunity to draw attention to an issue that provides a possible account for the undetected flourish of the extraordinary event that came to light. It is the theoretical as well as "phenomenal" permissibility that our science and some of our prestigious publication outlets encourage. The absence of a true paradigm in the Kuhnian sense, the absence of truly integrative theory, the absence of a problem that requires collective attention and research is undoubtedly one of the contributory factors allowing this type of misconduct to pass undetected for such a long time. The fractioning of the quest for knowledge to sound bites is becoming the criterion by which quality and significance are being judged, and our graduate programs are becoming increasingly sophisticated in training the next generation with these goals in mind. This means that we have to reflect and work upon the bigger questions that capture the imagination of many competing for the answer for the answer's sake. This means that we have to train the next generation to identify big questions, teach them to separate the big ones from the seduction of sound bites, and to learn to work in teams.

The recent revelation of misconduct, the full magnitude of which we shall only hear closer to spring of this year, is also diagnostic of what we value and why we confer high accolades in our profession, since the culprit in question had accumulated all possible honors in his field of practice and beyond. The shift from the individual to the team, a process that is in the making, will also contribute to a rethinking of the distribution of rewards as well as of the administrative and organizational structures we have to adopt in order to bring about these changes that are essential for our science to progress and reduce the hiccups we occasionally experience.

Gün R. Semin

Replication Will Expose Cheaters

I believe three points should be considered in this discussion:

1) Cheating and scientific misconduct sadly happen in all fields of science and take many forms, from the outright forging of data to not reporting all of the data that have been collected. Psychological science is not different in this regard, and we need to come to terms with the fact that there are dishonest people in our field.

2) Replication, a distinguishing feature of science, ultimately ferrets out cheaters — it just takes time. While it is important that we take steps as a field when possible to prevent scientific fraud, it happens, perhaps by the way data are handled and reported. I hope the field does not substitute regulation for replication in its attempt to legislate this bad behavior. Replication remains our chief tool for eventually exposing cheaters.

3) The overwhelming majority of scientists in our field are honest and diligent, and these honest people are our ultimate tool for countering cheating — they sense when something isn't right, and as long as our institutions maintain an open and non-intimidating atmosphere, our honest colleagues will expose the cheaters. This happened in the case that triggered this discussion.

Joseph E. Steinmetz

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THE ACADEMIC OBSERVER

An occasional column by
Henry L. Roediger, III
Washington University in St. Louis

Psychology's Woes and a Partial Cure: The Value of Replication

Psychology has come in for some bruising in the news media recently. The huge fraud case involving Diederik Stapel of Tilburg University in the Netherlands reaped a large amount of (well-deserved) negative publicity. Coming on the heels of other fraud cases at well-respected universities in North America, some see a trend emerging. In addition, recent publications provide additional ammunition for those firing at psychology in that the papers show that some researchers employ shoddy research practices (e.g., cherry-picking data to make some point) or use wrong statistics to bolster their claims (this kind of study comes along every few years, it seems).

The media had a number of different takes on the Stapel affair. The *Los Angeles Times* ran a story (by Amina Khan; November 5, 2011) headlined "Dutch scientist accused of falsifying data" that focused on Stapel and his fraud. Other media outlets were more generous with their blame. The *Chronicle of Higher Education* provided several stories. The first (on November 3) focused on Stapel ("The fraud who fooled almost everyone"). However, a later story on the front page of the *Chronicle* (November 13) ran under the headline "Fraud scandal fuels debate over practices of social psychology." Now it was not just Stapel who was under scrutiny, but the entire field of social psychology. The author, Christopher Shea, brought into play the article that was published in *Psychological Science* by Joseph Simmons, Uri Simonsohn and Leif Nelson on "false-positive psychology." These authors provided an interesting case study of how a complex piece of research can be done with many variables and then, if the authors cherry-pick their findings and ignore basic statistical practices, they can reach an outlandish conclusion (e.g., that listening to the Beatles "When I'm 64" can make people younger). The basic tactic was to use all sorts of covariates in splitting data in various ways to find one that produced a significant outcome (father's age was used as a covariate in the case of the Beatles' song). The reach of the Stapel affair, the Simmons et al. article, and other matters (the cases of fraud involving Marc Hauser and, longer ago, Karen Ruggiero at Harvard) has worked others into a lather. Writing in the *New York Times* on November 2, Benedict Carey indicted all of scientific psychology in an article headlined "Fraud case seen as a red flag for psychology research."

Henry L. Roediger, III *is a past APS President and is on the faculty at Washington University in St. Louis.* *Dave Balota, Kathleen McDermott, Hal Pashler, Endel Tulving, Simine Vazire and John Wixted provided helpful comments on an earlier draft of this column. My thanks to Hal Pashler for letting me quote from his remarks.*

Really? All of psychological research? Why not all of science? After all, the problems of fraud, nonreplication and poor statistical practices are hardly unique to psychology. As I was writing this piece, I read a notice of *Findings of Misconduct* from NIH, which reported several cases of scientific mischief (two involving plagiarism by computer scientists and another involving falsification of figures published in the *Journal of Cell Biology*). As this paper was going to press, another case of fraud involving a medical researcher at the University of Connecticut was in the news.

Calmer voices have been seeking to soothe these fevered proclamations about psychological science. APS Executive Director Alan Kraut wrote an op-ed piece arguing that "Despite Occasional Scandals, Science Can Police Itself" (in the *Chronicle of Higher Education*, December 9, 2011). Science is a self-correcting process, although sometimes the correction is slow in coming.

Social/personality psychologists have been agonizing over the events mentioned above, as well as publication of Daryl Bem's article on psi processes in the *Journal of Personality and Social Psychology*. Most psychologists I know have been paying close attention. I too have been reading through some of the commentaries about the whole business, trying to make sense of it all. The issues are varied and somewhat unrelated. Fraud is the most heinous of scientific crimes and can be hard to catch (although how Stapel carried on for so long is hard to fathom). Poor research practices as elaborated by Simmons et al. (2011) may be more common, but I think that someone who carried out a study similar to theirs (using many covariates and reporting only analyses that reached outlandish conclusions) would also border on fraudulent research.

What can psychology as a field do about these problems? Simmons et al. suggested six concrete steps that seem quite sensible (although "authors must collect 20 observations per cell" seemed a tad arbitrary). However, they omitted what, to me, seems the most obvious solution: replication of results. We should value replication more than we do, treasure it even. We were all routinely taught the value of replication in our first research methods course, but it seems some have forgotten the lesson. Of course, replication would not directly solve problems like the Stapel fraud — he could have made up several sets of data nearly as easily as he could have made

ACADEMIC OBSERVER continued on Page 27

We ♥ Journals

Addiction or affection? Dopamine or devotion? Oxytocin or oo la la? In many countries, February signifies all things love. However you define it, read up on the latest research in love, sex, and relationships from APS Journals.

The Ability to Love Takes Root in Infancy

Current Directions
Those who play nice as kids have better-quality romances.
http://cdp.sagepub.com/content/20/6/355.full

Women, Men, and the Bedroom

Current Directions
People may believe men are from Mars and women are from Venus, but research says they're more similar than we think.
http://cdp.sagepub.com/content/20/5/296.full

Smells Like Safe Sex

Pscyhological Science
Bacterial smells make people more likely to want to use a condom (and hold their nose).
http://pss.sagepub.com/content/22/4/478

Tempting Fate or Inviting Happiness?

Psychological Science
The key to preserving that new-marriage shine is to never stop idealizing your partner.
http://pss.sagepub.com/content/22/5/619

And watch for this paper coming up soon in *Psychological Science*:
When Leaving Your Ex, Love Yourself
Turns out self compassion after a divorce could help you get over your ex faster.

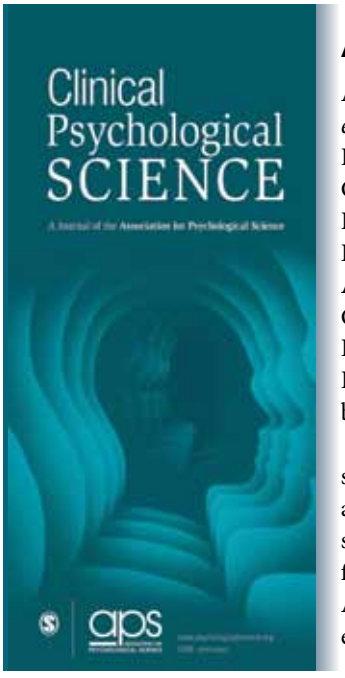
Why We ♥ Video Games

From Mario Kart to World of Warcraft, why are we so obsessed with video games? Psychological scientists predict that part of the appeal of video games is the opportunity to "try on" a better version of you.

In research published in *Psychological Science*, participants reported how they would like to experience themselves (ideal-self) and how they experienced themselves while playing video games (game-self). In video games that promoted greater similarity between their ideal- and game-selves, gamers were more intrinsically motivated to play and had a greater attachment to the game.

The researchers also found that individuals who had a wider gap between their actual-self and ideal-self were more motivated to play video games, especially games that helped reduce the gap.

The pros and cons of video games have been debated in psychological literature, but virtual environments can allow for self-exploration and put us in touch with our ideal-self, or at least some characteristics that we desire. So play on and be all you can be (in the virtual world at least)!



APS to Launch Clinical Science Journal

APS is excited to introduce a new addition to the APS journal family — *Clinical Psychological Science* (*CPS*). At the helm of this new journal is Founding Editor **Alan E. Kazdin**, John M. Musser Professor of Psychology and Child Psychiatry at Yale University and Director of the Yale Parenting Center. Kazdin is joined by a distinguished team of Associate Editors: **Tyrone Cannon**, Staglin Family Professor, Departments of Psychology and Psychiatry and Biobehavioral Sciences, and Director, Staglin Center for Cognitive Neuroscience, University of California, Los Angeles; **Emily A. Holmes**, Professor of Clinical Psychology, EPaCT Team (Experimental Psychopathology and Cognitive Therapies), Department of Psychiatry, University of Oxford; **Jill M. Hooley**, Professor, Department of Psychology, Harvard University; and **Kenneth J. Sher**, Curators' Distinguished Professor, Department of Psychological Sciences, University of Missouri. The journal's editorial board also includes a large and diverse group of Consulting Editors.

Bringing together the top basic and applied research from a wide range of disciplines, such as psychiatry, neuroscience, and cognition (to name a few), with the goal of advancing and informing many facets of clinical psychological science, *CPS* will begin taking submissions in the spring of 2012 with plans to publish papers online soon after acceptance. The first full issue of the journal will be published January 2013. For more information, look for Alan Kazdin's editorial in the March *Observer*. For more information, look for Alan Kazdin's editorial in the March Observer, or go to www.psychologicalscience.org/journals/clinical.

The Science of Online Romance

Psychological scientist **Eli Finkel** believes "we are witnessing the early stages of an explosion of research on romantic attraction." Why the explosion? The Internet, that's why.

Finkel is the lead author of "Online Dating: A Critical Analysis From the Perspective of Psychological Science," an upcoming issue of *Psychological Science in the Public Interest (PSPI)*. The report explores whether online-dating services help or hinder people in their search for true love.

"Online dating is a terrific addition to the array of options available to singles seeking to meet potential romantic partners," Finkel says. But online dating has downsides too, especially "the absence of compelling scientific evidence supporting the validity of any matchmaking algorithm developed to date."

Finkel will speak about the report at the 24th APS Annual Convention in Chicago. His talk will include a historical overview of online dating as well as a critique of the services provided by online dating sites.

If you can't wait for Convention, APS will be posting a Twitter Q&A with Finkel in early February.

Understanding the Impact Factor

Loved, hated, and a source of widespread controversy, journal impact factors (JIF) have taken on a unique role in scientific publishing. These little numbers are considered a measure of a journal's importance. However, in an article to be published in *Perspectives on Psychological Science*, Peter Hegarty and Zoe Walton question whether JIF actually measures the psychological importance of psychology articles.

Journal impact factors are traditionally created using citations from the database *Web of Science*. But this search engine is more focused on natural science than psychological science, and it may underestimate the importance of Psychology articles. So the authors chose to analyze citations from the database *psychinfo* to assess how JIF specifically relates to an article's importance to psychological science.

The authors scoured *PsychINFO* for citations of over 1,000 articles published in 9 leading psychology journals. They discovered that JIF was not the best predictor of the number of citations an article actually received. In fact, an article's length and number of references were more accurate predictors of how many times the article was cited. They also found JIF was biased against articles in which the first author was a woman.

So what do these findings mean for JIF and psychology? Overall, JIF may underestimate the impact of both of social science research and research conducted by women. The authors admit that JIF has some validity in measuring the impact of psychology articles, but they caution that "predictions and decisions that are made solely on this basis are not ideal."

APS Award Address

The Realities of Reason

Mahzarin Banaji (President 2010-2011) presents the William James Fellow Award to Philip Johnson-Laird

Reasoning is an ability that comes naturally to most people, and this can be demonstrated, according to psychological scientist Philip Johnson-Laird, by the world-wide popularity of Sudoku puzzles. While some people might be better at them than others, the whole point of Sudoku puzzles is that people can solve them without any formal training. Johnson-Laird, a professor of psychology at Princeton University, explored the depths of this ability to reason in his William James Award Address at the 23rd APS Annual Convention.

About thirty years ago, psychologists came to a consensus — a rare occurrence, noted Johnson-Laird — that there must be some kind of formal logic in our heads for us to be able to make the deductions that seem to come so naturally to us.

But a discovery by Johnson-Laird's advisor Peter Wason cast this consensus into doubt. The Wason selection task, essentially a logic puzzle, demonstrated that people are better at deductive reasoning when the logic rules are formulated using familiar or previously experienced terms. That is, reasoning seems to depend, in part, on existing knowledge.

This observation is not easily accommodated by a formal rule approach, and it led Johnson-Laird to develop the mental model theory of reasoning. The theory holds that when we reason, we generate models of what is possible given not only the stated premises but also our own knowledge. Our limited working memory makes it difficult for us to think of all possible models, and this limitation, according to Johnson-Laird, is one of our biggest cognitive failures.

We also assume that our mental models only represent what is true, which can lead to systematic fallacies. Some of these fallacies are so powerful that they seem to be cognitive illusions. Such fallacies present a dilemma for theories of reasoning that involve formal rules of inference, because we shouldn't be making these kinds of mistakes as long as we have valid rules.

Despite our many limitations, there are some aspects of reasoning that we seem to do particularly well. We understand the force of counterexamples. And we're quick to develop strategies, like drawing diagrams, to solve groups of similar problems.

Perhaps one of our greatest strengths is our ability to explain. In one study, participants were confronted with the following puzzle: "If a pilot falls from a plane without a parachute, then the pilot dies. This pilot didn't die. Why not?" A perfectly valid deduction would be that the pilot must not have fallen out of the plane without his parachute, but many participants relied instead on inductive reasoning to answer the question. They came up with creative explanations, like "The plane was on the ground and he didn't fall far," "The pilot fell into deep snow or a deep cushion," and, Johnson-Laird's favorite, "The pilot was already dead." Humans are extraordinarily good at this kind of reasoning — we can explain just about anything.

Despite the seeming robustness of the mental model theory of reasoning, Johnson-Laird believes that it may well be wrong. If it is wrong, he says, someone will discover a whole set of phenomena that are counterexamples to the predictions of the model theory. But Johnson-Laird has his bases covered: "You'll notice," he said with a wry smile, "that as the theory goes down in flames, it will at least explain its own demise." ●

-Anna Mikulak

How I Spent My Summer Vacation: Testifying Before the US Congress

By Hillary Anger Elfenbein

This adventure began with an email I nearly deleted as spam.

In 2007, Heather Kelly from APA asked to help gather evidence to fight an amendment to the National Science Foundation (NSF) authorization act that called for de-funding my NSF grant along with six others — on the grounds that Representative John Campbell (R-CA), a first-term member of Congress, thought the titles sounded "silly."

Rep. Brian Baird (D-WA) used my grant as an example to defeat this amendment and to question the wisdom of politicians second guessing peer-reviewed science. After all, the same research they called silly was being incorporated by the US Army Research Institute into training programs for soldiers.

My quiet life as a scientist continued until early 2011. With the debt ceiling looming overhead and a series of first-term members of Congress elected with promises to shrink the size of government, the Republican staff members of the Science, Space, and Technology committee called for a hearing purportedly to educate their members about the value of NSF-funded social science. Then Senator Tom Coburn (R-OK) published a report calling for the demolition of the NSF's entire social, behavioral, and economic sciences (SBE) division, and all heck broke loose. The minority (a.k.a., the Democrats) could invite only one witness to make their case.

The honor of serving was not entirely appealing. These are difficult times in the funding environment, and many politicians openly describe social science as a waste of government money. I chose a career in academia so that I could stay inside the Ivory Tower, and coming out just to be a subject of ridicule for politicians didn't seem like a great idea. As the only research faculty member on the panel, I also needed to represent the interests of scientists across a spectrum of disciplines ranging from psychology to sociology, anthropology, and even economics. Usually we researchers focus deeply on relatively narrow topics — it was nerve-wracking to do just the opposite.

Giving Testimony

My sense of dread increased when I was sent essay questions. You see, when you testify in Congressional hearings, they ask you to write a set of long essays beforehand and another set of long essays afterwards. The first question was straightforward enough. I had to list my academic qualifications and describe my work that has been funded by the NSF, how that work is being used, and by whom.

The questions got more challenging from there: "Why are social, behavioral, and economic sciences important to the physical and life science communities, to the Federal government, and to the American taxpayer?" I decided to focus on the broadest level: "The social and behavioral sciences in general are important because technology, health, industry, and politics are ultimately in the hands of people — who behave rationally and irrationally. The learning and implementation of all other sciences depends on the human factor." A third question covered similar territory, and I argued that we receive an unusually high return from investments in the basic sciences, including our world-class university system and the reinvestment of federal grants into the economy via salaries and durable goods.

Hillary Elfenbein (second from the left) testifying on a panel for the Congressional Committee on Science, Space, and Technology.

The last question was truly painful: "Why is it in the American taxpayer interest for the Federal government to fund all disciplines within the social, behavioral and economic sciences?" My only choice was to turn this question back on itself by questioning how well any of us can judge scientific fields outside of their own expertise. Relaying my 2007 experience, I pointed out the risk of judging books by their covers, and discussed the process and value of peer review:

A scientific problem can look unimportant from the outside, which is why it is valuable to have sufficient background and context to judge the work's potential merit. The peer review of science is certainly not perfect, and […]one is reminded of Winston Churchill's famous quote, "Democracy is the worst

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form of government, except all the others that have been tried."

As challenging as it was to write these essays, it was also a refreshing change from the usual protracted journal-review process to have a paper go straight to press.

The hearing itself was somber and scary. The opening speech emphasized that SBE are "soft sciences," and the pursuits of scientists in these fields must be weighed against national priorities. Each witness made an opening statement. The head of the NSF's SBE directorate Myron Gutmann discussed the division's budget and how it was used. Peter Wood, the President of the National Association of Scholars, an organization that fights political correctness in universities, focused on the politicization of social sciences, and how there is an oversupply of PhDs. Finally, Diana Furchtgott-Roth — a political administrator and self-proclaimed economist — proceeded to argue that funding social sciences does not constitute a public good. She also pointed out that early social scientists such as Adam Smith worked without government funding, while failing to mention these scientists were typically supported by monasteries or family wealth — not exactly a feasible model for today's researchers.

In the question and answer period, my proudest moments involved coming up with lines that I would normally imagine only later. Rep. Dan Benishek (R-MI) talked about not being able to justify increases in funding for social sciences at a time of fiscal crisis. My hand lifted itself, and I said to justify the increase, "You have to believe that this is an investment, not an expense." He snapped back that everyone says that about their own department. Later, Rep. John Sarbanes (D-MD) later told me never to apologize for the value of psychological research, because we are contributing to the American Dream. Toward the very end of the session, one member asked about the lessons that Rep. Campbell and I learned in 2007 when my NSF grant was almost de-funded because of its title. I responded that "for me the lesson learned was to pay a lot more attention to the titles of grants, and for the Representative, the lesson was maybe to read the abstracts as well."

Lessons From the Hearing Room

Sitting in that hearing room, I was reminded that politicians focus on the broadest range of national priorities. Their lack of knowledge about exactly what psychological scientists do is not their fault. We need to embrace our role as educators outside of our classrooms and laboratories. For example, some members of Congress at the session were confused about the distinction between "basic science" (i.e., without foreseeable commercial applications) and "soft science" (i.e., a pejorative term for non-life sciences). Attempting to clarify this misunderstanding allows us to explain why agencies like the NSF are absolutely vital to psychological scientists.

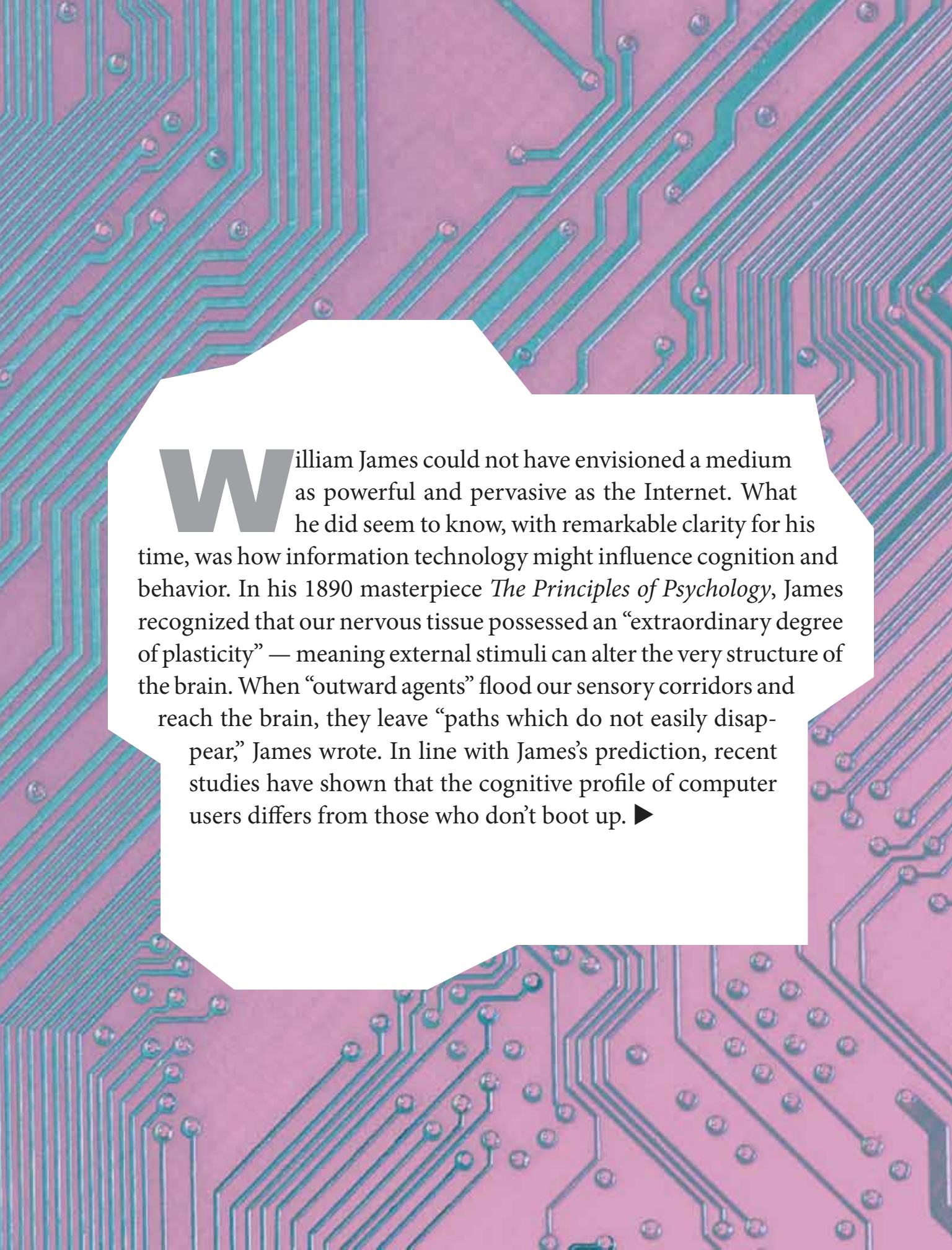
Politicians are also less willing to fund projects they cannot explain to their constituents. During my 2007 visit, Rep. Baird asked me how he should describe my research to a taxpayer who is struggling to pay their bills. All of us who seek government funding should have answers to this question. How does our work make people safer, happier, or better able to meet their basic family needs?

Although we should make a better effort to educate politicians, we also need to fight for peer review so that we retain the final judgment on research quality. Some politicians compare peer review to letting pork barrel perpetuate itself. However, peer review is democratic because it involves thousands of scholars. It is efficient, as scientists volunteer countless hours of their time (saving the government millions) in exchange for a voice. Allowing political review to overturn peer-reviewed research would be the worst kind of "big government" intervention.

Politicians simply cannot dictate from the top what constitutes good science. The history of science suggests that politicians cannot predict what agenda scientists should follow. Instead, curious minds make connections that can seem ridiculous to everyone else, including politicians, until these ideas are proven brilliant — and stimulate the economy. Perhaps there are some politicians who could have predicted that NSF grants for teaching machines how to recognize the thickness of lines would lead to the invention of barcodes, or others who would have known that NSF grants for digital libraries would have led to the founding of Google. But, more often, science leaps forward through basic research.

By putting ourselves in the shoes of politicians, and thinking in terms of their priorities, we can help them to see that our interests are aligned. ●


REWIRED
Cognition
in the
Digital Age
By Eric Jaffe



William James could not have envisioned a medium as powerful and pervasive as the Internet. What he did seem to know, with remarkable clarity for his time, was how information technology might influence cognition and behavior. In his 1890 masterpiece *The Principles of Psychology*, James recognized that our nervous tissue possessed an "extraordinary degree of plasticity" — meaning external stimuli can alter the very structure of the brain. When "outward agents" flood our sensory corridors and reach the brain, they leave "paths which do not easily disappear," James wrote. In line with James's prediction, recent studies have shown that the cognitive profile of computer users differs from those who don't boot up. ▶

James knew the drawback of scattered attention, too. Long before people could browse the Web while instant-messaging a friend between answering emails, James understood the perils of handling too many cognitive tasks at once. The number of "processes of conception" people can engage in at a single time is "not easily more than one, unless the processes are very habitual," he wrote in *Principles of Psychology.* Indeed, basic behavioral research confirms that multi-tasking carries a great cognitive cost, and studies in realistic settings have caught those limitations in action.

And with the advent of Google still a century away, James understood that the memorization of facts has its natural limits. Being able to recall knowledge on demand is great, he said in *Talks to Teachers on Psychology*, but most education consists of learning "where we may go to recover it." In fact, said James, what distinguished lawyers from laymen was not so much the information stored in their heads, but the ability to locate it externally in a brief amount of time. Sure enough, new behavioral science suggests that people are great at remembering *where* to access information on the computer, even when the fact itself eludes them.

As beneficial as computer use might be to the senescent mind, it may prove equally destructive to the developing one.

In short, William James knew yesterday what a growing body of psychological research continues to reveal today: that technology can change our brains, and with it, our behavior.

Inside the iBrain

Since the days of William James, neuroscientists have confirmed the existence of neural plasticity. The very act of processing external stimuli adjusts our internal circuitry. Because these adjustments increase with exposure, and because we're exposed to the Internet each passing day, digital technology stands to impact cognition unlike any other "outward agents" that have come before it. "One thing is very clear," writes Nicholas Carr in *The Shallows: What the Internet Is Doing to Our Brains*: "if, knowing what we know today about the brain's plasticity, you were to set out to invent a medium that would rewire our mental circuits as quickly and thoroughly as possible, you would probably end up designing something that looks and works a lot like the Internet."

To see just how our wires are rewiring us, a group of four neuroscientists at University of California, Los Angeles (UCLA) recently recruited 24 people, ranging in age from 55 to 76, to undergo brain imaging while they engaged in an Internet task. Half of the participants were considered Net Naïve, meaning they went online just once or twice a week, and half were Net Savvy, meaning they went online at least once a day. All the participants had their brains scanned during two tests: a traditional reading condition, in which they read text presented in the format of a book, and an Internet condition, in which they performed a Web search then read content displayed on a simulated Web page.

On the traditional reading task, the Naïve and Savvy groups demonstrated more or less the same brain activity, as one would expect. Each group used regions of the brain connected to language, memory, and of course reading. During the Web task, however, the neural activity between the two groups differed strikingly. When Naïve participants examined a Web page, they used the same brain regions as during traditional reading. When the Savvy group used the Internet, a number of additional brain regions were activated — including those linked to decision making and complex reasoning. The Savvy group demonstrated twice as much neural activity as the Naïve group: 21,782 voxels of the brain scan to 8,646, for those keeping score at home.

In other words, the experience of browsing and reading the Web makes brains better adapted to browsing and reading the Web. The study, which was published in a 2009 issue of the *American Journal of Geriatric Psychiatry*, is considered the first to observe brain functioning during Internet use. In a 2008 issue of *Scientific American*, the study's lead author, Gary Small, reported that after just five days of Web training after the initial experiment, Naïve brains began to work like Savvy ones — suggesting that neural plasticity is remarkably swift.

"We develop a better ability to sift through large amounts of information rapidly and decide what's important and what isn't — our mental filters basically learn how to shift into overdrive," wrote Small, who is also the author of *iBrain: Surviving the Technological Alteration of the Modern Mind*. "Initially the daily blitz that bombards us can create a form of attention deficit, but our brains are able to adapt in a way that promotes rapid processing."

The results of the UCLA test suggest that using digital technology might keep a mind active and limber, particularly as a person grows older. Psychologists Patricia Tun and Margie Lachman of Brandeis University recently analyzed a national survey of computer use and cognition in more than 2,600 people aged 32 to 84. Participants in the survey completed a brief cognitive test and a brief task-switching test administered over the phone. Tun and Lachman found a strong association between cognitive performance and frequency of computer use. Even after the researchers controlled for factors like basic intelligence, regular computer users still demonstrated higher executive functioning on the task-switching test, Tun and Lachman reported in a 2010 issue of *Psychology and Aging*.

"Neuro-plasticity is across the lifespan," says Tun. "What we're doing is affecting our brains, and there's a lot more op-

portunity for rewiring and making neural pathways than we used to believe. The kinds of things the computer engages can be particularly good exercise, you could say, for some of these abilities that start to fail with age."

The Multi-Tasking Mind

As beneficial as computer use might be to the senescent mind, it may prove equally destructive to the developing one. While a 50-year-old is considered Net Savvy by going online everyday, a young adult earns Internet stripes by handling all sorts of digital tasks at once: browsing, emailing, instant messaging, texting. Carr likens being online these days to "reading a book while doing a crossword puzzle." In short, multi-tasking is the new norm.

A few years back, a group of psychologists at UCLA, led by Karin Foerde, designed an experiment to determine whether or not multi-tasking impairs learning. The researchers trained 14 participants to perform a single task — in this case, predicting the weather based on certain cues — and scanned their brains as they did it. To complicate matters, Foerde and company then asked participants to handle a secondary task at the same time: While continuing to forecast the weather, participants also heard a series of auditory tones and had to keep count of only the high-pitched ones.

Participants handled the multiple tasks successfully, but not without paying a cognitive price. While performing the weather task alone, participants used a region of the brain associated with declarative learning — a dynamic type of learning that enables a person to apply knowledge gained to other situations later on. When participants did both tasks at once, however, they activated a part of their brain linked with habit learning — a far less flexible form of learning that requires little attention or effort.

The results suggest that when we do two things at once, our brain conserves some strength by shutting down the advanced learning centers and reverting to the basic ones. In multi-tasking situations, "even if distraction does not decrease the overall level of learning, it can result in the acquisition of knowledge that can be applied less flexibly in new situations," the authors conclude in a 2006 issue of *Proceedings of the National Academy of Sciences.* So the types of regular distractions we encounter in the digital age don't make us learn less; they just make us learn worse. As William James knew, we can't easily do more than one thing at once, "unless the processes are very habitual."

Still the possibility remained that as multi-tasking becomes routine the brain gets better at handling several things at once. As a follow-up to the work of Foerde's team, a group of Stanford researchers that included psychologist Anthony Wagner gathered a group of participants they identified as either heavy or light multi-taskers. They then administered a series of cognitive tests, each designed to measure some aspect of distractibility, to see which group handled the load better.

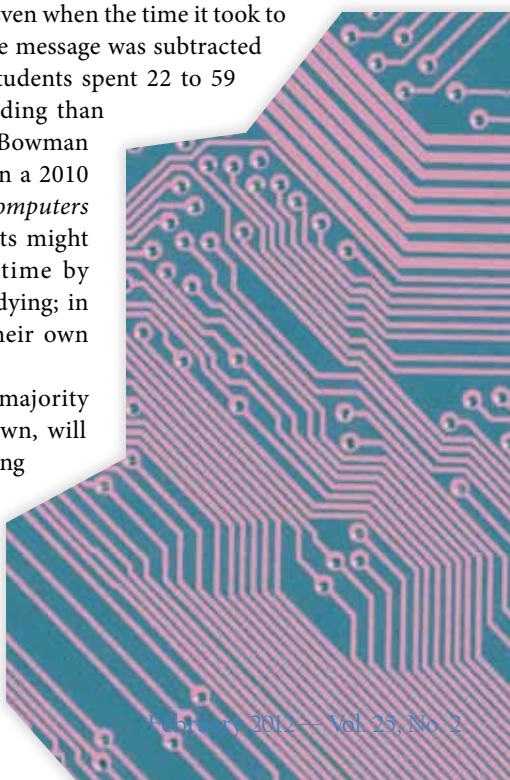
The results came as something of a surprise. Compared to light multi-taskers, the heavies did a worse job filtering out irrelevant distractions, had a harder time ignoring irrelevant memories, and took a longer time switching from one task to another. What made the findings more striking was the fact that the two groups performed the same on tasks without any distractions. On the whole, the findings suggest that heavy multi-taskers "may be sacrificing performance on the primary task to let in other sources of information," Wagner and colleagues reported in a 2009 issue of *Proceedings of the National Academy of Sciences*.

The findings don't bode well for the wired generation. The barrage of new media distractions is "placing new demands on cognitive processing, and especially on attention allocation," the researchers write. While cause-and-effect is difficult to parse here, in some sense it doesn't matter. If all this digital media is causing people to multi-task more frequently, then their learning ability will suffer. But if only certain people are attracted to the heavy multi-tasking lifestyle, then those people will still have a hard time coping in an environment that's only poised to get more distracting with time.

Trouble with attention in the lab is one thing. Trouble in the classroom is quite another. To investigate whether or not the problem transferred to a realistic setting, a research team that included psychologists Laura Bowman, Laura Levine, and Bradley Waite of Central Connecticut State University recently asked a group of 89 students to read a lengthy textbook passage on a computer. Some of the students simply read the text; others responded to instant messages before reading the passage; a third group was interrupted by an occasional instant message. All three groups were given a test of the material once they finished their reading.

The results were almost exactly as Foerde's brain imaging study would predict. While all three groups achieved similar scores on the test, the group that responded to instant messages while reading took significantly longer to finish the passage. (The researchers suspect the students made up for the distractions by re-reading passages that were interrupted by the instant messages.) Even when the time it took to read and respond to the message was subtracted from the total, these students spent 22 to 59 percent more time reading than the other groups did, Bowman and colleagues report in a 2010 issue of the journal *Computers and Education*. Students might think they're saving time by being online while studying; in fact, they're making their own lives harder.

"I don't think the majority of students, on their own, will recognize that multitasking slows their productivity," says Bowman. "Since we only have so much time in the day, I'd predict that



devotion to studying, homework, and academic activities will be short-changed. […] This means that the academic activity will receive less focused time, resulting in perhaps more cursory processing of the information, or more shoddy outcomes."

Google Memory

However much the distraction of the Internet may interrupt the learning process, it also stands to aid our access to knowledge. When it came to learning information, after all, William James made little distinction between knowing a fact by memory and simply knowing where to find it. Not everyone shares that belief; in Plato's *Phaedrus*, Socrates believes the invention of another communication technology — in this case, writing—will cause people to "trust to the external written characters and not remember of themselves." But some wise company certainly does: "Never memorize what you can look up in books," said none other than Einstein, in 1922.

Whether you side with Socrates or Einstein, it's hard to deny that the Internet will have *some* impact on our memories. Search engines like Google and information warehouses like Wikipedia promise to turn the Web into something like a personal external hard drive for us all. In the same way that social groups form what psychologists call "transactive memory" — a collective store of information that anyone in the group can access — the Internet might carry around much of the knowledge we might otherwise have stored ourselves.

Psychologists Betsy Sparrow of Columbia, Jenny Liu of the University of Wisconsin-Madison, and Daniel Wegner of Harvard recently designed a series of four experiments to study what access to search engines may be doing to our memories. In the first test they found that difficult trivia questions — ones they might typically send us racing toward Google — caused people to think of computers. After considering the tough question, participants took longer to name the color of a computer-related word than they did to name a general word during a Stroop task. The test suggests that when "faced with a gap in our knowledge, we are primed to turn to the computer to rectify the situation," the authors wrote in a report published online in *Science* last July.

In two subsequent experiments, participants demonstrated their reliance on computer memory more directly. For one test, Sparrow and colleagues had participants enter 40 facts into a computer then asked them to recall the information later. Those who had been led to believe the computer would save the item recalled significantly fewer items than those who thought the computer would delete them. For the other test, the researchers repeated the entry task but divided the participants into three groups. Some believed the computer would save the entry; some saw the exact name of the folder where the entry would be saved; and some believed the entry had been erased. Once again, the participants who recalled the most facts were those who believed the information would be deleted. "When we need it," the researchers wrote, "we will look it up."

In a final experiment, all participants typed trivia into a computer and were told it would be saved in a specific folder. Afterward, the researchers asked them to recall as many facts as they could, as well as the folder where the fact had been saved. True to William James's prediction, participants remembered *where* the information had been stored more than the information itself — a "remarkable" finding, the authors write, considering that folder names had been displayed without any particular fanfare.

"The accessibility of external memory is much more extensive than it ever has been in the past," says Sparrow, pointing to the ubiquity of smart phones, tablets, laptops, and the like. "I think it makes a lot of sense to offload a lot of the memorization component, if we can."

So did William James — go online and look it up. ●

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Why I Became An Administrator... And Why You Might Become One Too

Applying the Science of Psychology To The Life Of A University

By Robert J. Sternberg

James McKeen Cattell Fellow Robert J. Sternberg

Perhaps no field lends itself to application in and to a university setting the way psychological science does. Becoming an administrator is a wonderful way for psychological science to positively touch the lives of many people in a university setting. As we move on with our careers, some psychological scientists become more and more concerned about how the scientific work we do can make a practical difference. Academic administration can provide an ideal venue for making a positive and meaningful difference, or at least, it has for me.

Following 30 years as a professor and center director at Yale, I have held two full-time administrative jobs: Dean of the School of Arts and Sciences at Tufts University (2005-2010) and Provost and Senior Vice President at Oklahoma State University (2010-present), where I am also Regents Professor of Psychology and Education. In choosing my current post, I was excited by the land-grant mission of Oklahoma State to use the knowledge acquired and created in the service of the state, the nation, and the world.

When I entered psychology, I had hoped that through my role as a faculty member I somehow could change the world. I worked on topics such as successful intelligence, creativity, and wisdom in the hope that standardized testing, instruction, or both would change to incorporate these broader abilities. But after 30 years as a faculty member, 40 grants, and more than a thousand publications, that change was nowhere in sight. I needed another path to accomplish my goals.

The initiatives we formulated in Arts and Sciences at Tufts and then, more recently, university-wide at Oklahoma State, are based in part on a rather broad theory of leadership called WICS (Sternberg, 2003, 2007, 2010a, 2011; Sternberg, Jarvin, & Grigorenko, 2011), which stands for Wisdom, Intelligence, Creativity, Synthesized. As a leader, one needs creativity to generate novel ideas, analytical intelligence to ascertain whether they are good ideas, practical intelligence to implement the ideas and persuade others of their value, and wisdom to ensure that the ideas help reach a common good by balancing one's own interests with others' interests and institutional interests over time through the infusion of positive ethical values (Sternberg, 2010b).

The Overarching Theme: Leadership

A major reason students go to college is to develop the skills and attitudes they need in order to become active citizens and also successful positive leaders, defined as people who make the world a better place (Sternberg, 2010a). My work as an academic administrator has centered in part on how we can select future leaders who will make a positive, meaningful, and enduring difference to the world, and then teach them and assess them in ways that will help develop those future leaders.

Selecting Future Leaders

How does one select the positive leaders of tomorrow? The skills measured by grades and standardized tests may be relevant to, but these skills are not sufficient for, leadership success. One way to select leaders is to devise measures of the broader range of abilities needed for success in leadership (Sternberg, 2009).

When I was at Yale, we devised such a battery, which we named Rainbow (Sternberg & the Rainbow Project Collaborators, 2006). It measures creative, analytical, and practical skills. Other batteries measure similar skills at different levels of education (e.g., Chart, Grigorenko, & Sternberg, 2008; Hedlund, Wilt, Nebel, Ashford, & Sternberg, 2006). The Rainbow Battery required writing creative stories, telling creative stories, and captioning cartoons (creative); inferring the meaning of words from context and completing number series (analytical); and solving practical problems in a college context and in the context of work teams (practical). Performance was assessed for over 700 college students who were from a broad range of colleges across the United States, varying from unselective to highly selective. We found that the battery enabled us through factor analysis to separate measurements of creative and practical skills from each

Robert J. Sternberg *is provost, senior vice president, and Regents Professor of Psychology and Education at Oklahoma State University, as well as Honorary Professor at Heidelberg University in Germany and President of the Federation of Associations in Behavioral and Brain Sciences. He can be contacted at robert.sternberg@okstate.edu.*

other and from analytical skills; doubled prediction of freshman grade-point average; and substantially decreased ethnic-group differences relative to SAT scores (Sternberg, 2010a; Sternberg & the Rainbow Project Collaborators, 2006).

At Tufts, we initiated the Kaleidoscope Project, which assessed analytical, creative, and practical, as well as wisdom-based skills (e.g., understanding other people's viewpoints in addition to one's own) (Sternberg, 2010a; Sternberg, Bonney, Gabora, Karelitz, & Coffin, 2010). Examples of optional items were to write a creative story using one of several titles, such as "The End of MTV" (creative); analyze one's favorite book (analytical); illustrate how one convinced a friend of something that the friend did not initially believe (practical); and indicate how, in the future, one would turn a high school passion toward achieving a common good for society (wisdom).

The optional assessments, completed by roughly 2/3 of applicants from the second year of my deanship, onward, were integrated into the Tufts undergraduate application as a supplement to existing measures such as SATs and high school GPA. Admissions officers used rubrics to rate applications. We found (Sternberg, 2010a; Sternberg, Bonney, Gabora, Karelitz, & Coffin, 2010) that the Kaleidoscope Project increased prediction of academic performance in the freshman year over SAT or ACT alone; predicted engagement in university life and, in particular, in extracurricular and leadership activities; largely nullified ethnic-group differences; and increased satisfaction among applicants with the admissions process. At Oklahoma State University, we have initiated the Panorama Project, which will use optional items for admission to Oklahoma State that are similar to those used in the Kaleidoscope Project. The same principles that apply at Tufts and at Oklahoma State can apply elsewhere as well.

Educating Future Leaders

We have found that teaching students according to WICS significantly enhances academic performance relative to conventional teaching across grade levels and subject-matter areas (see Sternberg, Grigorenko, & Zhang, 2008). To put theory into practice, at Tufts, we opened the Center for the Enhancement of Learning and Teaching (CELT). Professors involved in the Center participated in a semester-long seminar in which they learned how to apply the contributions of modern-day psychological science to improve their teaching. They learned how to teach to and assess students who have a variety of learning styles — more memory-based, analytical, creative, practical, wisdom-based (Sternberg & Grigorenko, 2007; Sternberg, Jarvin, & Grigorenko, 2009) — so that virtually all of their students were better able to capitalize on strengths and to compensate for, or correct, weaknesses. At Oklahoma State, we have created, for students, the Learning and Student Success Opportunity (LASSO) Center, and for professors, the Institute for Learning Excellence (ITLE). The goal is to improve the teaching/learning process, and thereby student retention and graduation rates, by offering students supplementary instructional services, based in part on the WICS model.

Conclusion

An administrative career has provided me a chance to use what I have learned as a teacher, researcher, and elected leader in psychological organizations to make a positive difference to the life of an institution and the people in it. But taking an administrative position did not mean putting my teaching and scholarly activities behind me: I still teach one course and publish more or less as before. Rather, the new position meant reconceiving my work so that it could further the goals of the university as well as the field of psychological science. An administrative position could do the same for you. ●

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Keynote Address

James S. Jackson
University of Michigan, Ann Arbor

Jackson's research focuses on how culture influences our health during our lives, attitude changes, and social support. He has contributed enormously to our understanding of such diverse perspectives as race relations and racism around the world. For example, his research has highlighted how racial discrimination can affect physical and mental health and treatment. Jackson is a member of the Institute of Medicine of the US National Academies, a Fellow of the American Academy of Arts and Sciences, and a founding member of the Aging Society Research Network of the MacArthur Foundation. He is a recipient of the Association for Psychological Science (APS) James McKeen Cattell Fellow Award for his lifetime of significant intellectual achievements in applied psychological research.

Bring the Family Address

Barry Schwartz
Swarthmore College

Practical Wisdom: The Right Way to Do the Right Thing

"America is broken," says Barry Schwartz. "None of the institutions we rely on -- schools, clinics, courts, banks -- give us what we want and need. Our efforts to repair these institutions rely on two tools -- rules and incentives. Neither can do the job. What is also needed is virtue and character and especially the virtue that Aristotle called 'practical wisdom,' the will to do the right thing and the skill to figure out what the right thing is. Psychological research tells us that whereas people aren't born wise, they are born to become wise, if they have the right experience. And rules and incentives provide the wrong experience. Too many rules undermine the development of skill and too much reliance on incentives undermines the needed will. Current institutional practices threaten wisdom. Efforts can and should be made to nurture it instead."

Psi Chi Distinguished Speaker

Is Music Training Predictive of Cognitive Social and Emotional Abilities?

E. Glenn Schellenberg
University of Toronto, Mississauga, Canada

Inside the Psychologist's Studio

Margaret Beale Spencer
University of Chicago

Interviewed by

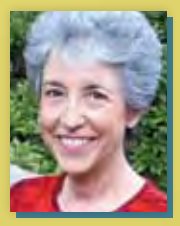
Douglas L. Medin
Northwestern University

Brenda Milner
McGill University, Canada

Interviewed by

Carol Tavris
Social Psychologist and Writer

APS-David Myers Distinguished Lecture on the Science and Craft of Teaching Psychology



Debunking Pseudoneuroscience

Carol Tavris
Social Psychologist and Writer

APS William K. Estes Symposium

The Career and Impact of William K. Estes

William Kaye Estes: A Man for All Reasons

Richard M. Shiffrin
Indiana University

What Is Modeling, How Is It Useful, and Why Is It Inevitable?

Robert A. Bjork
University of California, Los Angeles

Presidential Symposium

Diverse Perspectives: Who Owns Science?

Douglas L. Medin, Chair
Northwestern University

In this symposium four scholars analyze diversity in science and explore the ways in which the nature of science may depend on who is doing it.

Margaret Beale Spencer
University of Chicago

Advancing Grounded Portrayals of Human Development for Diverse Communities: The Advantages of Systems Theory and Mixed-method Approaches for Challenging Stagnant Science

A professor of Urban Education, Spencer studies resiliency, identity, and competence formation processes for African-American, Hispanic, Asian-American, and Euro-American youth. She designed a CNN study to test racial bias in children and was awarded the 2006 Fletcher Fellowship, which recognized work that furthers the broad social goals of the U.S. Supreme Court's Brown v. Board of Education decision.

Richard A. Shweder
University of Chicago

Fundamentalism in Mainstream Psychology versus Other Big Currents: Cultural Psychology

A professor of Human Development, Shweder is a cultural anthropologist whose research interests include psychological anthropology and cultural psychology. Over the past 40 years, he has conducted research in the Hindu temple town of Bhubaneswar, India. He is a Fellow of the American Academy of Arts and Sciences and a recipient of a John Simon Guggenheim Fellowship and the American Association for the Advancement of Science Socio-Psychological Prize.

Helen E. Longino
Stanford University

Science, Diversity, and Objectivity

Longino's teaching and research interests are in philosophy of science, philosophy of biology, social epistemology, and feminist philosophy. She has argued influentially for the significance of values and social interactions in the practices of science. Longino is well known for her books Science as Social Knowledge and The Fate of Knowledge.

Megan Bang
University of Washington

Seeing Relational Epistemologies and Impacts on Cognition: Towards Improving Science Education for Native Youth

Bang's work is broadly focused on issues of culture, cognition and development. More specifically she focuses on community-based and culturally based science education. Her academic work has explored the kinds and forms of explanations, arguments, and attentional habits Native American children are exposed to and learn in community settings as they relate to school science learning.

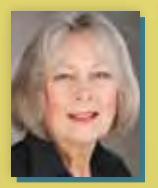
Award Addresses

William James Fellows

Elaine Hatfield
University of Hawaii, Manoa

Introduced by co-recipient

Ellen Berscheid
University of Minnesota

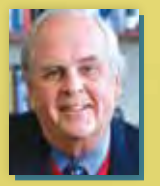


Passionate Love: Looking Back and Looking Ahead

Henry L. Roediger, III
Washington University in St. Louis

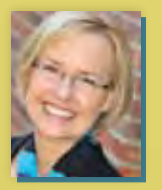
The Surprising Power of Retrieval Practice in Improving Retention: From the Lab to the Classroom

James McKeen Cattell Fellows



David H. Barlow
Boston University

The Origins, Diagnosis, and Treatment of Neuroticism: Back to the Future



Geraldine Dawson
University of North Carolina at Chapel Hill

New Directions in Early Detection and Intervention in Autism

Gail Goodman
University of California, Davis

Childhood Trauma and Memory

SSCP Distinguished Scientist Award Address

William E. Pelham
Florida International University

Are We Overmedicating America's Children? Psychosocial, Pharmacological, Combined, and Sequenced Interventions for ADHD

SPECIAL EVENTS

Clinical Science Forum

Organizational Efforts to Disseminate and Implement Empirically-Supported Interventions in Health Care Systems

Chair: Lea R. Dougherty
University of Maryland, College Park

Kellie Crowe, *Wilford Hall Ambulatory Surgical Center, Lackland Air Force Base*

Antonette Zeiss, *Department of Veterans Affairs*

Afsoon Eftekhari, *National Center for PTSD, Dissemination and Training Division*

Patricia Resick, *National Center for PTSD, VA Boston Healthcare System, Boston University*

Shirley M. Glynn, *VA Office of Mental Health Services*

Bradley E. Karlin, *Office of Mental Health Services (116), VA Central Office*

This symposium will provide an overview of large-scale organizational efforts to increase the use of empirically-supported treatments in health care systems. Speakers will describe the implementation and dissemination of empirically-supported interventions within the Air Force (AF) and Veterans Affairs (VA) health care systems. Within these contexts, the following training and dissemination efforts will be discussed for the following treatments: prolonged exposure (PE) therapy, cognitive processing therapy for Post Traumatic Stress Disorder (PTSD), cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT) for depression, and behavioral couples and family therapy.

SSCP Presidential Address

Teach Your Students Well: Mentoring Doctoral Students to be Clinical Scientists in the 21st Century

Richard G. Heimberg
Temple University

Psychological Science in the Public Interest

Chair: Elaine F. Walker
Emory University

Online Dating: A Critical Analysis From the Perspective of Psychological Science

Eli J. Finkel
Northwestern University

Psychopathic Personality: Bridging the Gap Between Scientific Evidence and Public Policy

Scott O. Lilienfeld
Emory University

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CROSS-CUTTING THEME PROGRAMS

Biological Beings in Social Context

Joan Y. Chiao
Northwestern University

Elissa Epel
University of California, San Francisco

Christine Dunkel Schetter
University of California, Los Angeles

Annette Karmiloff-Smith
Birkbeck College, United Kingdom

Richard Lerner, Discussant
Tufts University

Nature "versus" nurture? Not anymore! In today's psychological science, they're on the same team. Research reveals the interdependencies among biological systems and social contexts. Environmental and interpersonal factors influence the expression of genes, the development of the brain, and the growth of the individual from the beginnings of life. In this theme program, speakers present cutting-edge advances in the study of biological beings in social context.

Disaster, Response, and Recovery

George A. Bonanno
Columbia University

Silvia H. Koller
Rio Grande do Sul Federal University, Brazil

Edna B. Foa
University of Pennsylvania

Dirk Helbing
Swiss Federal Institute of Technology, Zurich

Lisa M. Shin
Tufts University

Disasters – natural (floods, earthquakes landslides) or human-induced (war, terrorism, crowding disasters) - present psychological science with multiple challenges: identifying the psychological and biological effects of trauma; helping the traumatized victims; and formulating interventions that might prevent disasters from occurring. In this theme program, international leaders in the study of disaster, response, and recovery show how these challenges can be, and have been, met.

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CROSS-CUTTING THEME PROGRAMS

Music, Mind, and Brain

Daniel J. Levitin
McGill University, Canada

Aniruddh D. Patel
The Neurosciences Institute

Carol L. Krumhansl
Cornell University

Victor Wooten, Discussant
Five-Time Grammy Award Winner and Bassist for Béla Fleck & The Flecktones

It's just sound — structured, organized sound. Yet it has surrounded us, moved us, and echoed in our memories throughout the history of our species. In this theme program, three of the world's leading psychologists and neuroscientists in the study of music, and one of the world's leading musicians, discuss the psychological systems and "orchestra of brain regions" through which music enriches our lives.

Including a special concert with

Dale Boyle
Award-winning Folk, Country, and Blues Singer-songwriter

Kevin Feyen
Worth Publishers, and Former Member of the Black Eyed Peas

Robert W. Levenson
University of California, Berkeley, and APS Past President

and featuring

Daniel J. Levitin
McGill University, Canada

Bianca Levy
McGill University, Canada

Victor Wooten
Five-Time Grammy Award Winner and Bassist for Béla Fleck & The Flecktones

WORKSHOPS

Integrative Data Analysis: Applications Across Different Data Types

Richard P. Moser
National Cancer Institute

Patrick J. Curran
University of North Carolina at Chapel Hill

Michael Larsen
The George Washington University

Daniel Bauer
University of North Carolina at Chapel Hill

Sierra Bainter
University of North Carolina at Chapel Hill

Integrative data analysis (IDA) is a general term for a set of analytic techniques derived from combining or linking independent data sets together and analyzing them as a complete set. This is different from meta-analysis in the sense that one analyzes the actual data in IDA, not the statistical summaries of those data. IDA is a cost-effective way to do science and has the potential to move areas of science forward rapidly by building a cumulative knowledge base. It is an extremely topical issue given the unprecedented access to data that is now afforded to all researchers through cyberinfrastructure (i.e., internet-based research environments), and a push from the Federal government to make data more accessible.

This four-hour workshop will provide a general overview of the pertinent issues involved with IDA, demonstrate three applied guided examples utilizing different types of data, and discuss Federal funding opportunities to support IDA methodology. Statistical code and related output will be provided to workshop participants so that they can follow along with each example.

Workshop Objectives:

1) Learn about the conceptual and analytic issues involved with integrative data analysis
2) Observe applied guided examples of the types of integrative data analyses that can be done
3) Apply techniques learned to a prescribed dataset during a workshop

Integrating Qualitative and Quantitative Methods: Mixed Methods Designs for Psychological Research*

Rebecca Campbell
Michigan State University

Mixed methods research designs are often celebrated as having the best of both worlds--quantitative numerical findings as well as qualitative contextual detail. However, planning, implementing, analyzing, and presenting mixed methods projects can be challenging. This workshop will break down this complex process into a series of decision trees researchers can use to create mixed methods studies. This workshop will provide an overview of the key epistemological and methodological debates in the mixed methods literatures. Then, we will focus on specific mixed methods designs and their utility across different types of psychological research. Participants will work on developing a feasible mixed methods design for a research topic in their own substantive areas.

Bayesian Data Analysis*

John K. Kruschke
Indiana University, Bloomington

The workshop explains why it's embarrassing to report p values in research, then introduces concepts of Bayesian data analysis, modern computer methods, and the benefits of Bayesian analysis. Applications to multiple regression and ANOVA are covered, with complete computer programs.

Introduction to R Statistical System*

William Revelle
Northwestern University

R is an integrated suite of software facilities for data manipulation, calculation, and graphical display that is particularly useful for psychological scientists. This workshop will assume no prior knowledge of R and will emphasize standard functions for analysis and display of experimental and correlational data for classroom and research.

Introduction to Structural Equation Modeling*

Gregory R. Hancock
University of Maryland

Structural equation modeling represents the union of regression, path analysis, and factor analysis, facilitating the investigation of hypothesized relations among both measured and latent variables. The particular advantage of methods involving latent variables is that theories may be investigated as they pertain directly to the underlying constructs of interest, rather than to the measured variables whose observed relations are often attenuated by error of measurement. The current workshop will provide a brief practical introduction to this exciting area, starting with path analysis among measured variables, moving into confirmatory factor models, and then finally detailing structural models involving hypothesized causal connections among latent variables. Issues related to advanced types of models, as well as software options, will be mentioned as well. Participants are encouraged to bring PC-compatible laptop computers to be able to do practice exercises using the SIMPLIS language within the LISREL software package; registrants will be e-mailed information about software and materials to download prior to the workshop.

Introduction to Structural Modeling Using OpenMx

Steven Boker
University of Virginia

Michael Neale
Virginia Commonwealth University

This workshop will introduce the use of the OpenMx Structural Equation Modeling (SEM) package. The workshop will begin with a very brief introduction to the calculation of the covariances of linear combinations and the notions of path analysis. Next will be an introduction to specifying structural models in OpenMx. In contrast to traditional SEM modeling software, OpenMx uses a functional approach to model specification.

Next, we will specify and fit a wide variety of models that will include multiple and multivariate regression, confirmatory factor models, latent growth curves, latent differential equations, moderation models, and multigroup models.

The workshop will be hands-on. It will be assumed that participants that participants are at least somewhat familiar with R and know the basics of SEM. Please bring a laptop with the latest versions of R, "psych", and "OpenMx" packages installed. OpenMx can be installed for free from the OpenMx website at http://openmx.psyc.virginia.edu.

WORKSHOPS

Introduction to Multilevel Modeling*

Elizabeth Page-Gould
University of Toronto, Scarborough, Canada

Multilevel modeling is an analysis known by many names: Hierarchical Linear Modeling (HLM), nested growth curves, and random effects models, just to name the most common monikers. Truly, multilevel models represent a class of techniques used to analyze datasets where cases are not independent (e.g., romantic couples, primates within colonies, longitudinal designs). This workshop will give you a practical introduction to the theory, implementation, interpretation, and reporting of multilevel models. Page-Gould will demonstrate some important extensions that are commonly employed by psychologists: simple effects testing, mediation, and calculation of effect size in multilevel models. You will also receive syntax files for conducting multilevel modeling in two common statistical packages: SPSS and R (you only need to be familiar with one of these packages). You will emerge from the workshop with the ability to apply multilevel modeling to your research questions in a rigorous manner.

Estimation for Better Research: Effect Sizes, Confidence Intervals, and Meta-analysis*

Geoff Cumming
La Trobe University, Australia

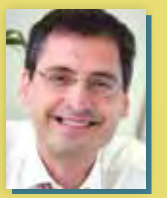
The APA Publication Manual states "wherever possible, base discussion and interpretation of results on point and interval estimates." This workshop will explain why an estimation approach is better than null hypothesis significance testing, and describe how to calculate and interpret effect sizes and confidence intervals for a range of measures and designs. It will also introduce meta-analysis, and the use of precision for research planning. The emphasis will be on understanding, and practical strategies. Much use will be made of the interactive simulations of ESCI (Exploratory Software for Confidence Intervals). There is more information about ESCI, and the book that includes the material in the workshop, at: www.thenewstatistics.com

Studying Emotions in the Laboratory

Iris Mauss
University of Denver

This workshop will provide a brief and practical introduction to studying emotion in the laboratory. Studying emotion in the lab requires two things. First, one needs to be able to evoke emotions in laboratory settings. We will cover various approaches to doing so, including pictures, film clips, and naturalistic interactions, with a focus on advantages and disadvantages of each one. Second, one needs to be able to measure participants' emotional responses. We will cover three common approaches to measuring emotion: experience, facial behavior, autonomic physiology. Discussion will focus on advantages and disadvantages of each one as well as their relationship to one another. Participants should emerge from the workshop with the ability to design rigorous laboratory studies involving emotion.

Randomization Tests for Single-case Experiments Using R*



Patrick Onghena
Katholieke Universiteit Leuven, Belgium

In this workshop, participants will be introduced to the SCRT-R (Single Case Randomization Tests, the R version) package. Some theoretical background regarding randomization tests will be provided, together with exercises and hands-on experience using the package. Participants will be shown how to perform a visual analysis (making a graphical representation of the single-case data; plotting a measure of central tendency; displaying information about variability in the data; and visualizing trends), how to calculate randomization test p-values, how to include effect size measures in their analyses (Standardized Mean Difference, Percentage of Nonoverlapping Data, and Percentage of Data points Exceeding the Median), and how to perform a meta-analysis of replicated single-case experiments. The focus of this workshop will be on behavioral applications and on understanding the results of statistical analyses rather than on the mathematical or algorithmic background of the techniques presented.

Federal Funding for Basic Psychological Science

Chair: Rebecca A. Ferrer
National Cancer Institute

This workshop will bring together program directors and investigators to discuss federal funding opportunities for basic psychological science. Here, we define basic psychological science as research that seeks to understand psychological mechanisms, but does not directly seek to influence or predict specific decision or behavioral outcomes.

We will focus on articulating the potential basic psychological science funding at NSF and NIH, with an eye towards the type of science that fits various research priorities, as opposed to specific funding mechanisms or grant-writing strategies (although these will also covered briefly). Each program director will briefly discuss psychological science-related priorities of her institution. Investigators will then discuss their experiences in pursuing and obtaining this type of funding for their own basic psychological science research program.

The objectives of the workshop for attendees are to: 1) match their current research programs with strategic priorities of various federal funding institutions; 2) think broadly about leveraging different funding opportunities creatively to further psychological science in conjunction with an institution's mission; and 3) learn about current funding opportunities for specific areas of basic psychological science.

Lisbeth Nielsen
National Institute on Aging

Melissa W. Riddle
National Institute of Dental and Craniofacial Research

Rosalind King
National Institute of Child Health and Human Development

Kellina M. Craig-Henderson
National Science Foundation

Lisa Feldman Barrett
Northeastern University

Emily Falk
University of Michigan

*Co-sponsored by the Association for Psychological Science (APS) and the Society of Multivariate Experimental Psychology (SMEP).

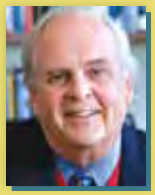
INVITED ADDRESSES

Sex, Murder, and the Meaning of Life

Douglas T. Kenrick
Arizona State University

Breaking Down Empathy into Component Processes: Integrating Evolution, Neurobiology and Psychology

Jean Decety
University of Chicago



Science and Practice in 2012 And Beyond

David H. Barlow
Boston University

Culture as Treatment for American Indian Mental Health Problems: Pursuing Evidence Through Community Collaborations

Joseph P. Gone
University of Michigan, Ann Arbor

The Interpretation of Dreams, and of Jokes

Matthew H. Erdelyi
Brooklyn College, The City University of New York

Language, Culture, and Being Human

Daniel Everett
Bentley University

Race to Nowhere

Vicki H. Abeles
Producer and Co-Director

How Applied Behavior Analysis is Making a Difference: A Look at Effective Early Intervention Treatment for Children with Autism

Sheila Jodlowski
Manhattanville College

What Develops in Social Development?

Eric E. Nelson
National Institute of Mental Health

The New Statistics: Why, How and Where Next

Geoff Cumming
La Trobe University, Australia

Oliver P. John
University of California, Berkeley

Why Agreeable People Are Agreeable: Cognitive, Regulation, and Metaphoric Perspectives

Michael Robinson
North Dakota State University

Safely Testing the Alarm: Positive Event Disclosures and Traditional Social Support

Shelly Gable
University of California, Santa Barbara

The Righteous Mind: How Moral Psychology Can Explain Part of the Political Mess We're In

Jonathan Haidt
University of Virginia

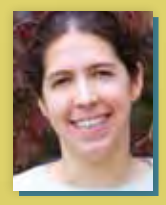
Understanding the Decline Effect Requires Systematically Documenting Unpublished Findings

Jonathan W. Schooler
University of California, Santa Barbara

INVITED TALKS

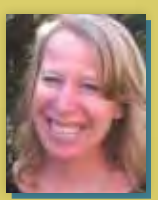
Academic Performance Under Stress

Sian Beilock
University of Chicago



Facing Our Selves: What People Do and Don't Know About Their Personality

Simine Vazire
Washington University in St. Louis



Resources for Emotion Regulation

Heather L. Urry
Tufts University

For the Latest on the Convention

www.psychologicalscience.org/convention

Questions? **+1 202.293.9300 or convention@psychologicalscience.org**

INVITED SYMPOSIA

Evolutionary Psychology: Controversies, and Current Directions

Chair: Richard S. Lewis
Pomona College

Jaime Cloud, *University of Texas at Austin* and
David Buss, *University of Texas at Austin*
The Use and Misuse of Evolutionary Psychology

Debra Lieberman, *University of Miami*
It's All Relative: Human Kin Detection and Inbreeding Avoidance

Ed Hagen, *Washington State University, Vancouver*
Nicotine—Candy or Cure? Testing an Evolutionary Alternative to the Reward Model of Psychoactive Substance Use

Martie Haselton, *University of California, Los Angeles*
Fertile Minds: Effects of the Ovulatory Cycle on Women's and Men's Social Behavior

Discussant: David Buss, *University of Texas at Austin*

Current Directions in ADHD Research

Chair: Arnaud Rey
CNRS- Universite de Provence, France

Chair: Howard Berenbaum
University of Illinois at Urbana-Champaign

Richard Milich, *University of Kentucky*
Inference-making Difficulties Among Children with ADHD

Tiago V. Maia, *Columbia University*
Norepinephrine and ADHD

Cynthia Huang-Pollock, *Pennsylvania State University*
Integrating Common Cognitive Phenomena in ADHD

Rick Mayes, *University of Richmond*
Medicating Kids: ADHD and the Controversy over Stimulants

Looking at the Impact of Culture in Collectives

Chair: C. Shawn Burke
University of Central Florida

Debbie DiazGranados, *Virginia Commonwealth University*

Maritza Salazar, *Claremont University*
Facilitating Creativity in Inter-Cultural Teams: The Role of Dual Identification

Paul Hanges, *University of Maryland*

Diverse Perspectives on Diversity in Mentoring

Chair: Suzanne T. Bell
DePaul University

Lisa Finkelstein, *Northern Illinois University*

Roya Ayman, *Illinois Institute of Technology*

Belle Rose Ragins, *University of Wisconsin – Milwaukee*

Gene-environment Interactions of Psychological Traits

Chair: Howard Berenbaum
University of Illinois at Urbana-Champaign

Elizabeth Hayden, *University of Western Ontario, Canada*
Genetic and Contextual Interplay in Emerging Child Depression Risk

Danielle M. Dick, *Virginia Institute for Psychiatric and Behavioral Genetics*
The Promise and Peril of GxE Studies

S. Alexandra Burt, *Michigan State University*
Are GxE Really Ubiquitous? Thinking Though Our Implicit Assumptions

Application of Diverse Methodologies to Studying Distributed Teams

Chair: C. Shawn Burke
University of Central Florida

Leslie DeChurch, *Georgia Technical University*
Innovating within and Across Teams, through Time and Space: A Multiteam-network Perspective

Aparna Joshi, *University of Ilinois*
Leading Across Distance and Time: Leadership in Globally Distributed Teams

Emotional Influences on Decision Making

Chair: Benjamin J. Newell
University of New South Wales, Australia

Peter Ayton, *City University London, United Kingdom*
Dread Risk: Terrorism & Bicycle Accidents

Paul Slovic, *University of Oregon*
The More Who Die, the Less We Care: Psychic Numbing and Genocide

John Payne, *Duke University*
Complex Risky Choice and Emotions

New Directions in the Psychology of Meaning

Chair: Travis Proulx
Tilburg University, The Netherlands

Roy F. Baumeister, *Florida State University*

Aaron Kay, *University of Waterloo, Canada*

Ian McGregor, *York University, Canada*

INVITED SYMPOSIA

Making Intensive Longitudinal Data Speak

Chair: Francis Tuerlinckx
Katholieke Universiteit Leuven, Belgium

Chair: Peter Kuppens
Katholieke Universiteit Leuven, Belgium

Jean-Philippe Laurenceau, *University of Delaware*

Pamela Sadler, *Wilfrid Laurier University, Canada*

Emilio Ferrer, *University of California, Davis*

Beyond Threat and Defense in the Science of Meaning

Chair: Laura A. King
University of Missouri, Columbia

Mark Landau, *University of Kansas*
More Than Words: Metaphorical Thought in Social Life

Sascha Topolinski, *Universität Würzburg, Germany*
Measuring and Inducing Gut Feelings in Intuitive Judgments

Laura Kray, *University of California, Berkeley*
From What Might Have Been to What Must Have Been: Counterfactual Thinking Creates Meaning

Strategies for Developing a Successful Research Proposal: Perspectives Across Funding Agencies

Chair: C. Shawn Burke
University of Central Florida

Jay Goodwin, *Army Research Institute*

Susan Winter, *National Science Foundation*

Sarah Kobrin, *National Institute of Health*

Advances and Applications in Single Case Design

Chair: Ellen L. Hamaker
Utrecht University, The Netherlands

Chair: Howard N. Garb
Wilford Hall Surgical Ambulatory Center

Patrick Onghena, *Katholieke Universiteit Leuven, Belgium*

The Curious Case of Single-case Research: Causal Inference from Randomized Single-case Experiments

Matthew K. Nock, *Harvard University*
Doing More with Less: (Re)focusing Psychology on the Study of Change within Individuals

Thomas Kratochwill , *Wisconsin Center for Education Research*
Distinguishing Design and Evidence: The What Works Clearinghouse Single-Case Research Standards

Discussant: David H. Barlow, *Boston University*

Political Ideology "From the Bottom Up": Origins, Manifestations, Consequences

Chair: John T. Jost
New York University

Geraint Rees, *University College, London, United Kingdom*
Political Attitudes and Brain Structure

Christian Kandler, *Universität Bielefeld, Germany*
Genetic and Environmental Sources of Left-Right Political Orientation: The Roles of Personality, Assortative Mating, and Generation-Specific Context Effects

Christopher M.Federico, *University of Minnesota*
Ideological Asymmetries in the Political Expression of Needs for Certainty and Order

Riley E. Dunlap, *Oklahoma State University*
Political Ideology and Global Warming: The Dismissal of Climate Change by Conservative Americans

BOBO'S A BIG *HIT*

Come see Albert Bandura's famous Bobo Doll on display at the APS Convention this May 24-27 courtesy of The Center for the History of Psychology at The University of Akron.

Have your photo taken with the Bobo doll at the APS photo booth.

STUDENT EVENTS

Naked Truth Series

Part I – Getting into Graduate School

This panel provides a step-by-step guide for students interested in pursuing a graduate degree. Graduate students from various fields of psychological science will share their experiences and offer advice the process of graduate school admissions. The wide-ranging discussion will include advice for preparing for graduate school, what to expect during the application process, and tips for surviving graduate school interviews.

Chair: Kris Gunawan, *University of Nevada, Las Vegas*

Part II – Surviving Graduate School

Do you have questions about the next steps in your psychology education? This students-only event consists of three separate one-hour panels that focus on getting into graduate school, surviving graduate school, and what to do after graduate school, respectively. Each panel features students (or recent graduates) who share their experiences and answer questions from the audience.

Chair: Sean Hughes, *National University of Ireland Maynooth*

Part III- Navigating the Academic Job Market in Tough Economic Times

Are you a graduate student or recent graduate about to look for that first post-graduation position? Do you have questions about navigating the job market in a difficult economy? This panel will bring together a group of psychological scientists including faculty members and post-docs to share their experiences and answer your questions about finding a job in research, teaching, clinical science or non-traditional placements.

Chair: Peter M. Vernig, *Suffolk University*

How to Get Published

Are you a beginner in the world of scientific publishing? Editors from top journals in the field of psychological science will give valuable advice about what happens once your paper has been submitted, the publication process (e.g., common pitfalls of first-time submitters, what editors look for in manuscripts, why editors and reviewers only accept certain statistical procedures, etc.) and answer questions from the audience. This event is geared toward students and beginning researchers who want to find out what happens once they hit "submit."

Chair: Nicholas R. Eaton, *University of Minnesota*

RISE Research Award Symposium

The RISE Research Award is given annually to recognize outstanding student research on socially and economically under-represented populations. The winners, selected by a panel of their peers, will present their research in symposium format. The goal of this event is to increase awareness of the need for diverse perspectives in psychological science.

Chair: Andrew S. Sage, *University of Missouri, Columbia*

Student Research Award Symposium

The Student Research Award is given annually to recognize outstanding research conducted by APS Student Affiliates. The program will feature addresses from the four winners of the 2011 competition, who were selected through peer-review process.

Chair: Sean Hughes, *National University of Ireland Maynooth*

Champions of Psychology

The APS Student Caucus is honored to present the annual Champions of Psychology event, which provides the unique opportunity for student affiliates to talk in an informal setting with some of the most respected and well-known scientists in psychology. Space is limited, and available only on a first-come, first-seated basis, so come early to get a good seat.

Chair: Peter M. Vernig, *Suffolk University*

PSI CHI WORKSHOPS

Developing Leadership Skills through Mentoring Relationships

This interactive session will consider mentoring as a means of leadership development. Several potential mentoring relationships will be reviewed including Psi Chi mentoring opportunities. Common challenges to and recommendations for effective mentoring will be presented. Examples will concentrate on education and research, but also will relate well to business/organizational contexts.

Chair: Susan E. Becker, *Colorado Mesa University*

Michael D. Hall, *James Madison University*

Martha S. Zlokovich, *Psi Chi International Honor Society in Psychology*

Lost Chances and Increasing Opportunities for Faculty and Students in Psi Chi, the International Honor Society in Psychology

This discussion will raise and address several common misconceptions about Psi Chi. Panelists will review new Psi Chi programs and ongoing initiatives concerning international expansion, leadership, and diversity. The society's growing opportunities for awards and publications will be highlighted as will its utility as an information resource.

Chair: Michael D. Hall, *James Madison University*

Martha Zlokovich, *Executive Director, Psi Chi*

Susan E. Becker, *Colorado Mesa University*

Daniel Corts, *Augustana College*

Timothy Koeltzow, *Bradley University*

19TH ANNUAL APS-STP TEACHING INSTITUTE

Opening Plenary

Increasing Student Success: What Can Instructors Do?

Meera Komarraju
Southern Illinois University

How do students' personality traits, learning strategies, self-efficacy, social integration, and perceived interactions with faculty relate to their motivation and performance? Is it possible for instructors to structure their curriculum and the classroom experience to increase students' performance? Drawing on my research findings, I offer some answers to these questions.

Concurrent Sessions

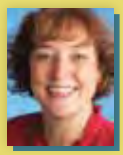
Teaching within an Honor System: Impact on Pedagogy and Practical Advice

Beth M. Schwartz
Randolph College

Holly Tatum
Randolph College

Texting = Epic Fail: Empirical Evidence that Text Messaging During Class Disrupts Comprehension of Lecture Material

Amanda C. Gingerich
Butler University



Tara T. Lineweaver
Butler University

Transformation and Service-Learning in Psychology

Steven Meyers
Roosevelt University

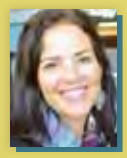
Students Appreciate Unannounced Quizzes After Exposure To Them In Class

Margaret C. Stevenson
University of Evansville

Retrieve Before You Leave: End-of-Lecture Retrieval Practice Increases Statistics Exam Performance

Keith B. Lyle
University of Louisville

Loving Your Students Without Being a Pushover



Janie H. Wilson
Georgia Southern University

Women, Romance, and STEM: Predicting Interest in Science, Technology, Engineering, and Math

Lora E. Park
University at Buffalo, The State University of New York

Closing Plenary

Utility Value Research: Useful Tips for Undergraduate Teaching

Janet Hyde
University of Wisconsin, Madison

"Utility value" refers to the usefulness of a task to the individual, either now or in the future. Both laboratory experiments and classroom research show that, when students perceive material as useful, they become more interested and achieve more (Hulleman & Harackiewicz). This talk will describe this research on utility value and explore its application for teaching undergraduate courses including introductory psychology and statistics.

Distinguished Lecturer

Personality Theories for Science . . . and Literature

Robert R. McCrae
National Institute on Aging

Research on the Five-Factor Model shows classic personality theories are outdated; new theories should be taught. Psychoanalysis remains influential in the humanities, but Five-Factor Theory provides a more scientific basis for interpreting characters in fiction. Some discussion of literature can keep "Personality Theories" relevant to a wide range of students.

Workshop

Sharpen Your Saw: Technology for Educators

Sue Frantz
Highline Community College

The fast pace of technological change has left many of us feeling behind. Our day-to-day work leaves us feeling too busy to seek out tech tools that may help us be more efficient. What are the newest technologies that you can use right now?

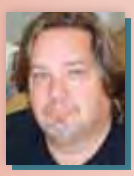
Society for the Teaching of Psychology Programs

Teaching Intergroup Relations in the 21st Century: Pleasures, Pains, and Prerogatives

Gordon Hodson
Brock University, Canada

Putting the Person Back Together: The Social Psychology of Cultural Animals

Roy F. Baumeister
Florida State University



Developing Useable Knowledge for Teaching and Learning: An Ecological Approach

David Daniel
James Madison University

EARLY BIRD REGISTRATION

Register and save now through

MARCH 31, 2012

www.psychologicalscience.org/convention/registration

INVITED SPEAKERS

Vicki H. Abeles
Roya Ayman
Peter Ayton
Sierra Bainter
Megan Bang
David H. Barlow
Daniel Bauer
Roy F. Baumeister
Margaret Beale Spencer
Susan E. Becker
Sian Beilock
Suzanne T. Bell
Howard Berenbaum
Ellen Berscheid
Robert A. Bjork
Steven Boker
George A. Bonanno
Dale Boyle
C. Shawn Burke
S. Alexandra Burt
David Buss
Rebecca Campbell
Joan Y. Chiao
Jaime Cloud
Daniel Corts
Kellina M. Craig-Henderson
Kellie Crowe
Geoff Cumming
Patrick J. Curran
David Daniel
Geraldine Dawson
Jean Decety
Leslie DeChurch
Debbie DiazGranados
Danielle M. Dick
Lea R. Dougherty
Christine Dunkel Schetter
Riley E. Dunlap
Afsoon Eftekhari
Elissa Epel
Matthew H. Erdelyi
Daniel Everett
Emily Falk
Christopher M. Federico
Lisa Feldman Barrett
Emilio Ferrer
Rebecca A. Ferrer
Kevin Feyen
Eli J. Finkel
Lisa Finkelstein
Edna B. Foa
Sue Frantz
Shelly Gable
Howard N. Garb
Amanda C. Gingerich
Shirley M. Glynn
Joseph P. Gone
Gail Goodman
Jay Goodwin
Ed Hagen
Jonathan Haidt
Michael D. Hall
Ellen L. Hamaker
Gregory R. Hancock
Paul Hanges
Martie Haselton
Elaine Hatfield
Elizabeth Hayden
Richard G. Heimberg
Dirk Helbing
Gordon Hodson
Cynthia Huang-Pollock
Janet Hyde
James S. Jackson
Sheila Jodlowski
Oliver P. John
Aparna Joshi
John T. Jost
Christian Kandler
Bradley E. Karlin
Annette Karmiloff-Smith
Aaron Kay
Douglas Kenrick
Laura A. King
Rosalind King
Sarah Kobrin
Timothy Koeltzow
Silvia H. Koller
Meera Komarraju
Thomas Kratochwill
Laura Kray
Carol L. Krumhansl
John K. Kruschke
Peter Kuppens
Mark Landau
Michael Larsen
Jean-Philippe Laurenceau
Richard Lerner
Robert W. Levenson
Daniel J. Levitin
Bianca Levy
Richard S. Lewis
Debra Lieberman
Scott O. Lilienfeld
Tara T. Lineweaver
Helen E. Longino
Keith B. Lyle
Tiago V. Maia
Iris Mauss
Rick Mayes
Robert R. McCrae
Ian McGregor
Douglas L. Medin
Steven Meyers
Richard Milich
Brenda Milner
Richard P. Moser
Michael Neale
Eric E. Nelson
Benjamin J. Newell
Lisbeth Nielsen
Matthew K. Nock
Patrick Onghena
Elizabeth Page-Gould
Lora E. Park
Aniruddh D. Patel
John Payne
William E. Pelham
Travis Proulx
Geraint Rees
Patricia Resick
William Revelle
Arnaud Rey
Melissa W. Riddle
Michael Robinson
Henry L. Roediger, III
Belle Rose Ragins
Pamela Sadler
Maritza Salazar
E. Glenn Schellenberg
Jonathan W. Schooler
Barry Schwartz
Beth M. Schwartz
Richard M. Shiffrin
Lisa M. Shin
Richard A. Shweder
Paul Slovic
Margaret C. Stevenson
Holly Tatum
Carol Tavris
Sascha Topolinski
Francis Tuerlinckx
Heather L. Urry
Simine Vazire
Elaine F. Walker
Janie H. Wilson
Susan Winter
Victor Wooten
Antonette Zeiss
Martha Zlokovich

Navy Pier

CITY SITES

The Chicago Theatre

The Crown Fountain at Millennium Park

Chicago's Cloud Gate Sculpture (The Bean)

Wrigley Field

Willis Tower and the Chicago River

Read the full profiles online

www.psychologicalscience.org/observer/rising-stars

RISING STARS

In case there was any doubt, the future of psychological science is in good hands. In a continuing series, the *Observer* presents more Rising Stars, exemplars of today's psychological scientists. Although they may not be advanced in years, they are making great advancements in science. The following are excerpts of the Rising Stars profiles. The full profiles are available online at www.psychologicalscience.org/observer/rising-stars.

Andrew Butler

Duke University, USA
http://duke.edu/~ab259/index.html

What does your research focus on?

Generally speaking, I study human memory and learning. However, I am particularly interested in how the act of retrieving information from memory affects subsequent memory for that information. Many people consider memory retrieval to be a neutral event, much like measuring someone's weight. Just as stepping on a scale doesn't change how much someone weighs, memory retrieval is assumed to reveal the contents of memory but leave them unchanged. However, a large body of research has shown that retrieving information from memory actually changes memory. My program of research explores the underlying cognitive processes that produce this basic finding as well as various practical applications.

What publication are you most proud of or feel has been most important to your career?

Butler, A. C. (2010). Repeated testing produces superior transfer of learning relative to repeated studying. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 36*, 1118-1133.

I am extremely proud of this publication for several reasons: 1) the findings demonstrate that retrieval practice can be used to promote the transfer of knowledge to a variety of contexts, 2) it communicates my dissertation research on which I spent a lot of time and effort, and 3) it is my first solo publication and thus represents an important step in my career

Read Andrew's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=butler

Julie Bugg

DePauw University, USA

What does your research focus on?

The primary focus of my research is cognitive control and age-related changes in control. I am interested in the mechanisms humans use to resolve interference, the interplay of expectancy-driven and stimulus-driven control, the degree to which these mechanisms are impaired versus spared with age, and remediation of age-related cognitive control decline.

What publication are you most proud of or feel has been most important to your career?

Bugg, J. M., Jacoby, L. L., & Chanani, S. (2010). Why it is too early to lose control in accounts of item-specific proportion congruency effects. *Journal of Experimental Psychology: Human Perception and Performance*. doi: 10.1037/a0019957.

This publication is meaningful for several reasons. One, it reflects a collaboration among myself, my mentor, and an undergraduate student, Swati Chanani, who I had the privilege of mentoring. Second, this was Swati's first publication, and I found it very rewarding to share this experience with her. Third, it represents what I love about being a cognitive psychologist, the opportunity to develop and test a theoretical account, to contrast it with existing accounts, and to generate novel experimental designs for testing exciting questions.

Read Julie's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=bugg

Shana Carpenter

Iowa State University, USA
www.psychology.iastate.edu/~shacarp/

What does your research focus on?

I study techniques and strategies that improve memory. My research so far has focused on the effectiveness of relatively simple mnemonic techniques such as retrieval practice, the optimal scheduling of repeated study sessions, and the best time during which corrective feedback should be given in order to maximize the amount of information that people can remember.

What publication are you most proud of or feel has been most important to your career?

Carpenter, S. K., & DeLosh, E. L. (2005). Application of the testing and spacing effects to name-learning. *Applied Cognitive Psychology, 19*, 619-636.

This one is special because it was the first. For a variety of reasons, I have found that it is a good thing to try to remember what it was like to do something for the first time.

Read Shana's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=carpenter

Jason Chan

Iowa State University, USA
www.jasonckchan.com

What does your research focus on?

My research focuses on memory illusions and memory interventions. Recently I started to merge these two interests together; the goal is to use memory enhancement techniques such as retrieval practice to reduce erroneous memories. Of course, we have known for a long time that memory can be malleable, so one question that interests me is "what can we do about it?" Memory intervention techniques (such as retrieval practice) can be used to reduce erroneous memories, and they can also be applied to enhance students' learning in general, but even these interventions can have their limits. One of my research goals is to learn more about these limits.

What publication are you most proud of or feel has been most important to your career?

Chan, J. C. K., McDermott, K. B., & Roediger, H. L. (2006). Retrieval-induced facilitation: Initially nontested material can benefit from prior testing of related material. *Journal of Experimental Psychology: General, 135*, 553-571.

It's hard to pick just one, but this paper was perhaps the most influential to me because it came out just when I was applying for jobs. If this paper hadn't been on my CV at the time, I don't know how my job search would have gone.

Read Jason's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=chan

Gregory Samanez-Larkin

Vanderbilt University, USA
www.psy.vanderbilt.edu/postdocs/gregoryrsl/

What does your research focus on?

In general I am interested in how cognition and motivation develop and change over adulthood and into old age. Most of my recent work has specifically examined age-related change in learning and decision making — particularly related to finances. The larger goal of all of this work is to contribute to a more comprehensive model of human aging that integrates evidence and theory from psychology, neuroscience, and economics.

What publication are you most proud of or feel has been most important to your career?

So far the publication I am most proud of is a paper that was published in 2010 in the *Journal of Neuroscience*. It was a bit more challenging to publish than my first few papers, which may have added to the satisfaction of actually getting it accepted. It went through review at a few journals and with each round got better and better. I also particularly like this paper because it is my most integrative to date (both in terms of disciplines and methods). Inspired by early theorizing by James Birren in the 1970's, more recent computational work by Shu-Chen Li, and a handy statistic developed by von Neumann in 1940's, we developed a novel measure of neural variability to assess both age differences and relationships with investment behavior. The relationship we observed between age and investment mistakes was mediated by an increase in mesolimbic neural variability. The age-related increase in variability in the midbrain and striatum was subsequently replicated in a study by Douglas Garrett in Cheryl Grady's lab using completely different methods. This paper has also led to a lot of fruitful discussion and several follow-up projects with Shu-Chen Li, Doug Garrett, and Cami Kuhnen.

Read Gregory's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=samanez-larkin

Karl Szpunar

Harvard University, USA
http://karlszpunar.com

What does your research focus on?

My research interests focus primarily upon, but are not limited to, understanding the cognitive and neural relations that underlie our capacity to remember personal past experiences and imagine personal future experiences.

What publication are you most proud of or feel has been most important to your career?

The publication that I am most proud of: Szpunar, K. K., Watson, J. M., & McDermott, K. B. (2007). Neural substrates of envisioning the future. *Proceedings of the National Academy of Sciences USA, 104*, 642-647.

Kathleen, Jason Watson, and I reported one of the first datasets demonstrating that the neural substrates underlying autobiographical memory retrieval become similarly engaged as people imagine their future. This was the first paper that we published together on this topic and led to several fun collaborations.

Read Karl's full profile online at www.psychologicalscience.org/observer/rising-stars/?n=szpunar

ACADEMIC OBSERVER from Page 9

up the first one. However, if others had tried to replicate his work soon after its publication, his misdeeds might have been uncovered much more quickly. Yet, my friends in social/personality psychology tell me that replication is often not encouraged or valued in their field. Writing an editorial in *Science*, Jennifer Crocker and Lynne Cooper (socal/personality psychologists) wrote "studies that replicate (or fail to replicate) others' findings are almost impossible to publish in top scientific journals." Brent Roberts (in a column in *P: The Online Newsletter for Personality Science*, which is published by the Association for Research in Personality) wrote: "In personality psychology, and most other areas of psychology, we actively devalue direct replication." He goes on to decry this tendency and to recommend steps to remedy it.

I am not sure replication is always devalued. At least in my little corner of the world of psychological science, I see replications all the time. Often, for cognitive psychologists, replications of experiments are required for publication by editors in our most prestigious journals. While in graduate school, I was admonished repeatedly on the critical importance of replication and was taught to never ever submit a finding that you were not sure of via replication. To those who argue that a robust level of statistical significance is all one needs to assure replicability, I recall the aphorism (attributed to Confucius) that "One replication is worth a thousand *t*-tests." Words to live by. And if we replicate our results routinely, we do not need to worry so much about the poor logic of null hypothesis statistics or using Bayesian statistics to try to determine what happened in a single experiment or study. If you obtain an effect, just replicate it (perhaps under somewhat different conditions) to be sure it is real. I will illustrate the benefits of replication with a personal example below.

A Tale of Two Studies

How can we avoid the problem of nonreplication that seems to plague psychological science and other fields? The answer is disarmingly simple: Researchers should always, whenever possible, replicate a pattern of results before publishing it. The phenomenon of interest should be subjected to careful scrutiny, should be twisted, bent, and hammered to see if it will survive. If the basic effect is replicated under the exact conditions as in the original study, but it disappears when conditions are changed a bit, then the effect is real but brittle; the boundary conditions for obtaining the effect are rather narrow. That is not ideal, but is certainly worth knowing. Many phenomena in the world of cognitive psychology have this feature of holding under one set of conditions (say, in within-subject designs) but disappearing under another set of conditions (in between-subject designs). McDaniel and Bugg (*Psychonomic Bulletin & Review*, 2008) review how many interesting memory phenomena (even strong ones, like the generation effect) can be affected by the type of design employed. That is simply a fact that would need to be explained, but not a failure to replicate, at least in one sense (to be discussed further below).

In the mid-1990s, Kathleen McDermott and I were collaborating on research, and we tried two rather risky experiments, ones that seemed likely to fail but that were worth trying. To our surprise, we found startling patterns of data in both procedures. Yes, in both cases, we found what we predicted (or at least what we hoped to find), but we were skeptical about the results.

One case involved a technique for studying false memories in a list-learning situation in which the illusory memories seemed to occur nearly immediately and to be remarkably strong (contrary to standard paradigms of the time used to induce false memories). After a first classroom pilot experiment, we conducted a proper second experiment that confirmed and strengthened our initial results. We started to write up the two experiments. However, we were still a bit worried about the robustness of the effects, so we continued experimenting while we wrote. We were able to confirm the results in new experiments (employing various twists), so that by the time the paper reporting two experiments was accepted and published in the *Journal of Experimental Psychology: Learning, Memory and Cognition* in 1995, we had several more replications and extensions ready to be written.

Our paper had been fairly widely circulated as a preprint and generated some excitement in our little research world, so soon after publication I began getting manuscripts to review that used the same technique. The papers all began with a basic replication of our effect (although sometimes the replication was presented as a control condition to be contrasted with other conditions). Why? I suspect the answer was that the other researchers disbelieved our results or were at least skeptical, so they wanted to demonstrate the effect for themselves before exploring it. These papers replicating and extending the associative-list false memory effect were quickly published — no problem in getting replications published in this instance — and thus, within two years of its initial publication, anyone in my field who cared could know that the effect reported by Roediger and McDermott (1995) was genuine. (The basic effect has now been replicated hundreds of times.) Yes, McDermott and I had replicated our basic effect in the original paper, but the fact that others confirmed it many times over was critical to establishing it as genuine.

The second experiment we were excited about at that time did not have so happy a fate. Briefly, we developed a new (or newish) technique for measuring recognition memory that we suspected (from literature in animals) might be more sensitive than the usual tests of recognition memory. (I will skip the details for reasons that will become obvious, if they are not already.) Our first experiment manipulated a standard variable and measured recognition using our new method and a standard method. To our delight, we found that the new recognition method was indeed more sensitive than the old one (there was a main effect favoring it and an interaction as a function of another variable, showing that the new method was more sensitive than the standard one). We were elated; the effects were quite reasonable, the statistics were robust, and we were off to the races. Or so we

thought. We felt confident enough to submit the research to be presented as a talk at the Psychonomic Society annual meeting, and the work was presented in 1995 in Los Angeles.

After the talk, we decided we needed to replicate and extend the effect, to make sure it was replicable and robust, before submitting it for publication. So we tried replicating the experiment with a twist (a new independent variable), a new subject population (undergraduates, because the original experiment had been done with Air Force recruits), but with the same two measures of recognition memory (standard and new). We got a pattern that looked slightly hopeful, but was far from being statistically significant; we deemed it a failure to replicate (or at least certainly not a success). We scratched our heads and tried again. For the third experiment, we went back to the exact design and procedure to try a direct replication of the method and procedure, albeit still with undergraduates. Again, we did not get the effect, and now the data looked terrible — no hint of an effect of the test variable (the standard versus new procedure) was obtained. (It might not be possible to prove the null hypothesis, but it certainly can be hard to reject it.) As noted, our original experiment had been with Air Force recruits and the next two were with undergraduates. Although we could not imagine a reason that the subject population should matter, we decided to try a direct replication at the Air Force base using more subjects than we had in the original experiment. We still could not get the effect; just null results. The two procedures seemed equivalent measures of recognition. Altogether, we tried several more times over the next few years to replicate the effect. To make a long story short, we never got it again, even though our original experiment in the series had produced such pretty results. Sometimes we got results that hinted at the effect in our new experiments, but more often the results glared out at us, dull and lifeless, telling us our pet idea was just wrong. We gave up.

McDermott and I might well have published our initial single initial experiment as a short report. After all, it was well conducted, the result was novel, we could tell a good story, and the initial statistics were convincing. I would bet strongly we could have had the paper accepted. Luckily, we did not pollute the literature with our unreplicable data — but only because we required replication ourselves (even if the editors probably would not have — brief reports do not encourage and sometimes do not permit replication).

The moral of the story is obvious: Replicate your own work prior to publication. Don't let others find out that you are wrong or that your work is tightly constrained by boundary conditions. If there were a way to retract conference papers, we would have retracted that one. Most people don't count conference presentations as "real" for the scientific literature, and our case provides another good reason for that attitude. At least we found out that our effect was not replicable before we published it.

Varieties of Replication

Nearly every research methods textbook harps on the need for replication. In my experience, it is fairly easy to get successful replications of work published because usually the replication is presented in the context of other research that extends the basic phenomenon of interest. On the other hand, failures to replicate are much more difficult to publish. This fact is bemoaned, but in a way is as it should be. For someone to claim a "failure to replicate" someone else's work, the person needs to have really tried hard to do so. A one-shot "we-tried-but-didn't-get-it" attempt is not enough. Some failures to replicate are published, at least within cognitive psychology (see Fernandez & Glenberg, *Memory & Cognition*, 1985, for one paradigmatic case study in how to conduct and publish a failure to replicate).

The concept of replication is often treated as well defined and unitary. You replicate or you do not. Of course, that is not so; it is customary to distinguish among several types of replication attempts: direct replication, systematic replication, and conceptual replication. As the name implies, direct replications attempt to reproduce a result using the same conditions, materials and procedures as in the original publication to make a replication as close as possible to the original research. Systematic replications are an attempt to obtain the same finding, but under somewhat different conditions (say, in a memory experiment, with a different set of materials or a different type of test). Finally, a conceptual replication tries to replicate the existence of a concept (e.g., cognitive dissonance) by using a different paradigm (say, moving from an induced compliance paradigm for studying dissonance to a free choice paradigm). If the researcher cannot find evidence of cognitive dissonance in the latter paradigm, the result has no necessary implication for replicability of the experiment using the former paradigm. Of course, both these paradigms have been frequently shown to produce cognitive dissonance in line with the core idea of the concept.

When someone uses the phrase "failure to replicate," they almost always have in mind (or should have in mind) direct replication. However, even the concept of direct replication represents a continuum. For example, it is never possible to test the same subjects from the original study, nor is it possible to use the same equipment. Thus, one must make judicious judgments about how close is close enough, and in my experience, debates between the authors of an original report and those trying to publish a failure to replicate it often differ on what "close enough" means. Often, a replication attempt will use the same number of subjects as in the original attempt. This approach sounds reasonable, but studies have shown that experiments will often fail to replicate using this strategy (even if the effect is real). So it would be wise to use 150 percent or more of the number of subjects in the original, if possible.

Is the solution to scientific psychology's woes as simple as replication? Well, no, or at least not completely. However, I would argue that by following the practice of both direct and systematic replication, of our own research and of others' work, we would avoid the greatest problems we are now witnessing. In truth, this advice is easier to adopt for some fields than for others. In most types of cognitive research,

replication is fairly easy. But in some types of research (those with special populations, or onerous manipulations, or longitudinal studies) are by definition difficult to replicate. In these cases, we must depend on other scientific tactics to insure validity of the study. Nonetheless, much of scientific psychology is composed of the sorts of studies that can be readily replicated with just a bit more work, and the replications can be of the systematic variety (changing things up a bit) rather than simply direct replications. We must also ask editors to be open to devoting journal space to replications. In fact, reviewers and editors might be strongly encouraged to ask authors about replicability of their work (even if they are submitting a brief report with only a single study). Do they have other data for possible future reports that insure that the effects reported are genuine? The need for such assurance is particularly high when a single study reports some dramatic or surprising claim.

In a preceding paragraph, I wrote that it should be difficult to publish failures to replicate, in part because failures to replicate can be due to sloppiness on the part of the replicator rather than the original researchers. I implied that the onus should fall on the replicator to directly replicate the research, trying hard to do so in a systematic series of studies. Hal Pashler, who read an earlier version of this column, said he agreed with the general point, but he commented: "However, from a systemic point of view, it [the practice of not publishing failures to replicate unless they are exceptionally systematic] guarantees a biased scientific literature, because let's face it, most of the time when people fail to replicate a result, one or two studies is all they bother to do."

He went on to say that often these are students looking for a topic on which to do a thesis or dissertation, and faced with a failure to replicate, they are likely to give up and move onto another topic rather than to pursue a failure-to-replicate dissertation. Such a dissertation might be good for the field, but might not help the student on the job market. To quote Pashler's note a bit further: "So if the typical program of research that yields a nonreplication isn't ever taken to the point where we would say it should be considered worthy of publication, then errors in the literature will only rarely be corrected, and our literature (even our textbooks) will become bigger and bigger heaps of unreplicable junk (exactly as John Ioannidis' famous 2005 paper in *PloS Medicine* led us to expect)."

Assuming this analysis is correct (and there is a sad ring of truth to it, if we do not replicate our work and that of others), what is the solution? Happily, Pashler is on the front line of providing a possible solution. Along with Barbara Spellman, Alex Holcombe, and Sean Kang, Pashler has helped to create a website called PsychFileDrawer.org to remedy the situation. As the website says, PsychFileDrawer.org is intended to be "An archive of replication attempts in experimental psychology." The use of "experimental psychology" in this context is meant to be broad, to encompass all of scientific psychology. The authors of the website write that "PsychFileDrawer.org is a tool designed to address the file drawer problem as it pertains to psychological research: the distortion in the scientific literature that results from the failure to publish non-replications." Its creators urge researchers to post their replication attempts (successful or unsuccessful) on the website, and the site specifies the rules of the game. I urge readers to take a look. Although the website has only recently gotten started, it should prove to be a useful addition for all fields of psychology. If several researchers (or research groups) report that they cannot replicate a particular finding, this would serve notice to the field that a "false-positive" result may exist in the literature. The various authors of the failures may even team up to publish their findings in an archival journal.

The recent critical examination of our field, though painful, may lead us to come out stronger on the other side. Of course, as noted above, failures to replicate and the other problems (fraud, the rush to publish) are not unique to psychology. Far from it. A recent issue of *Science* (December 2, 2011; Volume 334, No. 6060) contained a section on "Data replication & reproducibility" that covered issues in many different fields. In addition, an article in the *Wall Street Journal* ("Scientists' Elusive Goal: Reproducing Study Results," December 2, 2011) covered failures to replicate in medical research. So, failures to replicate are not only a problem in psychology. Somehow, though, when an issue of fraud or a failure-to-replicate occurs in (say) field biology, journalists do not create headlines attacking field biology or even all of biology. It seems that psychology is special that way. ●

Reflections on Rogers

By David B. Baker

Digging into the history of psychological science, the Observer *has retrieved classic interviews with prominent psychological scientists for an ongoing series* Psychology (Yesterday and) Today. *Each interview is introduced by a contemporary psychological scientist, and the full text of the interview is available on the* Observer *website. We invite you to reflect on the words of these legendary scientists, and decide whether their voices still resonate with the science of today.*

Carl Rogers made a lot of sense in 1967, and he still makes sense in 2011. Like many students in psychology in the 1970s and 80s, my wish was to become a psychotherapist. Rogers's client-centered therapy fit me and countless others like a glove. We were immersed in the human potential movement and encountering our genuine and authentic selves was a common quest. Symptoms and syndromes often took a backseat to self-discovery and expression in the therapeutic hour. Personally, I miss those times.

It is easy to assert that Carl Rogers (www.psychologicalscience.org/r/observer/rogers) reflected the humanistic movement of the 1960s. True enough, but his work also reflected a number of larger social trends with origins in the 1930s.

Carl Rogers

Rogers studied at the progressive Union Theological Seminary in New York City, and crossed the street to earn his PhD at Columbia University in 1931. Those early years in seminary and at Columbia pointed Rogers toward a lifelong commitment to the phenomenology of the self and the demands of psychological science. Indeed much of that balancing act is outlined in the 1967 interview with Mary Harrington Hall.

Rogers also came of age intellectually in the Great Depression, during which the scale and scope of human suffering demanded attention from all quarters. One expression of this in psychology was the formation of the Society for the Psychological Study of Social Issues (SPSSI) in 1936. By then, Rogers was working at the Society for the Prevention of Cruelty to Children in Rochester, New York. It was his work with children in need and crisis that supported the emergence of his client-centered approach. Much of this can be seen in his first book *The Clinical Treatment of the Problem Child* (Rogers, 1939), made more explicit in *Counseling and Psychotherapy* (Rogers, 1942), and achieving extensive visibility in *Client-Centered Therapy* (Rogers, 1951). Central to Rogers's point of view, and in direct opposition to a much more popular practice in counseling, the therapist was non-directive. It was believed that the clients (children or adults) would be able to resolve issues and find their way if they were presented with an accepting and empathic listener who would join rather than direct their journey. This was humanistic psychology!

At the same time that Rogers was formulating his views, a very similar activity was underway at Western Electric's Hawthorne Works in Chicago. It was here that Elton Mayo conducted his famed Hawthorne studies, a collection of experiments designed to discover what workplace factors could be altered to increase productivity. The most well-known studies are the ones that measured the effects of lighting. The finding that attention paid to workers outweighed the effects of illumination in increasing productivity has become the oft-cited *Hawthorne effect*. There were many other studies undertaken, including an interviewing program that examined workers' attitudes. Mayo became interested in the workers as individuals and developed interview methods that focused on attentive listening to the worker without judgment or interruption (for more see Mahoney and Baker, 2001). The method became known as nonauthoritarian interviewing and a full description is included in a book describing the Hawthorne studies called *Management and the Worker* (Roethlisberger & Dickson, 1939). Many researchers credit this method with starting the human-relations movement in industry. Rogers was well aware of Mayo's work at Hawthorne and approved.

Rogers was finding an increasingly receptive audience for his theories and methods. At Ohio State University, the University of Chicago, and the University of Wisconsin, students eager to learn psychotherapy greeted Rogers with interest and enthusiasm.

In the 1940s, another major world event carried Rogers and his work further. World War II highlighted the need for a national mental health workforce. Psychiatric casualties of war far outstripped

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the available supply of practitioners. The National Mental Health Act of 1946 sought to remedy the situation and in the process gave us such things as the National Institute of Mental Health and the Boulder model of training for clinical psychologists.

Like many psychologists of his day, Rogers contributed to the war effort. Under the supervision of Rensis Likert, he interviewed gunners upon their return from battle missions. The data he gathered were used to generate recommendations that would help gunners adjust to civilian life. Working as director of counseling services for the United Service Organization (USO) he developed a program to train others to provide nondirective counseling to returning veterans. The need for effective methods and techniques that could be quickly acquired was a priority, and client-centered therapy fit the bill. Not only had the world changed, but so too did American psychology. As a result of the war, those who identified themselves as applied psychologists joined with academic psychologists in 1945 to create a reorganized American Psychological Association (APA). Carl Rogers became president of the APA in 1946.

In the postwar period, professional psychology came into its own. Healthcare benefits grew to include psychotherapy, and psychologists fought hard to earn recognition as providers and receivers of third-party reimbursement. Clinical and counseling psychology programs flourished. Individual and group therapy approaches using Rogerian principles became a staple of training programs. Once again Rogers and his methods proved to be flexible. Most of his earlier work served the aims of adjustment, be it the adjustment of a child to a foster home or a returning GI to his community. In the 1960s, the concept of adjustment was replaced with the goal of self-fulfillment. Counseling and psychotherapy became tools for self-discovery, and the quest for self-knowledge grew in popularity. The phenomenological and humanistic core of Rogers's work was well suited to this new environment.

But the times do change. Today, there is increased competition for healthcare dollars as well as calls for greater accountability in the provision of psychotherapy. Training programs for mental health practitioners have proliferated, as have calls for the establishment of empirically validated treatments. It is no longer a given that the client-centered approaches developed by Rogers some 70 years ago will be an anchor in the training of mental health professionals. However, as history has taught us, some individuals and innovations stand the test of time and remain there for us when we need them. I like to think this is true for Carl Rogers. ●

Editor's Note: To read the full interview with Carl Rogers as well as other interviews from legendary psychological scientists, please visit our *Psychology (Yesterday and) Today* series page at psychologicalscience.org/psychology-today

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More Than Just a Grade

By Rebecca Silton

After reading Mahzarin Banaji's (2011) article in the *Observer* calling APS members to action, I was sold on using the APS Wikipedia Initiative (APSWI) as a classroom tool. It was just a matter of waiting until the right course came along.

When I was scheduled to teach a graduate class in clinical neuropsychology this past fall semester, I decided it was the perfect course to try out APSWI because I always strive to include a community outreach component in the courses that I teach. The mission of APSWI provided a great vehicle for promoting social justice, particularly within the context of a Neuropsychology course. As medical paternalism is gradually being replaced by do-it-yourself internet research, providing accurate cutting-edge information about neuropsychological research and related diagnoses to an internet audience is necessary for individuals to make informed decisions about their medical care. Wikipedia is frequently accessed for health-related information, including information about neuropsychological and psychological diagnoses. By joining the ranks of professors and students who were already participating in APSWI, I was excited to provide my students with an opportunity to contribute to this important group effort. Rather than assign the traditional final paper that would ultimately get buried six bytes under on a hard drive and never see the light of day as a published manuscript, I assigned "Project NeuroWiki" and invited my students to learn a little syntax and travel into unchartered web territory with me.

Overall, Project NeuroWiki was a very rewarding experience for me and my students. I am extremely proud of my students' hard work, reflecting their intrinsic motivation to improve their selected Wikipedia pages (see the anonymous feedback provided by my students on the following page). Most students indicated that they will continue to update and maintain their Wikipedia pages after the course ends. I will continue to follow their selected Wiki pages to track interesting developments as new research becomes available. It is refreshing to know that my students' final projects will extend beyond the physical walls of the classroom and continue past the short duration of the academic semester.

Unanticipated experiences arose during the course of the semester. There were no tired excuses about accidentally losing work due to a hard-drive crash or a surprise "blue screen of death." Instead, new experiences and challenges arose: while working on their Wikipedia pages, students collaborated with other individuals from other universities and countries across the world. This important level of collaboration would have never occurred if students were writing a traditional term paper. Learning how to efficiently collaborate is critical as psychological science becomes an increasingly multidisciplinary and international discipline. However, this type of fast-paced electronic collaboration also poses unique challenges for grading. Wiki pages are dynamic, quickly changing documents. How should an instructor grade a project that is necessarily collaborative and not static? How do instructors measure the unique impact that students have on their Wikipedia pages in the context of collaboration? These are important questions for professors to grapple with as web-based multidisciplinary final projects become increasingly commonplace.

Rebecca Silton

A related issue occurred after one student conducted extensive background research on the Wiki page that she intended on updating. She was about to update her selected Wiki page, when she realized that another group of students from a different university had already made significant changes to the page that she was working on. It would be helpful to have a better method to coordinate APSWI across universities. Similarly, other students occasionally found it challenging that other people were working on their pages at the same time as they were. A final unanticipated issue arose when a student discovered that following months of his hard work, someone had replaced his entire Wiki page with the biography of an international football star. He quickly remedied this problem, but it was surely a stressful moment to find that his entire final project had been wrongfully edited. These challenges offered important educational experiences that introduced skills involved in effectively directing collaborative efforts and managing the dissemination of information in a fluid, web-based, public context.

As an instructor, I faced new pedagogical challenges. I struggled to arrange a grading rubric for an activity that I had never personally done before, and there is a lot of room for improvement in the rubric that I provided for my students. Another difficulty was that the Wiki pages that the students were improving were at different stages of development, so the amount

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and type of work that each student needed to do improve their specific page varied. In retrospect, it would have been helpful to ask each student to submit a proposal of their changes for me to review so that I could provide useful feedback to guide their projects from an early stage. I also was unsure how to account for the time it would take students to learn Wikipedia syntax, particularly since it was reasonable to expect that there would be variance in their skills due to different exposure to coding/programming tasks. In the future, I will provide an in-class Wikipedia/syntax tutorial to ensure that students have a similar foundational background before starting the project. Despite facing some challenges and weaknesses, this final project was a huge success that will undoubtedly influence countless individuals beyond the doors of the Ivory Tower. ●

ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Call for Fellows Nominations

Deadline: April 1, 2012 for Spring Review

Fellow status is awarded to APS Members who have made sustained outstanding contributions to the science of psychology in the areas of research, teaching, service, and/or application. Fellow status is typically awarded for one's scientific contributions. However, it may also be awarded for exceptional contributions to the field through the development of research opportunities and settings. Candidates will be considered after 10 years of postdoctoral contribution.

Nomination Requirements

Nominators must be APS Members and must supply the following documents to the APS Fellows Committee:

- A letter of nomination specifying why the candidate is judged to have made sustained outstanding contributions.
- The candidate's current Curriculum Vitae.
- Additional letters of support from two outstanding contributors to the field of scientific psychology familiar with the nominee's work, one of whom must be an APS Fellow.

For more information and to submit a nomination please visit

www.psychologicalscience.org/fellows

Electronic submissions are required.

Fellows Committee

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aps
ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Connecting Student Researchers Via Distance Research Talks

By Vicki S. Gier and David S. Kreiner

Imagine a room full of college students and police officers anxiously awaiting to hear your presentation on how to better identify missing or abducted children, but wait! The audience is not only in front of you, but they are also in two other states! Can this really happen? Yes it can! We have used distance learning technology to make such presentations possible. To make it even sweeter, the cost was zero because the entire broadcast was through a computer! In these hard economic times when students may not be able to afford to attend conferences, Distance Research Talks allow students to participate in research presentations with little or no cost.

Students may learn about research studies directly from researchers by attending state, regional, or national conventions such as the American Psychological Association (APA) or the Association for Psychological Science (APS) annual conventions. However, many students do not have the opportunity to travel to such conferences due to budgetary restraints. Students can present at colloquia and brown bag meetings, but wouldn't it be an even more rewarding experience if they could interact with students and faculty at other institutions as well? In the present article, we describe a way for psychology students to both present and hear research presentations from psychologists at other institutions without traveling to a conference. We refer to these research presentations as Distance Research Talks (DRTs). Although we do not have conclusive evidence concerning the effectiveness of DRTs, we believe that many faculty will find the idea worth considering.

Distance Research Talks (DRTs)

A Distance Research Talk is a presentation of research to multiple institutions via distance videoconferencing. Presentations may be from academic psychologists, practicing psychologists, graduate students, or even undergraduates who are engaged in research. Our focus is on the use of DRTs as a way to engage students at different institutions in thinking about research. Our DRTs are typically an hour long, allowing approximately 45 minutes for the presentation and 15 minutes for questions and answers. The DRTs are presented at the most convenient time for the institutions involved. We have found that having a set time allows interested parties to plan the DRTs into their schedules. The DRTs are not typically held during class time; however, sometimes entire classes have attended when the research topic was particularly relevant. For example, an entire cognitive psychology class attended a talk on eyewitness identification and an entire social work class attended a talk on the effect of fathering in single parent households. Additionally, some members from the community, including police officers, attended a talk on the effectiveness of AMBER alert photographs of missing children.

Vicki Gier presenting a Distance Research Talk.

Organizing a Distance Research Talk

Organizing a DRT involves a number of considerations. The organizers must ensure that each institution has live video conferencing technology. We have found that most universities and colleges do have the technology, and branch or satellite campuses often make heavy use of these facilities. If you are planning to organize a series of DRTs, the following considerations may be helpful.

Video Conferencing Fees. We advise checking to determine whether there is any cost associated with the video conferencing. Typically there are no charges for using the video conferencing

Vicki S. Gier *is an assistant professor of psychology at Mississippi State University. Her research interests include memory, cognition, and metacognition, in relation to recognizing the faces of missing children (i.e. AMBER Alert posters). If you are interested in presenting a psychology research talk via video conference or Skype, contact Vicki at vgier@meridian.msstate.edu.*

David S. Kreiner *is a professor of psychology at University of Central Missouri. His research interests include cognitive psychology, particularly in language processing and memory, as well as research on the teaching of psychology. He can be contacted at kreiner@ucmo.edu*

rooms; however, we did have one instance in which a fee was charged by the presenting institution. Such fees may be an issue, as budgets to support talks such as these may not exist at many institutions. Fortunately, because the talks are broadcast via the internet, most institutions do not charge a fee.

Inviting Presenter: Arranging the presentations consists of inviting professors from our own institutions as well as inviting both undergraduate and graduate students to present their research to multiple campuses. We have been increasingly successful at inviting presenters from other institutions whose research we thought would be of particular interest to our students. Another method of recruiting presenters could involve speaking with potential presenters at state, regional, or national conferences. Sometimes it takes being creative to find psychologists at other institutions to present; however, we have been very successful in finding six to eight DRT presenters each semester. In addition to faculty presentations, one of the DRTs consisted of three undergraduate research interns who presented on results from their summer research internships, and a graduate student presented his proposal for his thesis. Graduate students may find that a DRT is a good forum to practice a thesis or dissertation defense.

Advertising. It is important to advertise the talks at each of the participating institutions. We advertise by posting the schedule on the university websites, placing posters and announcements in the psychology hallways at each institution, and announcing the presentations in psychology classes. We have found that the audience has grown as we have advertised consistently. Student participation has increased at one institution to the point of now requiring two distance education rooms to accommodate the audience.

Technology. In order to connect to a university via video conferencing, the university must have a H.323 compatible video conferencing unit. This unit enables multiple universities to connect at the same time for the DRT. There are also some web-based teleconferencing options. We suggest contacting the IT personnel at the universities wanting to participate in a DRT and letting them have a practice run to make sure the connection will function properly before the actual time and date of the DRT.

International Possibilities: There is also potential for international distance talks. Thus far we have connected twice with universities in Canada, but the possibilities are limitless. The distance talks provide opportunities to forge long-lasting connections with other universities.

Advantages

There are multiple advantages for both students and faculty members participating in DRTs. For students, the DRTs are a forum in which they learn about the research of psychologists at colleges and universities other than their own institutions. Students not only learn about different areas of research in psychology, but also learn about how research methods and designs are applied to real research studies. The faculty members can then relate the presentation results to classes such as statistics or experimental psychology.

In addition to hearing about research studies, students can see the researcher and can interact with the researcher by asking questions. Students may be more likely to become engaged in research if they feel they have a personal connection with a researcher, particularly if the area of research is of interest. Our DRTs have spurred interest in becoming involved with psychological research studies. For example, since the inception of the DRTs, five students have joined the research lab of one of the authors, and these students have been successful in becoming involved in conference presentations and preparing research manuscripts for publication.

Exposure to research being conducted at other institutions may also encourage students to apply to programs such as the Research Experience for Undergraduates (REU) funded by the National Science Foundation or the McNair Scholars Program. The McNair Scholars Program is a federally funded program that prepares eligible participants for doctoral studies through involvement in research and other scholarly activities. Programs such as these have been successful in increasing interest in conducting research. Russell, Hancock, and McCullough (2007), for example, surveyed 15,000 undergraduates between 2003 – 2005 who had participated in a REU. According to the results of their study, undergraduates showed increased understanding, confidence, and awareness of conducting research studies after completing the program. Additionally, the results of this study showed the students had increased expectations for obtaining a PhD. We have had informal indications that students are interested in discussing research after participating in a DRT. Often after a talk, students remain in the room to continue the discussion with faculty members who are present.

To enhance the learning experience of a DRT, students are often given articles by the presenter in order for them to better understand the research study being presented. Additionally, the presenters can also send a list of questions for the students to answer about the purpose of the study, design and analysis of the research, and the conclusion. Furthermore, online discussions can be held both before and after the DRT.

Another advantage of DRTs is that they can be recorded, so the talks can be shown in research methodology courses or in other courses in which the presentations would be relevant. For example, when the author of the textbook for one class presented to the students on research studies he discussed in the textbook, the students reported having a much more positive opinion of that area in psychology. Additionally, we have used DRT presentations as examples of particular research designs when teaching our courses, which may provide a more meaningful and concrete way for students to understand the research concepts. For example, hearing and actually seeing pictures of eye-tracking equipment, or seeing the actual stimuli used in a study and how the researcher measured the dependent variables using the equipment and stimuli, may help the students understand the research concepts better than discussing the concepts alone.

Challenges

We have encountered several challenges as we have developed our continuing series of DRTs. One challenge involves presenters learning the technology for presenting via video conferencing. Although all of the institutions involved in the distance talks have provided technical support, presenters who have not used the technology previously can encounter some challenges. For example, it may be difficult to remember to change the view back and forth from the computer display to the presenter. In some cases, we have had researchers at a third institution present to audiences at other institutions, but not to anyone at their institution. In these cases, the researchers presented to an empty room with two to three screens, one showing the PowerPoint slides, and the other two showing the distance audiences at the two institutions they were presenting to. This type of situation can be awkward for a presenter who is not accustomed to this type of presentation.

Generally, the video conferencing technology has worked well, but we have learned that presenters and organizers should be prepared to adapt to technical difficulties. We have had some situations in which the audio or video signal was disrupted or slightly delayed due to the amount of network traffic. Delays may be a particular issue with international presentations, but up to this point our international presentations have been limited to the U.S. and Canada, and we have not experienced major delay times in transmission. In some cases we have momentarily lost a connection.

Another issue we sometimes encounter concerns the microphones available to the audience for asking questions. If a student at one institution, for example, asked a question and forgot to turn off the microphone, any paper rustling or whispering would be picked up and heard at the other institutions. We have addressed this issue by giving instructions to the students at all sites to make sure that the microphone was turned off after asking a question.

There are also challenges involving time. Scheduling can be challenging due to time zones, class schedules, and room availability for all institutions. Attendance tends to be better when there is a predictable schedule. Therefore, we consistently schedule all talks at the same time. Other significant time commitments for the organizers at each institution issue include arranging rooms and technical support as well as advertising the presentations.

Future Directions

Using available technology to expose psychology students to research talks via video conferencing, especially those at branch and satellite campuses, has been very exciting. A major part of psychological science is sharing our research findings with others in the field by presenting at conferences or publishing in journals. We propose that presenting research to diverse student populations via distance education technology is another important component of how science should be communicated. Distance research talks provide a good solution for those students who would not otherwise be able to interact directly with influential researchers.

Future uses for DRTs could include DRT conferences. The host institution could arrange for some of their presenters to give their talk in a distance learning room, possibly an auditorium. Having Distance Research Conferences (DRC) would enable students from different parts of the country to be part of a research conference. The receiving institutions could also present their research via the DRC. With the substantial cutbacks in funding that many educational institutions are experiencing, having access to a free DRC would enable students and faculty to present their research studies without the usual financial burden. Some students are not able to attend conferences because their institutions cannot afford to support their travel. Although the experience of a DRC would not be the same as a regional or national conference, it would enable students who present to enrich their curriculum vitae for graduate school.

Another possibility would be to invite community college general psychology classes to attend the DRTs. Exposing community college psychology students to the vast area of areas of research in psychology may increase their interest in the an area they had never considered, and the DRTs could influence some non-psychology majors to consider psychology as their major or minor.

We hope we have encouraged other faculty to consider the possibility of becoming involved in DRTs. We have only begun to explore the possibilities of using videoconferencing technology to connect students with researchers all over the world. As more psychologists begin to explore these possibilities, there will be a continuing need to collect data bearing on whether DRTs are effective at accomplishing the goals that we have for them as faculty.

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Why Nonparametric Statistics Should Be Part Of Your Toolkit

By Amanda ElBassiouny

When the fateful time for analysis arrives, we frequently turn to *t*-tests, ANOVAs, or Pearson product-moment correlations. These parametric statistics are ubiquitous in the behavioral sciences. Alternatively, the nonparametric equivalents of our favorite analyses, such as the Mann-Whitney test, Kruskal-Wallis test, and Spearman correlation are not applied as commonly (Cohen, 2008). This is unfortunate because nonparametric statistics provide practical and statistical advantages over parametric approaches for many variables in psychological science research.

What Are Nonparametric Statistics?

Nonparametric statistical analyses are used to investigate research questions in which the dependent variable is ranked or categorical rather than quantified in a true numeric sense. Traditional parametric statistics require a number of assumptions about the characteristics (i.e., parameters) of the data. Nonparametric statistics do not require the same assumptions, which makes nonparametric statistics more flexible and, in some ways, more appropriate for broad applications. Common psychological science variables are often non-normally distributed and non-numerical, ranked responses (e.g., "somewhat true" versus "very true"), so the relaxed requirements of nonparametric statistics make them an important alternative to parametric methods. Also, employing nonparametric statistics actually has many advantages.

Nonparametric Statistics Aren't Bound By Pesky Assumptions

Among the primary assumptions of parametric statistics is the assumption that the data is normally distributed (for those who might need a refresher on their statistics terms, see www.statsoft.com/textbook/). Many researchers don't explicitly check the assumptions of parametric tests. Also, most tests used to check assumptions (1) don't have adequate power to identify deviations from normality or homogeneity of variance (Jaccard & Guilamo-Ramos, 2002) and (2) require normality or homogeneity of variance to interpret violations of normality and homogeneity of variance (Erceg-Hurn & Mirosevich, 2008). Issues such as these have led some statisticians to recommend that these assumption-heavy tests not be used due to the high error rate (e.g., Glass & Hopkins, 1996). When these tests are used, researchers should be cautious when interpreting their results.

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Issues surrounding normality assumptions alone are quite complex. Some common psychological science variables, such as reaction times, tend to be positively skewed and are non-normal (Heiman, 2006). There are even complications for variables that are more likely to be normal. For instance, in small samples, there is no way to be sure that the normality assumption has been met (Hill & Lewicki, 2007). Even in large samples, in which a variable's distribution may seem normal, the true population distribution may not necessarily be normal. While many investigators believe that parametric statistics protect against violations of the assumptions, research demonstrates that this is true in only a narrow number of situations (Erceg-Hurn & Mirosevich, 2008).

While parametric statistics require strict assumptions about underlying variable distributions, nonparametric statistics are not confined by assumptions (Siegel, 1957). The main assumptions of nonparametric tests are that the dependent variable should be continuous and have independent random sampling, which means that nonparametric statistics do not require assumptions of homogeneity of variance and normality.

Nonparametric Statistics, Transformations, And Power

When parametric statistics are appropriate to use, they have greater power than nonparametric statistics. However, researchers using parametric statistics frequently apply data transformations (e.g., logarithmic transformations) to try to make a skewed distribution approach normality. While these transformations can make variables more normally distributed, they can also diminish or alter experimental effects, which can reduce power. And even though parametric tests can withstand some deviation from their inherent assumptions, there is no consensus on what degree of violation is acceptable. When the data violates the assumptions of a parametric test, nonparametric tests are again the more powerful analytic technique (Siegel, 1957). Finally, nonparametric statistics can often attain the same level of power as parametric tests (if their assumptions are actually met) by modest increases in sample size. Generally, only a slightly increased sample size is needed for nonparametric statistics to have comparable power to parametric statistics (Siegel, 1957).

Nonparametric Statistics Can Be Used For Ordinal-level Data

The level of measurement of a variable (nominal, ordinal, interval, or ratio) determines which statistical procedures are appropriate for analysis. In behavioral sciences, variables of interest are generally ordinal in nature. This fact is problematic because parametric statistics require variables to reach at least the interval level (Siegel, 1957). In contrast, nonparametric statistics can be

used to analyze data at *all* levels of measurement. For example, Likert scales, which are a favorite tool in psychological research, are regularly analyzed as interval-level data with parametric tests. Likert scales are not interval-level data; they are ordinal scales because the participant ranks a response to an item with unequal intervals between the values. For instance, it is unclear if the differences between item responses of "somewhat false" and "somewhat true" and between "somewhat true" and "very true" on a four-point response scale are the same. The frequent application of parametric analyses to ordinal data such as Likert scales is so pervasive that it has been referred to as the first of "the seven deadly sins of statistical analyses" (Kuzon, Urbanchek, & McCabe, 1996).

A Variety Of Nonparametric Tests Can Be Used

There are many different types of nonparametric tests that can be used to analyze data. For two independent samples, a Mann-Whitney U-test or the rank-sum test can be applied. When two samples are matched or a participant is assessed twice, the Wilcoxon signed-ranks test can be performed. With three or more groups, the Kruskal-Wallis test is appropriate for independent samples, while Friedman's test is appropriate for repeated measures or randomized blocks. To conduct post-hoc analyses for either of these nonparametric ANOVAs (Kruskal-Wallis test and Friedman's test), the Mann Whitney rank-sum test and Wilcoxon signed-ranks test can be used, respectively. The correlation test for ordinal data is the Spearman rank-order correlation and, for nominal data, it is the contingency coefficient (Cohen, 2008; Siegel, 1957). These tests are the nonparametric counterparts for the independent samples t-test, matched t-test, one-way independent ANOVA, repeated measures ANOVA, protected t-test for post-hoc analyses, and the Pearson product-moment correlation, respectively.

When Should Nonparametric Statistics Be Used?

After conducting a study, the question that ultimately arises is when should you use a parametric or nonparametric analysis? Keep in mind the following questions when trying to decide which analysis is appropriate for your data: Are your variables normally distributed? Is there homogeneity of variance? Are the response items to your survey actually the same distance apart? If you answered no to any of these questions, then your data would be best analyzed using a nonparametric technique. Also, if you answer yes to the following questions, a nonparametric test should be used: Are participants assessing stimuli or manipulations using a Likert scale? Do the response options range from strongly disagree to strongly agree?

In summary, there are many benefits to gain by more widespread application of nonparametric statistics in psychological science. Nonparametric statistics are useful when a violation in the assumptions of parametric tests occurred, when transformations may be needed, and when variables are at the ordinal level or below. Broader use of these nonparametric tools can help ensure proper data analysis.

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Student Notebook Announcements

Travel Assistance!
Need help going to the 24th APS Annual Convention in Chicago? Become a volunteer to defray the cost of travel! We are looking for enthusiastic people to assist APS staff. Recipients will be required to volunteer for approximately six hours. Travel assistance is only offered to students who are presenting research. Also, the degree of financial hardship associated with attending the conference is taken into account. International students will receive special consideration. Decisions will be announced in April. To apply online, please visit: www.psychologicalscience.org/members/apssc/travel

Adversity, Trauma May Boost Mental Toughness

Can hardship be good for you? Robert Preidt reported on research showing that negative experiences can foster resilience and mental strength. In the December issue of *Current Directions in Psychological Science*, **Mark Seery** of the University of Buffalo showed that individuals who have suffered moderate levels of hardship had the highest levels of mental toughness — more than people who have suffered many traumatic events and more than people who have not suffered traumatic events. Another study showed that among people dealing with chronic back pain, those who faced some adversity in their lives have better mobility than those who have faced more serious adversity and those who have faced no adversity at all. Seery believes that experiencing some difficulty allows people to develop coping skills and teaches them to seek help when they need it.

msn HEALTH

December 27, 2011

Joseph Allen, University of Virginia, *NPR*, January 4, 2012: Why a Teen Who Talks Back May Have a Bright Future.

Dan Ariely, Duke University, *Milwaukee-Wisconsin Journal Sentinel*, December 28, 2011: Most People Want More Income Equality.

John Bargh, Yale University, *Scientific American*, November 4, 2011: A Brief Guide to Embodied Cognition: Why You Are Not Your Brain.

Laura Blackie, University of Essex, *Scientific American*, December 27, 2011: Thinking About Mortality Changes How We Act.

Robert Bornstein, Adelphi University, *MSNBC*, January 3, 2012: How Kim Jong Un's Looks May Help Him Rule.

Thomas Bouchard, University of Minnesota, *National Geographic*, December 30, 2011: A Thing or Two About Twins.

Alia Crum, Yale University, *The Wall Street Journal*, January 3, 2012: Why Placebos Work Wonders.

Carol Dweck, Stanford University, *TIME*, December 22, 2011: America Needs More Geeks: How to Make Science Cool.

More members online at:

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Justin Friesen, University of Waterloo, *Wiener Zeitung*, December 29, 2011: Die Sicherheit des Status quo.

Jack Goncalo, Cornell University, *The Boston Globe*, December 27, 2011: I Feel Powerful — and So Tall!

Marion Jacobs, University of California, Los Angeles, *Los Angeles Times*, December 31, 2011: New Year's Resolutions in the Works? Small Steps Are Best.

Jaana Juvonen, University of California, Los Angeles, *Los Angeles Times*, January 4, 2012: The Unreal World: 'Carnage' and Child Bullying.

Aaron Kay, Duke University, *Wiener Zeitung*, December 29, 2011: Die Sicherheit des Status quo.

Ellen Langer, Harvard University, *The Wall Street Journal*, January 3, 2012: Why Placebos Work Wonders.

Alan Leslie, Rutgers University, *De Standaard*, December 23, 2011: Baby niet te onderschatten.

Carin Perilloux, Williams College, *Metro TV News*, January 4, 2012: Pria Sering Keliru Membaca Isyarat Seksual Wanita.

William Roberts, University of Western Ontario, *MSNBC*, December 23, 2011: You Do the Math — Because That Pigeon Over There Can.

Arne Roets, Ghent University, *Yahoo India*, December 23, 2011: Psychological Need Drives Prejudice in Humans: Study; *Science 2.0*, December 29, 2011: Prejudice Is a Basic Human Need.

Wade Rowatt, Baylor University, *MSNBC*, January 4, 2012: Need a Hand? Find Someone Humble.

Mark Seery, University at Buffalo, The State University of New York, *MSN Health*, December 27, 2011: Adversity, Trauma May Boost Mental Toughness.

Nancy Segal, California State University, Fullerton, *MSNBC*, December 28, 2011: Is 'Twin Communication' a Real Thing? *National Geographic*, December 30, 2011: A Thing or Two About Twins.

Jefry Simpson, University of Minnesota, *MSN India*, December 21, 2011: Mom-Child Bonding Affects Adult Relationships: Study.

Vladimir Sloutsky, Ohio State University, *The Epoch Times*, December 30, 2011: Because You Said So?

Coverage of research from an APS journal

Podcast included in coverage

APS Employment Network
www.psychologicalscience.org/jobs

Featured Listing

University of Alabama-Birmingham

Psychology — Psychology Faculty Positions

As part of our multiyear hiring plan, the UAB Department of Psychology is seeking nominations and applications for three tenure track/tenured positions in Psychology in any area and at any level (assistant, associate, professor). The successful candidates for these positions will be expected to bring or establish an active and externally funded program of research, mentor graduate and undergraduate students, and teach in his/her area of expertise. All candidates must have received their doctoral degree. Note that the research specialty for these positions is open, but we would prefer candidates who will contribute to our priority research areas (pain research, addictions and eating disorders, obesity, neural plasticity, and affective science). Within these thematic areas, potential hires might include scientists in the areas of behavioral genetics, obesity, recovery of function after damage to the developing or aging nervous system, effects of stress on cognition, behavior, or mental health, vision science, clinical child pediatric, neuropsychology, neuroimaging, translational research in theme areas, and autism. The Psychology Department is a vibrant and well regarded department on campus and supports three doctoral programs [Behavioral Neuroscience, Lifespan Developmental, and Medical Clinical (APA Accredited)]. The Department has a long history of obtaining extramural research funding and has excellent research facilities. In addition, as part of the University's emphasis on multidisciplinary centers, the Psychology Department encourages/supports collaboration with various departments and centers within the university including the Civitan International Research Center, the Civitan/Sparks Clinics, The Children's Health System, The Comprehensive Cancer Center, the Center for Neuroscience, The McKnight Brain Institute, The Center for the Study of Community Health, The Center for Translational Science, The Center for Aging, The Vision Science Research Center, UAB Comprehensive Diabetes Center, the Nutrition Obesity Research Center, and the School of Medicine. Individuals interested in participating in, promoting, and advancing a collaborative and multidisciplinary environment at UAB and in the community are encouraged to apply. The Psychology Department enjoys the benefits of UAB's standing as a national center for biomedical health research and education. Metro Birmingham (population 1.2 million) is an ethnically diverse and cosmopolitan setting with a rich array of cultural institutions and a high quality of life.Applicants should send an electronic letter of interest describing your research and teaching interests and your curriculum vitae, and the names of three professional references to Mary Frances Thetford at mthetford@uab.edu. Address information to the Search Committee, Department of Psychology, University of Alabama at Birmingham, 1530 3rd Avenue South, Birmingham, AL 35294-1170. For questions about the positions, contact Dr. Karlene Ball kball@uab.edu, University Professor and Chair, and copy to mthetford@uab.edu. Applications should be received by February 28, 2012. Screening of applications will begin immediately and continue until the positions are filled. Starting date is negotiable. UAB is strongly committed to academic excellence, and dedicated to broadening the diversity of its faculty, staff, and students. We take pride in our exceptionally diverse and multicultural student body. UAB is an Equal Opportunity/Affirmative Action employer. Women and minority candidates are encouraged to apply. **AL02**

SUBJECT AREA INDEX

ALABAMA

Auburn University **Psychology** **Professor**

The Department of Psychology at **Auburn University** is seeking candidates for a full-time, tenure-track position as the **Director of the Applied Behavior Analysis in Developmental Disabilities M.S. program** . The rank is open but with a preference for a candidate at the advanced Assistant to Full level. The successful candidate will be expected to teach and supervise master's level students in the Applied Behavior Analysis and to manage the administrative duties of the program. In addition, the candidate will have the opportunity to maintain an active research program. Applicants must hold the BCBA credential and have a Ph.D. in Psychology or a related discipline from an accredited institution; experience in intellectual disabilities and autism spectrum disorders is preferred. Applicants should have a clear record of productivity in behavior analysis. The appointment will begin August, 2012. We are committed to increasing faculty and student diversity. Minorities and women are encouraged to apply.The successful applicants will join a growing Department of Psychology committed to promoting the careers of junior faculty, with 23 full-time, tenure-track faculty members. In addition to a general undergraduate program, the department has a master's program in Applied Behavior Analysis in Developmental Disabilities and doctoral programs in Clinical Psychology (APA accredited), Cognitive and Behavioral Sciences, and Industrial/ Organizational Psychology. For information on the Department of Psychology, see our website at www.auburn.edu/psychology.Auburn, Alabama is a university community in a metropolitan area of about 100,000 with an enviable climate, excellent schools, affordable cost of living, and an easy drive to Atlanta, GA, Birmingham, AL, Columbus, GA, and Montgomery, AL. For information on the communities of Auburn and Opelika, you may visit www.auburnchamber.com and www.opelika.org.Review of applications will begin March 15, 2012 and will continue until the position is filled. The successful candidate must meet eligibility requirements to work in the U.S. at the time the appointment is scheduled to begin and continue working legally for the proposed term of employment; excellent communication skills required. Send cover letter, vita, statement of research and teaching interests, reprints of recent publications or preprints, evidence of teaching effectiveness, and three letters of recommendation to Ms. Trixie Langley, Psychology Department, 226 Thach, Auburn University, Alabama 36849-5214. Auburn University is an Equal Opportunity/Affirmative Action Employer. **AL01**

ALABAMA (CONT)

University of Alabama-Birmingham **Psychology** **Psychology Faculty Positions**

As part of our multiyear hiring plan, the UAB Department of Psychology is seeking nominations and applications for three tenure track/tenured positions in Psychology in any area and at any level (assistant, associate, professor). The successful candidates for these positions will be expected to bring or establish an active and externally funded program of research, mentor graduate and undergraduate students, and teach in his/her area of expertise. All candidates must have received their doctoral degree. Note that the research specialty for these positions is open, but we would prefer candidates who will contribute to our priority research areas (pain research, addictions and eating disorders, obesity, neural plasticity, and affective science). Within these thematic areas, potential hires might include scientists in the areas of behavioral genetics, obesity, recovery of function after damage to the developing or aging nervous system, effects of stress on cognition, behavior, or mental health, vision science, clinical child pediatric, neuropsychology, neuroimaging, translational research in theme areas, and autism. The Psychology Department is a vibrant and well regarded department on campus and supports three doctoral programs [Behavioral Neuroscience, Lifespan Developmental, and Medical Clinical (APA Accredited)]. The Department has a long history of obtaining extramural research funding and has excellent research facilities. In addition, as part of the University's emphasis on multidisciplinary centers, the Psychology Department encourages/supports collaboration with various departments and centers within the university including the Civitan International Research Center, the Civitan/Sparks Clinics, The Children's Health System, The Comprehensive Cancer Center, the Center for Neuroscience, The McKnight Brain Institute, The Center for the Study of Community Health, The Center for Translational Science, The Center for Aging, The Vision Science Research Center, UAB Comprehensive Diabetes Center, the Nutrition Obesity Research Center, and the School of Medicine. Individuals interested in participating in, promoting, and advancing a collaborative and multidisciplinary environment at UAB and in the community are encouraged to apply. The Psychology Department enjoys the benefits of UAB's standing as a national center for biomedical health research and education. Metro Birmingham (population 1.2 million) is an ethnically diverse and cosmopolitan setting with a rich array of cultural institutions and a high quality of life.Applicants should send an electronic letter of interest describing your research and teaching interests and your curriculum vitae, and the names of three professional references to Mary Frances Thetford at mthetford@uab.edu. Address information to the Search Committee, Department of Psychology, University of Alabama at Birmingham, 1530 3rd Avenue South, Birmingham, AL 35294-1170. For questions about the positions, contact Dr. Karlene Ball kball@uab.edu, University Professor and Chair, and copy to mthetford@uab.edu. Applications should be received by February 28, 2012. Screening of applications will begin immediately and continue until the positions are filled. Starting date is negotiable. UAB is strongly committed to academic excellence, and dedicated to broadening the diversity of its faculty, staff, and students. We take pride in our exceptionally diverse and multicultural student body. UAB is an Equal Opportunity/Affirmative Action employer. Women and minority candidates are encouraged to apply. **AL02**

DELAWARE

UNIVERSITY OF DELAWARE

One of the oldest institutions of higher education in the country, the University of Delaware today combines tradition and innovation, offering students a rich heritage along with the latest in instructional and research technology. The University of Delaware is a Land-Grant, Sea-Grant, and Space-Grant institution with its main campus in Newark, DE, located halfway between Washington, DC and New York City. Please visit our website at **www.udel.edu**.

Continuing Non-Tenure Track Assistant Professor
University of Delaware Psychology Department

UNIVERSITY OF DELAWARE, DEPARTMENT OF PSYCHOLOGY invites applications for Assistant Professor faculty positions (continuing non-tenure track) to begin September 1, 2012. Applicants will be expected to be enthusiastic and scholarly teachers who will teach up to four courses each semester, focusing on introductory psychology, statistics, methodology, core courses in an area of expertise, and lab experiences for undergraduates. Area of specialization is open among one or more of our four training programs: behavioral neuroscience, clinical science, cognitive, and social. For more information about the Department, see our website: http://www.psych.udel.edu.

Applicants should go to http://www.udel.edu/udjobs/ to submit a single PDF including a cover letter describing their teaching interests, evidence of teaching effectiveness, and curriculum vitae. Send three letters of recommendation, all in PDF format, to searches@psych.udel.edu. Address inquiries to the search committee chair, Dr. Beth Morling (morling@psych.udel.edu; 302-831-8377). Applicants for this position should have a Ph.D. or expect to complete their degree requirements prior to appointment. Review of completed applications will begin on March 1, 2012, although applications received after that date may be considered.

The UNIVERSITY OF DELAWARE is an Equal Opportunity Employer.

DE01

KENTUCKY

University of Kentucky College of Medicine **Behavioral Science** **Tenure Track Faculty Positions**

The Department of Behavioral Science, located within the College of Medicine at the University of Kentucky, is seeking applicants for multiple newly established full-time, tenure-track positions at all ranks; salary will be commensurate with the rank. Successful candidates must have completed advanced degrees (e.g., Ph.D.) and established programs of extramurally funded health outcomes or health services research. The University of Kentucky has growing programs of health outcomes and health services research among its Colleges (Medicine, Public Health, Pharmacy) and Centers (Center for Clinical & Translational Science, with biostatistics, biomedical informatics and community engagement functions; Cancer, Aging, Prevention Research, and Drug and Alcohol Research). Other university resources include the Center of Excellence in Rural Health; the Kentucky Ambulatory Network; the Center for Poverty Research; and many more. With increasing opportunities for collaboration throughout the University, health services research comprises a major research initiative. The Department of Behavioral Science is a multidisciplinary, basic science department within the College of Medicine with a tradition of collaboration among these units. The University is located in Central Kentucky's Bluegrass region, an area known for its quality of life. Lexington is a community of approximately 330,000 with excellent schools, diverse business and industry, and a variety of cultural and recreational opportunities. Information about the Department of Behavioral Science is available at <http://www.mc.uky.edu/behavioralscience>. Additional information can be obtained by e-mail from TK Logan, Ph.D. < tklogan@email.uky.edu>. Interested applicants should submit a current curriculum vitae, a letter of application outlining their research and interest in the position, and three letters of recommendation to: Search Committee (c/o Cynthia Campbell), Department of Behavioral Science, University of Kentucky College of Medicine, Lexington, KY 40536-0086. Review of applications will begin immediately and will continue until the positions are filled. All applicants will be required to pass a pre-employment drug screen and undergo a pre-employment national background check as mandated by University of Kentucky Human Resources. The University of Kentucky is an Affirmative Action/Equal Opportunity Employer. **KY01**

Chair of the Department of Psychology/ Associate or Full Professor of Psychology

The College of Liberal Arts at the University of Southern Indiana invites applications for the Chair of the Department of Psychology. The University seeks a psychologist who can work closely with eight other full-time faculty and part-time instructors in a dynamic department, provide strong leadership through strategic planning, and support a liberal arts education.

The successful candidate must have: an earned doctorate in psychology, specialization open, but experience in teaching Research Methods and Statistics is desirable; evidence of effective, collaborative leadership; and an ongoing record of teaching, scholarship, and service that will support appointment to advanced Associate or Full Professor of Psychology.

To learn more about the University and to apply for this position, visit **www.usi.edu/hr/employment**. Within our web-based applicant system, you will have the opportunity to attach your letter of application, curriculum vitae, and contact information for references.

University of Southern Indiana

The University of Southern Indiana is an equal opportunity, affirmative action educator and employer.

IN01

UTD

The University of Texas at Dallas
School of Behavioral and Brain Sciences

Assistant Professor in Culture and Cognition and Behavior

The School of Behavioral and Brain Sciences at the University of Texas at Dallas seeks an Assistant Professor who can contribute to our program in Psychological Science, who examines the impact of Culture on Cognitive and Social Processes investigating such issues as differences in cognitive style, social decision-making and/or neural underpinnings of cultural influences. Preferred candidates will contribute to the University's Center for Asian Studies. Successful applicants will demonstrate the ability to develop a vigorous program of research with the potential for extramural support.

To apply for this position, applicants should submit (a) their current curriculum vitae, (b) a letter of interest (including research interests), and (c) letters of recommendation from (or the names and contact information for) at least five professional references via the ONLINE APPLICATION FORM **http://go.utdallas.edu/pbp111207** Upon submitting their preferred email address, applicants will receive instructions to access a personalized application profile website. School hiring officials will receive notification when application materials are posted and are available for review.

The University of Texas at Dallas is an Equal Opportunity/Affirmative Action employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age, citizenship status, Vietnam era or special disabled veteran's status, or sexual orientation. Indication of gender and ethnic origin for affirmative action purposes is requested as part of the application process but is not required for consideration.

TX01

ANNOUNCEMENTS

Send items to apsobserver@psychologicalscience.org

MEETINGS

Society for Industrial & Organizational Psychology, Inc. Annual Conference
April 26 – 28, 2012
San Diego, CA
www.siop.org/confpart.aspx

16th International Conference on Cognitive and Neural Systems (ICCNS)
May 30 – June 1, 2012
Boston, MA
http://cns.bu.edu/cns-meeting/conference.html

International Behavioral Neuroscience Society 21st Annual Meeting
June 5 – 10, 2012
Kailua-Kona, HI
www.ibnshomepage.org/annualmtg12.htm

European Association of Personality Psychology 16th European Conference on Personality
July 10-14, 2012
Trieste, Italy
http://www.eapp.org/news/?id=181

International Association for Cross Cultural Psychology 21st International Congress
July 17-21, 2012
Stellenbosch, South Africa
www.iaccp2012southafrica.co.za/

30th International Congress of Psychology: Psychology Serving Humanity
July 22 – 27, 2012
Cape Town, South Africa
www.icp2012.com/index.php?bodyhtml=home.html

GRANTS

NIA Grants for Social Neuroscience and Neuroeconomics of Aging
The National Institute on Aging (NIA) has announced two funding opportunities for psychological scientists in order to generate interdisciplinary applications "examining social, emotional and economic behaviors of relevance to aging" using an approach that investigates both relevant behaviors and the underlying genetics or neurological processes

GRANTS (CONT)

associated with the behaviors. The application deadline is **February 5, 2012, 2013, and 2014**.
http://grants.nih.gov/grants/guide/pa-files/PAR-11-337.html
http://grants.nih.gov/grants/guide/pa-files/PAR-11-336.html

AWARDS

APA Call for Award Nominations
The Society for General Psychology, Division One of the American Psychological Association, is conducting its Year 2012 awards competition. The nomination deadline is February 15, 2012.
www.apa.org/about/division/div1.aspx

Clinical Scientist Training Initiative Program
The Society for a Science of Clinical Psychology is eager to see new ideas in the 2012 applications for the Clinical Scientist Training Initiative Program. Applications are due by March 31, 2012, and funds will be distributed during the summer of 2012.
https://sites.google.com/site/sscpwebsite/awards

TRAINING

24th National Institute of Mental Health Summer Institute in Cognitive Neuroscience
The 24th NIMH Summer Institute in Cognitive Neuroscience will be held from June 24 – July 7, 2012. This year's topics are "Does Brain Plasticity Account for Everything?" with Jon H. Kaas, and "The Indispensable Role of Episodic Memory in Adaptive Behavior" with Ian Dobbins and Mike Miller.
http://sicn.cmb.ucdavis.edu/

Rand Summer Institute
RAND is pleased to announce the 19th annual RAND Summer Institute (RSI). RSI consists of two annual conferences that address critical issues facing our aging population. The Mind-Medical School for Social Scientists will be held on July 9 – 10, and the Demography, Economics, and Epidemiology of Aging conference on July 11 – 12, 2012. Both conferences will convene at the RAND Corporation headquarters in Santa Monica, California The conferences are sponsored by the National Institute on Aging and the NIH Office of Behavioral and Social Sciences Research.
www.rand.org/labor/aging/rsi.html

BOOKS

Emotional Expression: The Brain and the Face
Armindo Freitas-Magalhaes is in the process of preparing the edited volume entitled *Emotional Expression: The Brain and the Face* (Volume 5). If your area of research fits in well in this edited volume, we invite you to submit. For more information contact Érico Castro at feelab@ufp.edu.pt.

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