

Meet the New Editor of *Perspectives on Psychological Science*

Vol. 31, No. 10 • December 2018

Observer

BRAINS AND BACTERIA

The Intersection of Microbiology and Psychological Science

PLUS

Richard A. Bryant on Buffers Against PTSD and Depression
The Cooperation Revolution in Psychological Science
Morton Ann Gernsbacher Leverages Learning Principles Online

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COVER FEATURE

BRAINS AND BACTERIA

The Intersection of Microbiology and Psychological Science

What's in our guts can affect what's on our minds. Psychological scientists and microbiologists collaborate to explore the relationships among gut microbes, mood, behavior, and the immune system.

18

How Mitochondria Keep Our Brains and Minds Moving

These energy-generating organelles — believed to have begun as bacteria themselves — are implicated in learning, memory, cognition, and mental and neurological afflictions.

5 Presidential Column

The Mind-Body-Environment Connection

In a guest column, renowned architecture critic **Sarah Williams Goldhagen** applauds psychological science for fostering new understanding about the links between our surroundings and our health, well-being, and development.

9 Meet the New Editor of Perspectives on Psychology Science

APS Fellow **Laura A. King** begins a 3-year term as Editor of *Perspectives in Psychological Science* in January, and says she wants the journal to showcase, among other things, insights from a wider range of authors — including scientists from underrepresented groups.

15

Award Address

The Social Defense

Through lab experiments and field studies with survivors of historic wildfires, APS James McKeen Cattell Fellow **Richard A. Bryant** has demonstrated the power of relationships and community to temper psychological trauma.

23

The Cooperation Revolution Is Making Psychological Science Better

A group of authors touts a new era of collaboration, with scientists sharing innovative methods and promoting scientific rigor and transparency.

33

Leveraging Learning Principles Online

APS Past President **Morton Ann Gernsbacher** designs her online psychology courses to encourage students to engage with content more deeply than they might in traditional college classes.

Back Page

49

How to Make the Most of Meetings

Lab check-ins, advisory meetings, and other confabs can be tedious and unproductive, but a new report in *Current Directions in Psychological Science* shows evidence-based strategies for maximizing meeting quality.

Departments

Observations	7
Student Notebook	40
Members in the News	42
Announcements	48

APS EMPLOYMENT NETWORK

45

Teaching Current Directions in Psychological Science

"When More Isn't Better: The Costs of Extreme Personalities"

by **C. Nathan DeWall**



"The Gaps Among Us: Understanding and Assessing Inequality"

by **David G. Myers**

36

Observer

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FRED KAVLI KEYNOTE ADDRESSES



Arrested Development or Adaptive? The Adolescent and Self Control

BJ Casey

Department of Psychology,
Yale University, USA



Evolution of Emotions and Empathy in Primates

Frans B.M. de Waal

Department of Psychology,
Emory University, USA, and Utrecht University, The Netherlands

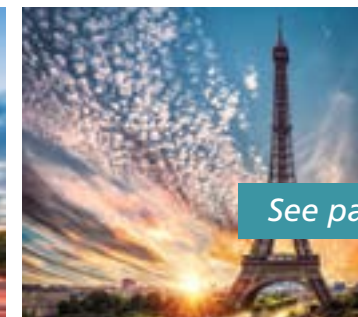


The Brain in the Ecosystem: Cognition, Culture, and the Environment

Atsushi Iriki

Laboratory for Symbolic Cognitive Development
RIKEN Brain Science Institute, Japan

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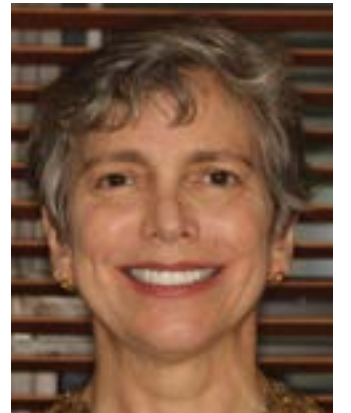


See page 26 for more program information

The Mind-Body-Environment Connection

To say that Sarah Williams Goldhagen is a prolific writer on architecture and urban design would be an understatement. Similarly, to say that Sarah Williams Goldhagen is a passionate advocate of human-centered design would be an understatement. But there you have it, and if you are inspired, you have much to explore, beginning with her 2017 book, Welcome to Your World: How the Built Environment Shapes our Lives, which was indeed welcomed by the world with rave reviews. Her perspective on architecture and urban design is deeply affected by her extensive knowledge of psychology, from end to end. She argues forcefully that the built world affects every aspect of our well-being and social interactions. Goldhagen is also a frequent speaker and contributor to many magazines and papers. She was for many years the architecture critic for The New Republic and taught for many years at Harvard's Graduate School of Design.

-Barbara Tversky, APS President



Sarah Williams Goldhagen

It's Time to Renew Your Commitment to Psychological Science & Your APS Membership

Your APS membership supports a collective effort to advance psychological science across all areas. We promote scientific exchange, increase public understanding of our field, and foster innovation in research methodology and practice. Together, we can transform society for the better. Here are a few ways we do that:

- **Share your science** with the public to promote broader understanding;
- **Keep you informed** on matters affecting psychological science;
- **Cultivate community** and foster global connections among our members;
- **Advocate for** increased support of psychological science in public policy;
- **Support your career** with resources, learning opportunities, and funding; and
- **Support student scientists** in their professional development.

Renew your APS membership and continue to support the important work that APS does to **benefit your career, your science, and society**.



Renew Now at psychologicalscience.org!

Psychological science commands an impressive amount of real estate in the empirical landscape. Land parcel by parcel, teams of researchers seed and nourish their singular contributions. Their combined work helps to cultivate new insights into the human condition, along with actionable knowledge which clinicians, policy-makers, and corporate executives draw upon in the hopes of nudging their corner of the earth a tiny bit further toward better understanding, or perhaps a tiny bit higher on the Happiness Index.

How architecture and urban design figure into this ferment might seem more than a bit . . . well, secondary. Yet consider a fistful of recent findings. Feelings of awe, whether in buildings or in landscapes, promote prosocial emotions and cognitions by diminishing our estimation of our own self-importance while buttressing our sense of commonality with others.¹ Whether our suffering originates in psychic injuries or surgical procedures, healing advances much more quickly when patients enjoy views of pastoral landscapes, whether they are whitened by snow or greened by the ample light and increased warmth of summer. Easy access to well-designed, high-quality natural spaces also supports longevity in the elderly and fortifies emotional regulation and attentional control in the young. The government bureaucracy or private company looking to boost work productivity and employee retention while simultaneously decreasing absenteeism and presenteeism — huge annual cost drains to any employer — might consider

jettisoning weekly community-building parties or other team-building events, and investing instead in the work environment, improving the HVAC (heating, ventilation, and air conditioning) system, reconfiguring interior spaces to admit more natural light, and configuring rooms and corridors to nurture sociability. And whatever the workplace setting, managers should demand office environments that encourage employees to personalize their workspace, because place attachment substantially nurtures well-being and demonstrably enhances job satisfaction.

These and other such findings, taken in aggregate, are shifting how scientists assess the physical context's centrality to how humans think, act, and interact with one another. Roger Barker, one of the founders of environmental psychology, published findings from the early 1950s to the mid-1970s demonstrating that, when it comes to predicting human behavior, physical and social context matter more than an individual's internal world. But among psychological scientists, behaviorism ruled supreme until the 1980s, and many regarded even the notion of a recursive mind-body feedback loop with skepticism. The importance of the role of the design of our physical surroundings to human health, well-being, and development (cognitive, emotional, and social) remained at best a fringe pursuit.

Oddly enough, this orientation was eventually upended by computer scientists' drive to develop artificial intelligence so that computers could be trained to learn. Teaching a computer to "think" in the way that a human does was proving far more

difficult than they expected. Algorithms based on logic alone didn't work. Then cognitive scientists figured out a major reason why, which is that computers don't live in human bodies or think with embodied, human minds. Thus cognitive science and its younger stepsister, cognitive neuroscience, were born, the first in the 1960s, the second by the 1990s. Fast forward to the present, and we find a subterranean revolution of sorts rumbling. Superseding the widely-accepted Mind-Body connection is a new paradigm: it's the Mind-Body-Environment connection to which we must attend.

For most people, most of the time, the environments people inhabit have been deliberately constructed. They are *built* environments. That means everything about them came about by decisions and choices made by deliberation or by default. And this fact of modern life bears clear implications, because every decision made about the built environment — whether a playground, a park, a bridge, a street, a residential housing project or suburban development, an office building — could have been, and could be made otherwise.

Built environments, their atmosphere and their constructed details, seep into psychology's domain in fundamental, if overlooked, ways. For example, in contemporary culture, identity is a fraught and commonly discussed subject. Psychologists have long recognized the centrality of autobiographical memories to the construction of a coherent self (or succession of selves). Now, cognitive neuroscientists have demonstrated that such memories are neurologically consolidated in the hippocampus, which is the part of the brain that also largely manages spatial navigation. It's likely, then, that every autobiographical memory is in some way bound up with the physical context in which it was first encoded and continues to contain a meaningful sliver of place.

Stress constitutes another frequently-investigated domain of psychological science. While a moderate amount of stress might facilitate positive emotions and behavior, too much of it harms people in dozens of ways. Recognized stress triggers include interpersonal conflict, a catastrophic personal event, and internal ruminations. How many people know that stress levels rise markedly when a person moves through a streetscape that is cognitively understimulating or downright ugly, though? That buildings composed of sharp angles will stimulate its users' sympathetic nervous systems, while curved contours stimulate the parasympathetic system? Who knew that children perform

better on IQ tests taken in rooms with high ceilings, or that they learn substantially better when the classrooms in which they learn contain six identifiable factors of good design?

The emerging Mind-Body-Environment paradigm has far-reaching implications. We are only at the beginning of this revolution, and much needs to happen before people as individuals, policy-makers, designers, and clients accord to the built environment a value commensurate with its impact, positive and negative, on people's emotions, cognitions, performance, and physical and mental health. General education on the importance of high-quality physical environments to a wide range of human factors should start before college (in Europe, this happens under the guise of teaching young students about the importance of their heritage, which is physically embodied and spatially dispersed). Designers of all sorts — architects, landscape architects, civil engineers, urban designers — should receive training in at least the basics of environmental psychology and allied disciplines, which currently is quite rare. Private sector players and policy makers need to understand that the calculus is changing, and investing in Human Centered Design constitutes not a luxury, but a necessity.

Here and there, research in cognitive science, cognitive neuroscience, ecological psychology, and environmental psychology continues to investigate how built environments shape and affect people's lives. Organizations such as the Environmental Design Research Association (EDRA), the Academy of Neuroscience for Architecture (ANFA), and the Conscious Cities Festival in London provide platforms for this research. The avant garde of the profession is debating names. Evidence-Based Design? Science-Based Design? Neuroarchitecture? Biophilic Design? Or simply, Human Centered Design? Whatever it's called, laboratories such as the Centric Lab at University College London, the WELL Living Lab at the Mayo Clinic in Rochester, Minnesota, and the Urban Realities Lab at the University of Waterloo in Canada are up and running. More will surely follow.

Sometimes, revolutions do happen, and the fruitful, thought-provoking intersection of cognitive neuroscience and psychological science with built environmental design just may produce one. ●

¹Dacher Keltner, UC Berkeley, Julio Bermudez, Catholic University

Klatzky, Bonanno, MacCoun Honored With 2019 APS James McKeen Cattell Fellow Award



Roberta L. Klatzky



George A. Bonanno



Robert J. MacCoun

APS Past Treasurer **Roberta L. Klatzky** and APS Fellows **George A. Bonanno** and **Robert J. MacCoun** have received the 2019 APS James McKeen Cattell Fellow Award.

Klatzky is a professor in the department of psychology as well as at the Human-Computer Interaction Institute at Carnegie Mellon University. She researches perception and action, focusing on touch and space perception and cognition. Some of her basic research has been applied to navigational aids for the visually impaired, telemanipulation, and surgical robotics. Klatzky has authored more than 300 articles and chapters and has written or edited seven books. She has been awarded fellowships from the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the Association for Psychological Science, and the Institute of Electrical and Electronics Engineers. She also was a recipient of the Humboldt Research Award and the Kurt Koffka Medaille from the University of Giessen, Germany. She served as APS Treasurer for 20 years.

Bonanno is professor of clinical psychology at Teachers College, Columbia University. He has applied rigorous scientific research to the study of trauma and has championed

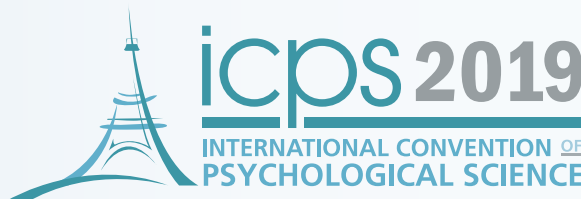
the concept of resilience in the fields of loss and grief. His book *The Other Side of Sadness: What the New Science of Bereavement Tells Us About Life After Loss* painted a new, more varied and positive picture of sadness and loss than traditional paradigms had theretofore presented. Bonanno also has worked to trace the long-term psychological health outcomes of loss and trauma.

MacCoun is the James and Patricia Kowal Professor of Law at Stanford Law School and a professor in Stanford's psychology department. MacCoun's research examines the psychological aspects of public policy and legal issues. In particular, he studies the effects of drug laws and policies, juries, fairness in courts, and child-support laws. MacCoun has written or cowritten more than 100 publications, including the 2001 book *Drug War Heresies: Learning From Other Vices, Times, and Places*, a scholarly analysis of Drug War policies and the discussion surrounding them. He has written extensively on the US military's "Don't Ask, Don't Tell" policy and testified as an expert during the 1993 and 2010 debates on allowing gays and lesbians to serve openly in the military. The three scientists will be presented with their awards at the 31st APS Annual Convention, to be held May 23-26, 2019, in Washington, DC.

SOUNDBYTE

"Just about the only person who wasn't totally convinced I was having a heart attack at that moment was the virtual Lisa Feldman Barrett in my head. That and the fact that the pain in my chest was starting to get really, really bad."

-APS Fellow **Jim Coan**, University of Virginia, on his podcast *Circle of Willis* talking about his heart attack that was initially diagnosed as a combination panic attack and indigestion. Coan credited his recollection of a previous interview he conducted with APS President-Elect **Lisa Feldman Barrett**, about the similarities of heart attack and anxiety attack symptoms, with saving his life. Coan interviewed Feldman Barrett in 2017 about her best-selling book, *How Emotions Are Made: The Secret Life of the Brain*. Hear the episode at bit.ly/coanbarrett



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- Papers that bring advances from a specialized subfield to a broader audience
- Registered Replication Reports, an innovative article type originated by APS

Check out the third issue now available at:
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King Plans to Expand Diversity of Authors, Viewpoints in *Perspectives*

APS Fellow **Laura A. King** in January will begin a 3-year term as editor of *Perspectives on Psychological Science*. King is Curators' Distinguished Professor of Psychological Sciences at the University of Missouri. She researches personality psychology, well-being, motivation, meaning in life, individual differences in intuitive information processing, and narrative approaches to personality and identity, among other topics. She is the author of two psychology textbooks and numerous scholarly articles and book chapters. She has served as associate editor for a number of journals in personality and social psychology and has served as editor of the *Journal of Personality and Social Psychology*. The *Observer* recently asked King a few questions about her plans for the journal.

What goals do you have for the journal under your tenure? Do you plan any significant changes or additions to the journal itself or to the types of articles being published?

My goals are to steer the journal toward increased representation of scholars from broad areas of psychology. I hope that everyone comes to see *Perspectives* as I do — as the place where all of us, whatever our specialty, are once again just “psychology majors”. So, my hope is that the articles will reflect the intellectual diversity of our science. I hope to increase, as well, the diversity of authors and perspectives. I have always felt that science is a conversation. To me, that is nowhere more apparent than in the pages of *Perspectives*. That conversation includes many people from all areas and all levels of seniority, and all kinds of ideas. I welcome and actively invite folks to let me know what they are longing to hear about, what they themselves would like to say, and to “host” this fascinating, irresistibly interesting conversation as editor of *Perspectives*. I want to be surprised, engaged, and fascinated by good ideas.

One of the things that makes this journal stand out is that it, like all of APS's journals, captures the full scope of psychological science. How will you preserve that breadth during your editorship?

I teach introductory psychology. That means that I, like many others, have had to master and share research from all of our science. Although I am a personality/social psychologist who studies well-being, I am a generalist in terms of my interests in psychological science. I love reading work from areas outside my own. I would give a special shout out to comparative cognition — I believe that some of the work being done in this area is the most interesting and most provocative a person could encounter. Sometimes, to me, it has seemed that researchers in areas that are easiest to describe in brief are the ones who publish in the most general journals. I hope to change that perception so that everyone with something important to say finds a place in *Perspectives*. I am also interested in hearing about the controversies that exist in fields outside my own and hope to highlight these in *Perspectives*. As a personality psychologist, one has little choice but to develop some expertise across psychology because our field is so broad. So, I see it as a true pleasure to get the chance to highlight important issues across all of psychological science.

What do you want prospective authors to consider when thinking about submitting to the journal? In addition to meta-analyses and longer, integrative review articles, are there other types of submissions you would like to see?

Quite frankly, I would love for people to consider the most interesting things they think, know, or suspect and consider writing these for *Perspectives*. I would love to publish dialogues that engage and model dispassionate discourse. Following on [Past Editor] Bobbie Spellman's initiative, I am happy to consider replications for the journal. I would also love to feature a scholarly discussion of replication issues and what they mean for our science. Indeed, whenever conversations about these issues occur on Twitter or in blogs, I cannot help but think how much better it might be — how many more people would be reached, how many viewpoints might be shared — if the ideas were subjected to peer review and published in an outlet like *Perspectives*. So, I suppose I would like to issue not only an invitation but a challenge to authors who believe they have something important to say on this issue. Let's move some of this intellectual heat to a scholarly outlet and see if we cannot have a conversation that brings light to our shared interest in excellent science.

Do you plan to develop special features or series in *Perspectives*? If so, what topics will you be focusing on?

In keeping with my goal to enhance diversity not only in the intellectual breadth of *Perspectives* but also in the authors and viewpoints, one of my goals is to feature brief contributions by individuals from underrepresented groups, sharing their strategies for success. I cannot tell you how many times I have been in conversations with people on the issue of the dearth of women and minorities in editorial work. “Why,” people ask, “don't women/minorities edit, review, join ed. boards, etc.?” My hope is to bring attention to those who do do these things, and do them well, so that others can come to appreciate the place of engaging on this side of the publication process in a rich scholarly career. ●



Laura A. King

CALL FOR APPLICATIONS

James McKeen Cattell Fund Fellowship

Presented in partnership with
Association for Psychological Science

Application deadline: January 15, 2019

For over half a century, the James McKeen Cattell Fund has provided support for the science and the application of psychology. The James McKeen Cattell Fund Fellowships supplement the regular sabbatical allowance provided by the recipients' home institutions to allow an extension of leave time from one to two semesters.

The maximum award is limited to the lesser of (1) half the recipient's salary for the academic year, (2) an amount less than half salary that will bring the total of the university allowance plus the award up to the individual's normal academic-year salary, or (3) a ceiling of \$40,000.

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Eligibility Requirements

James McKeen Cattell Fund awards are available to psychologists and other researchers in the broad field of psychological science who are faculty members at colleges and universities in the United States and Canada and are eligible, according to the regulations of their own institutions, for a sabbatical leave or its equivalent.

Candidates are eligible for a Cattell Award if they are currently tenured or will have formal University or College confirmation that they will be tenured by February 1, following our January 15, 2019 submission deadline.

Candidates are eligible for a Cattell Award if they have not had a leave with pay for the 5 years preceding the requested sabbatical leave (medical or pregnancy leaves are considered exceptions).

Prior recipients of a Cattell Fund Award are not eligible.

To be eligible for this year's awards, candidates must not be on sabbatical at any time during the Academic Year 2018-19. Sabbaticals must be for the Academic Year 2019-2020.

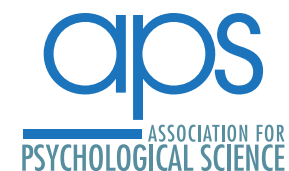
The deadline for submissions is January 15, 2019.

Applications may be submitted online: www.cattell.duke.edu/cattappl.html.

James McKeen Cattell established the Fund in 1942 to support "scientific research and the dissemination of knowledge with the object of obtaining results beneficial to the development of the science of psychology and to the advancement of the useful application of psychology."

Questions?

Christina L. Williams
williams@psych.duke.edu
www.cattell.duke.edu



SUBMIT YOUR RESEARCH TODAY



POSTER DEADLINE

January 31, 2019

Rapid Review: Poster submitters will be notified on a rolling basis.

STUDENT AWARDS

Student poster submitters are eligible for the following awards via the APS Convention submission system.

Applications due January 31, 2019

RISE Research Award

Recognizes outstanding psychological science research focused on socially and/or economically underrepresented groups and/or outstanding research by students of diverse ethnic, racial, and geographic backgrounds.

Student Research Award

Recognizes outstanding completed research from all areas of psychological science.

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CROSS-CUTTING THEME PROGRAMS

Leading researchers from across psychological science to discuss integrative topics in these featured programs. They are accompanied by posters related to the theme topic.

Artificial Intelligence and Psychological Science

Leslie Kaelbling
Massachusetts Institute of Technology

David Sussilo
Google Brain

Niko Kriegeskorte
Columbia University

Josh Tenenbaum
Massachusetts Institute of Technology

Me, My Phone, and I

Tracy A. Dennis-Tiwary
Hunter College, The City University of New York

Arko Ghosh
Leiden University, The Netherlands

Kanjo Eiman
Nottingham Trent University, United Kingdom

Ethan Kross
University of Michigan

Psychological Science and Policy

Russell Burnett
Office of Evaluation Sciences

Christina A. Roberto
University of Pennsylvania

David Clark
University of Oxford, United Kingdom

Linda Steg
University of Groningen, The Netherlands

Karina Davidson
Columbia University

Elke Weber
Princeton University

Submit your poster related to one of these theme programs today.

www.psychologicalscience.org/convention

Featured Program: Judicial Applications of Psychological Science

Hear from experts who are both psychological scientists and lawyers on how they apply their expertise in decision making, reasoning, and other aspects of behavior in their daily work and training.

- **Robert Timothy Reagan**, Federal Judicial Center (Chair)
- **Jeffrey J. Rachlinski**, Cornell Law School (Discussant)
- **David L. Faigman**, University of California Hastings College of the Law
- **Jeremy Fogel**, Berkeley Judicial Institute, University of California Berkeley School of Law
- **Avani Mehta Sood**, University of California Berkeley School of Law

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APS Award Address

The Social Defense

Richard A. Bryant Shows How Social Supports Buffer Against PTSD and Depression

On February 16, 1983, after years of severe drought, a series of nearly 200 fires now known as the Ash Wednesday bushfires swept through southeastern Australia. The wildfires displaced thousands of people, many of whom would later lose their homes, and resulted in nearly 100 deaths and more than \$1 billion in property damage.

Of the many psychological hardships that the disaster caused survivors, one in particular interested APS James McKeen Cattell Fellow Richard A. Bryant: the effect of being temporarily separated from a caregiver during a traumatic event as a child.

Psychological scientists have long known from studies of orphanages in areas such as Romania after World War II that enduring abuse and trauma as a child without parental support can inhibit a person's ability to form secure relationships throughout their lifetime. The Ash Wednesday bushfires, however, took place largely in one day, separating kids from their parents nearly at random depending on whether they were at school when the evacuation order went out. This unfortunate chain of events offered researchers a unique opportunity to study attachment, said Bryant, a professor of psychology at the University of New South Wales, Sydney, during his Award Address at the 2018 APS Annual Convention in San Francisco.

More than 800 children were psychologically assessed after the Ash Wednesday bushfires. Twenty-eight years later, Bryant and colleagues surveyed 500 of those now-adults and found that those who were separated from their parents during the fire were significantly more likely than those who were not to have an avoidant, insecure attachment style, which in turn translated to higher rates of post-traumatic stress disorder (PTSD).

"I'm not saying that's the only explanation for this," Bryant said. "This could also then have led to a cascade of different parenting styles and all sort of things that might have contributed to it, but it's a teasing, tempting interpretation that just having that brief separation through a very, very intense time of threat can actually threaten one's attachment style."

How Attachments Are Born

Attachment theory was first popularized more than 50 years ago by British psychological scientist John Bowlby



Psychological scientists have long known that the relationships we form in childhood can shape our interactions across the lifespan, but it remains to be seen if we can actively alter these attachment styles, said APS James McKeen Cattell Fellow **Richard A. Bryant**.

and further supported by Harry Harlow's classic study of infant rhesus monkeys. While psychological scientists previously believed that infants bonded with their mothers simply to maintain a source of food, Harlow found that orphaned monkeys spent the majority of their time cuddling a soft cloth "mother" rather than a functional wire one equipped with a milk bottle.

"What the 'monkey' was doing here is giving comfort contact, and of course this is a hardwired need that we have," Bryant said. "From a very young age we, and other species, have to rely on our attachment figures as a way of surviving. They feed us, they protect us, they nurture us in times of need."

When those needs for social support are met, Bryant explained, children can internalize that secure attachment, allowing them to activate a mental representation of the people they are close to even when no one is there to support them. Having an inconsistent or abusive attachment figure, on the other hand, can cause children to develop an insecure

attachment system characterized by anxious or avoidant behavior.

Linking Attachment, Memory, and PTSD

Memories are a pivotal part of PTSD, Bryant noted — in many ways, intrusive memories, or “intrusions,” are the fuel that drives other PTSD symptoms. Current models suggest that it may be arousal at the time of encoding traumatic memories that actually leads to intrusions, he continued.

With that in mind, Bryant undertook a series of studies designed to pinpoint how, exactly, secure attachments might serve as a psychological buffer in traumatic situations.

In one study, participants were shown subliminal flashes of images depicting either attachment figures, such as a mother with her baby, or a person standing alone followed by images of graphic medical scenes or neutral scenes. Two days later, they were invited back to the lab to report on the intrusive thoughts that may or may not have been caused by those images.

Participants with a secure attachment style who received the attachment prime before encoding memories of the graphic images were found to have fewer intrusive thoughts than those who did not. People with an insecure attachment style, however, didn’t benefit from the prime at all. In another study, securely attached people also were found to have fewer intrusive memories if the attachment prime was introduced 2 days after the initial viewing when participants were asked to retrieve memories of the graphic images. In this case, the control group was primed with positive images, such as a bag of cash, to account for the buffering effect of good mood.

When memories are retrieved, they enter a “labile” state during which synaptic plasticity allows them to be modified and reconsolidated, Bryant said. His next question, therefore, was this: If practitioners can destabilize a traumatic memory in this way before having a person think about their attachment figure, would that help reduce the impact of intrusive memories?

Bryant investigated this question using an experiment similar to those above. On the first day, student participants watched a graphic film on the aftermath of a car crash in California culminating in a body being pulled from a vehicle. Two days later, they were shown nontraumatic parts of the film to reactivate those memories and were asked to think about either an attachment figure or a positive experience. Across the next few days, participants recorded the frequency of intrusive memories, as well as how distressing and vivid those recollections were, using a mobile app on their phones.

In this case, thinking about an attachment figure while reactivating traumatic memories was found to have no impact on the frequency of intrusive thoughts. It did, however, cause participants to report them as being markedly less distressing and vivid — regardless of their attachment style.

If practitioners can help patients destabilize and alter trauma memories by thinking about attachment figures, it could provide a practical treatment option for people with PTSD, Bryant said.

Researchers have also found that thinking about attachment figures can help people repress their startle response and other fearful behaviors. This convergent evidence suggests that social support may function as a safety signal that can interfere throughout the habituation, acquisition, and extinction phases of fear acquisition.

“This is really important, because this is the process by which we understand how PTSD develops in people,” Bryant said.

Altering Attachment Systems

The notion that attachment styles develop during childhood would seem to suggest that you’re stuck with one for life, Bryant said. Cognitive bias modification (CBM), however, may provide an avenue for insecurely attached people to become more secure and thus more resilient to trauma.

CBM is based on the idea that people with anxiety conditions have an interpretive bias that leads them to view ambiguous stimuli as threatening or negative, Bryant explained. The training is designed to help anxious people appraise events more objectively.

“By focusing on the individual level, we’re actually missing out on a lot of important data, and that’s important not just for theoretical reasons but also for policy and planning.” -Richard A. Bryant

Bryant led a study to test the CBM procedure by presenting 80 anxiously attached individuals with a set of 64 social scenarios such as the following:

“You realize you made a mistake at work and are afraid to tell your boss the next day. You talk to one of your parents about it and they seem to be...”

The participants then have to complete the sentence using one of two incomplete words. Those in the attachment condition were given supportive endings such as “c_mpassion_te,” while those in the nonattachment condition were given more isolating terms like “i_differ_nt.”

Having to complete the words themselves forces participants to process the phrase more deeply, enhancing the cognitive priming caused by CBM, Bryant explained.

After completing these scenarios, participants completed a series of recognition tests during which they read scenarios similar to the previous one and rated how similar in meaning two related scenarios were.

For example:
“You have just been let go from your job and you ring your best friend for support. Your friend answers your pho_e ca_l.”

Followed by:
“Your friend answers your call and tells you that they can call you back in 5 minutes” and “Your friend answers your call and tells you that they cannot talk.”

The participants’ rating of how similar the two sentences are is meant to provide an implicit measure of bias in

interpretation, Bryant explained. A participant who views the scenarios from a more secure, objective perspective might rate the examples above as being roughly the same, for example, while a less securely attached individual might perceive the a friend who says they don’t have time to talk as being cold or distant. Those who were trained in secure CBM endorsed more secure sentences than those who were trained in insecure CBM.

“Essentially, what this is telling us is that by training someone to think in a biased way, we can actually shift how they’re interpreting their attachment scenarios,” Bryant said.

While shifting participants’ interpretive bias in an artificial lab environment is hardly the same as changing someone’s entire attachment system, he acknowledged, CBM for anxiety started out this way as well and has since been used successfully to help patients in clinical settings.

The real challenge, Bryant said, is to demonstrate that CBM can have the same effect on attachment style, providing once insecurely attached people with the benefits afforded by a more secure attachment style, such as reducing stress-hormone production and intrusive memories.

“It’s a big ask — I’m not sure if we can or not — but it is worth trying,” Bryant said. “We just need to start with the building blocks, which is what we see here, to see what ground we can make.”

Weathering the Storm With Social Networking

Despite the potential for therapies like CBM to improve PTSD patient outcomes, Bryant said one of his main criticisms of the trauma-research field is its emphasis on individuals rather than on the roles of relationships and community.

Even studies that touch on social support and community integration often rely on individuals’ self-reported perceptions of their community, Bryant said. But social network analysis (SNA) can provide a more “sociocentric” view of mental health, he said.

SNA, a method popular among organizational psychological scientists and economists, maps the relationships among social entities, also referred to as “nodes” or “actors,” whether they be people, organizations, or even countries.

“It looks at who is linked to whom, and then it looks at how those characteristics between these individuals are impacting or being impacted by other people within that social network,” Bryant explained.

Four years after the Black Saturday bushfires, some of the worst wildfires in Australia’s history, took 200 lives in 2009, Bryant used SNA to analyze the fires’ effect on tight-knit rural communities in Victoria, Australia. In addition to asking survivors about their rates of depression and PTSD, the epidemiological study also asked 1,056 participants questions about how they fit into their social network. These questions focused on whether or not there was any person or organization that participants felt close to and

how, if at all, they gave or received practical assistance and emotional support.

Each participant also provided researchers with a list of up to 10 people that they knew, along with demographic information and a description of their relationship, which Bryant and colleagues used to create a social map of the more than 5,000 relationships that made up the community.

As one might expect, participants with social ties that involved supporting, or receiving support from, others were found to experience lowered rates of depression and PTSD. There was also evidence, however, for depression having a “potential contagion” effect in communities — the more depressed participants were, the more likely they were to have ties to other depressed people.

There are a few ways to interpret that, Bryant said. It could be that depression is actually contagious, causing one person’s negative moods to bring other people down with them. It’s also possible that depressed people are just more likely to spend time together. In addition, Bryant added, there could be other variables that cause people both to be close to one another and to be depressed.

This contagion effect didn’t exist for PTSD, but risk for the condition was linked with how interconnected participants’ support systems were found to be. Those in fractured social networks, knowing people who did not know each other, had an increased risk of existing PTSD, while those in more reciprocal social networks were at lower risk for the condition.

“Essentially, what that’s saying is that if I’m part of a social network that’s intact, then that is protective against PTSD,” Bryant explained.

Bryant and colleagues are also analyzing how participants’ attachment styles may overlap with these findings. Preliminary results suggest that gender may influence the ways that people with secure, anxious, and avoidant attachment styles interact with their communities.

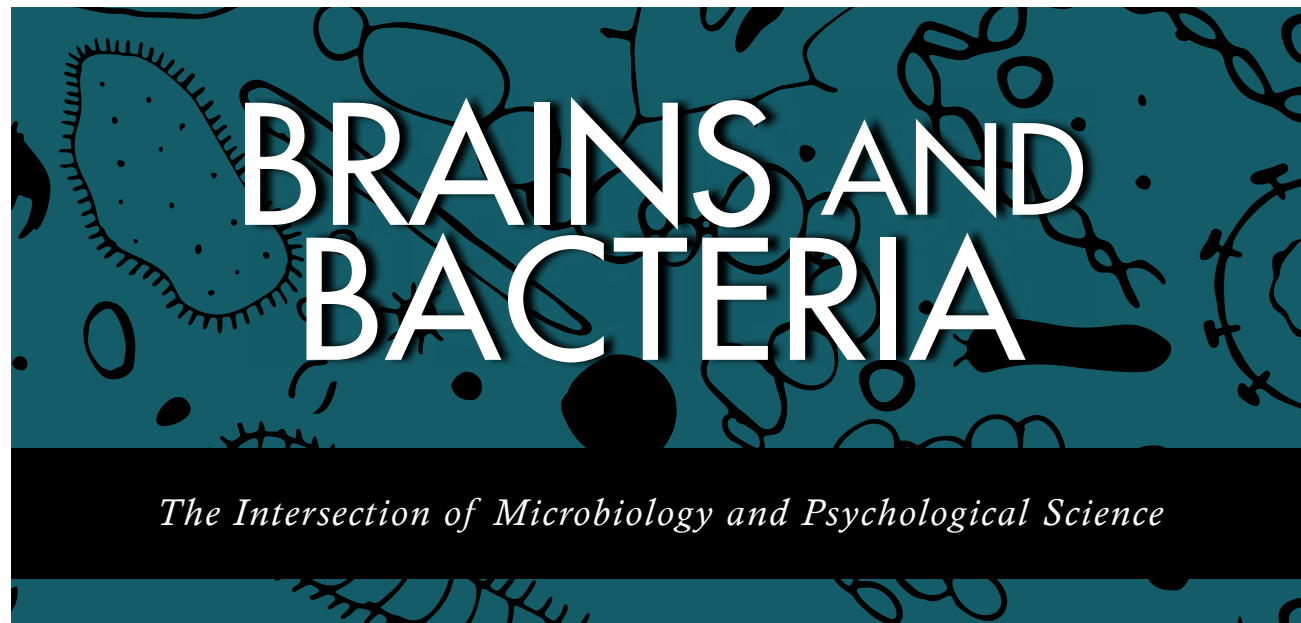
SNA can provide a useful tool for understanding the factors that contribute to conditions like depression and PTSD, particularly in the wake of natural disasters, he added.

“If you’re talking about an earthquake or a hurricane or something like this, by definition they effect communities, large numbers of people,” Bryant said. “By focusing on the individual level, we’re actually missing out on a lot of important data, and that’s important not just for theoretical reasons but also for policy and planning.” ●

-Kim Armstrong

To watch video of Richard A. Bryant’s award address, visit www.psychologicalscience.org/r/attachment.





It's tempting to tell yourself that you, or rather your brain, is the only driver behind the wheel when it comes to controlling your mind and body. According to emerging research on bacteria and our brains, however, we may actually have some pretty powerful passengers riding shotgun: the trillions of organisms that make up each of our microbiomes.

Microbiologists estimate that for every human gene in our bodies, there are hundreds, if not thousands, of microbial genes, and that there may be at least as many microbial cells in our bodies as human cells. Furthermore, while human DNA may only differ by about 0.1% from person to person, the DNA of our microbial partners can differ by roughly 50% between individuals.

From the bacteria that flourish on healthy human skin to microbiota that serve as a barrier to pathogens in adults and foster robust development in newborn children, microorganisms perform countless functions that make our lives possible. Of these, the 40,000 species of "human flora" in the gastrointestinal (GI) tract – which includes not just the stomach, but the mouth, esophagus, pancreas, liver, gallbladder, small intestine, and colon – may be among the most influential, write research associates Leigh Smith (University of California, Davis) and Emily Wissel (Emory University) in an article forthcoming in *Perspectives on Psychological Science*.

Our brains and the bacteria in our guts have a bidirectional, often mutually beneficial relationship unique to each individual, the authors explain. There is a staggering amount of diversity both in the bacteria we carry and in how our bodies react to them.

"Different bacteria can have drastically different functions, and therefore significantly different effects on their host," Wissel and Smith explain. "But differences in humans matter too. Our

By Kim Armstrong, APS staff writer

genes, health, and psychological states can all impact how our brains interpret the signals bacteria generate."

In a study of 124 participants, for example, researchers found that drinking milk with probiotics (similar to the live bacteria found in yogurt) improved the mood of those who self-reported higher levels of negative affect on the Profile of Mood States (POMS). Probiotics had little effect, on the other hand, on those who reported a more positive outlook prior to the study.

Research on the gut-brain axis is still in its infancy, but collaborations between psychological scientists and microbiologists can uncover the affective, cognitive, and personality-related factors that moderate these differences, add Smith and Wissel, who study social psychology and human microbiome metagenomics, respectively.

Fecal matter transplants, which entails the transfer of microbiota from one person to another via stool, are fertile ground for such findings. While there are currently strict medical guidelines that donors must meet for their stool to qualify for transplantation, the exclusion criteria almost never include measures of mental health. "Understanding the humans behind the microbes," Wissel and Smith write, "could allow researchers to more precisely measure what types of mental and biological traits are being transferred along with the donor's stool."

"Gut-brain axis research should begin systematically connecting the genomic data of the microbes back to the psychological data of the host," Wissel and Smith argue. "Accounting for, rather than ignoring, this diversity is an essential next step for microbiome research."

A Bacterial Balancing Act

Our relationship with microbes begins mostly at birth, said Jane A. Foster, an associate professor of psychiatry and behavioral neurosciences at McMaster University in Hamilton, Ontario Canada.

Although a relatively small number of microorganisms occupy the uterus and placenta, infants receive a kick start to the colonization and maturation of their gut microbiome from the symbiotic bacteria they encounter as they pass through the vaginal canal, Foster explained. Babies born by Cesarean section would have different bacteria following birth and may take longer to develop a diverse range of microbiota, but breastfeeding can also help transfer some of these beneficial bacteria from the mother.

In a foundational 2004 study by internal medicine researchers at Kyushu University in Japan, germ-free (GF) mice showed more extreme stress responses than did mice with normal microbiomes. GF mice had substantially higher levels of stress hormones, such as corticosterone, in their blood after being restrained in a small tube, but exhibited the same hormone levels as germ-carrying mice when exposed to the anesthetic properties of ether.

Drawing from this work, Foster and colleagues conducted a series of follow-up studies. In a study of 24 rodents, Foster observed GF and typical mice in isolation chambers and elevated mazes before collecting blood and brain tissue samples. They found that bacteria in the gut (or lack thereof) influenced the animals' behavior, reducing the level of anxiety-like behavior and showing increased exploration.

"The gut-brain axis is all encompassing and actually is designed to put us back to balance," Foster said at the 2015 Province of Ontario Neurodevelopmental Disorders Family Research Day, where parents of children with conditions such as autism spectrum disorder (which is often accompanied by gastrointestinal issues) gathered to identify avenues for future research.

These findings have also been extended to humans. For example, researchers at the Oppenheimer Center for Neurobiology of Stress and Resilience, led by Mind Body Research Program Director Kirsten Tillisch, have used functional magnetic resonance imaging (fMRI) to investigate the relationship between microbes in the gut and emotional processing in the brain.

In one pilot study, 40 female healthy participants submitted fecal samples for bacterial profiling before undergoing a set of three MRI scans during which they viewed positive, negative, and neutral mood-inducing images. The seven participants with a greater proportion of *Prevotella* genus bacteria in their systems exhibited decreased activity in the hippocampus while viewing negative images, and reported more negative affect afterward, than did participants with a greater number of *Bacteroides* genus bacteria. The fMRI scans also detected differences in the density of participants' white and gray matter, with the high-*Prevotella* group demonstrating lower hippocampal volume and greater white matter with more coordinated activation, or connectivity, between areas of the brain associated with depression.

While further research is needed to expand on this proof-of-concept study, it's possible that these patterns of microbial clustering could represent vulnerability factors for psychiatric conditions such as posttraumatic stress

disorder and borderline personality disorder as well, the authors wrote.

As part of the Kyushu University study, researchers were able to reduce the exaggerated stress response in the GF mice to baseline levels by reintroducing microbes into their systems at 6 weeks of age, but they found no such effects when the microbes were introduced after the mice had fully matured. Studies from Foster's lab showed that although "conventionalized" adult mice exposed to microorganisms developed complete microbiomes, it wasn't enough to alter their GF-related reduced anxiety-like behaviors.

This suggests there may be a critical period in the development of the hypothalamic-pituitary-adrenal axis and the central nervous system (CNS) during which microbes can influence behavioral traits that become resistant to change in adulthood, Foster and colleagues wrote in *Communicative and Integrative Biology*.

Defending Against Disease Threat

Not all of the microorganisms that exert influence over our brains through the stomach and other organs are helpful to us, of course. One of the most extreme examples of this, according to Mats Lekander, a professor of health psychology at Stockholm University and the Karolinska Institute in Stockholm, Sweden, is a genus of fungi known for turning ants into "zombies".

When an ant is infected with *Ophiocordyceps*, the zombie fungus releases a series of compounds tailor made to hijack the ant's CNS. This allows the fungal colony to chemically manipulate the ant into climbing and latching onto surrounding vegetation before killing its host, at which point hyphae – branches of fungi – grow from the shell of the ant's body to disperse new spores and repeat the cycle.

The fungus is only able to exert this behavioral control, however, when the species of *Ophiocordyceps* and the species of ant coevolved together – if the fungus doesn't "recognize" an ant's biology, it releases a different set of compounds that simply kill the ant.

The microorganisms that typically infect human hosts may not have such dramatic aims, but the struggle to secure the survival of our genes has resulted in the evolution of a range of immune defense strategies, Lekander continued. The immune system not only collects information about foreign invaders; it also signals the brain to carry out defensive behaviors in response to microbial threats.

Using fMRI, Lekander and colleagues investigated how white blood cells with receptors that act as the "eyes of the immune system" interact with bacteria and then the brain. Half of the 48 participants were injected with lipopolysaccharides (toxins from bacteria cell walls), while the control group received a placebo. Several hours later, volunteers who received these "endotoxins" reported back pain and general discomfort, among other symptoms. According to the fMRI scans, they also exhibited greater connectivity between the left anterior insula and the left midcingulate cortex, regions

associated with negative emotion, pain processing, and self-reflection.

This suggests that the “interoceptive cortex” may be involved not only in processing pain, but in an increased sense of focus on the body when sick, Lekander continued. This may in turn support the energy-preserving behaviors necessary to recover from an infection.

Talking Back to Your Immune System

Communication between the immune system and the brain is made possible by cell signaling proteins called cytokines, said Robert Dantzer, a professor of symptoms research at the University of Texas MD Anderson Cancer Center. The cytokines produced by white blood cells flush out microbial invaders by causing inflammation throughout the body and, when detected by the CNS, trigger a set of behavioral and metabolic responses familiar to anyone who’s felt anxiety, low mood, decreased appetite, sleepiness, and fatigue.

“A will free of all bodily contingencies is just an illusion — the illusion of temporarily healthy creatures,” said Dantzer.

While these effects may seem to do little more than bring you down, they’re designed to preserve the energy needed to fight microbial infections. Much like hunger drives us to eat, fear drives us to fight or run away, and curiosity drives us to explore, sickness is a motivational state that drives us to care for our sick bodies, Dantzer explained.

Illness competes with these other motivational states as well. In a study of mother mice, Dantzer and colleagues found that sick mice ate and drank less than their healthy counterparts, and laid on their sides rather than engaging in the upright, crouched nursing posture best suited to feeding their pups. When researchers took the pups away from their mothers and placed them throughout the cage, however, the mother mice overcame their fatigue to retrieve their young just as those in the control group did.

This suggests that overcoming bacterial threats takes precedence as a motivational state only until another motivation, such as maternal drive, becomes paramount to survival. If sickness is a motivation like fear, which can result in disorders such as anxiety and PTSD, Dantzer added, then it makes sense that there would be sickness disorders. Fatigue and depression, which have been linked to the inflammation response caused by cytokines, are two such possibilities.

Just because the immune system is often giving orders to the brain doesn’t mean the CNS doesn’t have its say when it comes to sickness, though. Research published in *Psychological Science* suggests that just as activating the immune system can make us more sensitive to signs of disease and ill health in others, witnessing symptoms of sickness can trigger our immune systems to ramp up, as well.

In the 2010 study, APS Fellow Mark Schaller and colleagues at the University of British Columbia showed 28 participants both neutral images and slides of either people brandishing guns or displaying symptoms such as pox, skin lesions, and sneezing. Blood samples drawn before and after each slideshow were then exposed to a bacterial stimulus. Results revealed a 23% increase in production of the cytokine interleukin-6 after viewing the disease

images, whereas there was no meaningful increase in the general threat condition.

These results suggest that visual signals of other people’s disease can cause the immune system to respond more aggressively to microbes. Stress hormones such as cortisol and norepinephrine, which have been found to interact with the immune system, offer one potential medium for these messages. However this communication is carried out, these findings offer some much-needed assurance that while microbes may be at the wheel when it comes to some things, our brains can still get their hands on the gear shift every now and then.

Foster, Lekander, and Dantzer will further discuss the role of microorganisms in our cognitive and physiological health at “Our Minds Are Not Our Own: The Role of Guts and Germs,” an Integrative Science Symposium at the upcoming International Convention of Psychological Science in Paris, March 7-9, 2019. ●

Leigh Smith, Emily Wissel, Jane A. Foster, Mats Lekander, and Robert Dantzer contributed to this article.

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How Mitochondria Keep Our Brains and Minds Moving

If you know a single fact about mitochondria, it’s probably this: “The mitochondria are the powerhouse of the cell.”

The energy produced by these ancient bacterial invaders turned organelles is essential for powering everything we do, and that includes using our brains to learn, think, and feel. In a review published in *Perspectives on Psychological Science*, scientists explore how these evolutionary tagalongs contribute to outcomes related to both mental health and mental illness.

“Given the multiple first-rate jobs that mitochondria do in the nervous system, it is hardly accidental that their malfunctioning has been associated with virtually every mental or neurological affliction on earth,” wrote researchers Peter Kramer and Paola Bressan of the Università di Padova in Italy. This includes everything from Alzheimer’s and Parkinson’s disease, anxiety, and depression to conditions like autism and Down syndrome, the pair wrote.

Mitochondria generate energy within our body’s cells in the forms of adenosine triphosphate (ATP) and heat by consuming glucose from the food we eat and oxygen from the air we breathe. Throughout this process, they also create waste products like carbon dioxide, water, and free radicals, corrosive chemicals that can degrade our cells as well as the mitochondria themselves.

Our mitochondria have a number of methods for dealing with this damage, but these measures offer only temporary relief. A certain amount of mitochondrial dysfunction over time is inevitable, Kramer and Bressan wrote, and the brain, which uses up to 25% of the body’s energy, is one of the most vulnerable targets.

In the case of degenerative conditions such as Alzheimer’s and Parkinson’s disease, the decrease in blood flow associated with aging has been shown to limit the amount of glucose and oxygen available to the brain’s mitochondria for energy production. This energy deficit can cause neurons to degenerate, disrupting activity in more energy-demanding regions of the brain associated with memory (e.g., the hippocampus in Alzheimer’s) and motor planning (e.g., the substantia nigra pars compacta in Parkinson’s.)

Furthermore, findings from several studies of rats have suggested that the lower concentrations of ATP in the nucleus accumbens caused by mitochondrial malfunctioning may contribute to the symptoms of depression and anxiety, expressed as “submissive” behavior in animal models. The causal nature of this connection, Kramer and Bressan wrote, was established by exposing

equally anxious rats to drugs that either inhibited or enhanced mitochondrial energy production. Those whose mitochondria had been inhibited were likelier to submit to their companions, whereas rats whose mitochondria had been stimulated exhibited less anxious behavior.

“Considering all of the above, it should come as no surprise that mental disorders are apt to hinge together,” Kramer and Bressan wrote. “For example, schizophrenia patients are often depressed, autism patients are often anxious, Down syndrome patients tend to develop premature dementia, and current depression predicts dementia later on.”

Although the exact mechanisms through which mitochondria may contribute to such a range of disorders is still poorly understood, the authors wrote, studies suggest that the path to mitochondrial health is a familiar one: Exercise, getting enough sleep, eating a nutrient rich diet, and engaging in stress-reducing activities like yoga and meditation can all have a positive influence.

In one study, rats who swam for 10 to 30 minutes a day for 20 weeks were found to have fewer mutations in their mitochondrial DNA than those who did not. Some research suggests that eating a ketogenic diet high in fat and low in carbohydrates and sugar may improve energy production.

“From the point of view of our mitochondria, proper food is whatever contains the materials they need for their job: vitamins, minerals, enzymes, antioxidants and so on,” Kramer and Bressan wrote.

It’s best to get these nutrients from unprocessed natural foods like fruits, vegetables, fish, and meats, rather than supplements, they added. Antioxidant supplements in particular can upset the balance of free radicals in the body, interfering with mitochondria’s ability to monitor their own health.

Kramer and Bressan said they intended to further explore how these once-invasive bacteria team up either with or against us to influence our health and behavior.

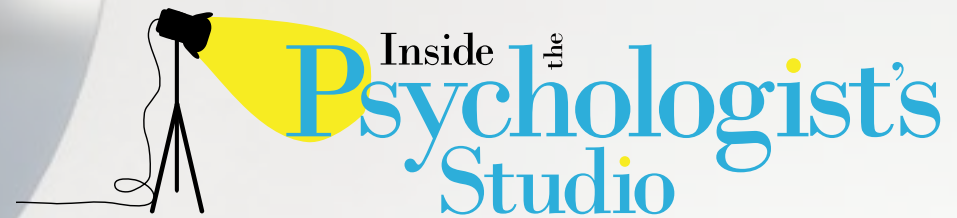
“Our hope is that future research will explore whether psychotherapy or psychiatric treatment might be assisted, and sometimes perhaps even replaced, by interventions that target the selfish entities that cohabit with us,” they said. ●

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–Kim Armstrong

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Washington University in St. Louis

Interviewed By

**SUPARNA RAJARAM**
Stony Brook University,
The State University of New York

APS Past President **Henry L. Roediger, III**, one of the most prominent memory researchers in psychological science, is interviewed by his former student, APS immediate Past-President **Suparna Rajaram**.

Recorded before a live audience at the 30th APS Annual Convention in San Francisco.

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The Cooperative Revolution Is Making Psychological Science Better

P psychological science is currently experiencing something of a revolution, and it is a cooperative one. It's a response to the so-called "replication crisis," a period of self-reflection that revealed problematic flexibility in data analysis, publication bias (null findings are less likely to be submitted and/or published than positive findings), and disappointingly low replicability rates — challenges that are also playing out across disciplines ranging from cancer biology to neuroscience.

But change is coming. In the past decade, the openness and frequency of communication among psychological scientists has increased sharply, allowing researchers to initiate worldwide projects involving the collaboration of dozens of researchers, and pushing academic journals and professional organizations to rapidly adopt practices to increase the rigor and transparency of published work. Thanks to the Internet, graduate students and researchers from less privileged institutions share the same platforms as their more privileged peers; information about new research, methods, and statistics are routinely discussed by scholars from all over the globe; and geographical distance is less of a barrier to collaboration than at any point in history.

In short, this is an exciting time to be in the field of psychological science. We are encouraged by the hope and passion for our science that we see in our colleagues, and we believe this cooperative revolution will push our science to become more collegial, rigorous, progressive, and inclusive.

Criticism, Cooperation, and Collaboration

Our optimism should not be confused with naivety. We acknowledge that the debates surrounding methodological reforms have been accompanied by clear cases of incivility, both in public (e.g., calling other researchers names on social media) and in private (e.g., threatening a colleague's career over email). We believe it's important to foster a scientific discourse that can be both strongly critical and also civil. Incivility is by no means necessary to get a critical point across, and if anything only distracts from the message. Importantly, psychological scientists are now having conversations about how to establish new norms for critical debates that occur in increasingly public spaces such as blog posts and social media.

Science benefits when critique is not made personal and not taken personally — but scientists are closely associated with

their findings, and having your work criticized is undeniably hard. We all experience this — when reading critical reviews on a manuscript or grant proposal, for example. But being wrong is a basic part of being a scientist. And for science to be self-correcting, we need to embrace critique. If someone points out errors in our work, we need to take a deep breath and objectively evaluate if we erred. Paraphrasing James Heathers: Science is not about producing research, but about producing knowledge, and for that we need to be deeply critical of our own work and that of others. But embracing a spirit of strong criticism is not sufficient for good science. We need an environment of cooperation and collaboration. And, in our opinion, the past decade has been largely cooperative and positive, with the vast majority of reform-minded researchers operating in a tactful and professional manner. They are providing a valuable service to both producers and consumers of science and are driven by a heartfelt desire to improve their field and its public reputation. Here, we highlight a few examples (many of which we are involved in) of supportive communities, civil conversations, statistical innovations, collaborative teaching materials, diverse and inclusive lab cultures, large-scale research collaborations, and technological infrastructure to support it all.

Supportive Communities and Constructive Conversations

Social media and other online platforms have provided researchers with new ways to connect with other scholars, share and debate ideas, and learn from one other. Conversations occur in real time instead of unfolding in slow motion in the pages of printed journals. They can also be structured in ways that encourage people from all career stages to participate rather than ways that engage only a limited number of eminent insiders.

A good example of constructive online conversation is the Facebook discussion group PsychMAP, a space for researchers to engage in constructive, open-minded, and nuanced conversations about psychological methods and practices. The group has thousands of members from around the world, from undergraduate students to senior professors. Discussions range from critical-yet-civil debates about scientific priorities or the strength of a given literature to specific questions about the best way to analyze a particular kind of data. The group is lightly moderated by four scholars who on rare occasions step in to steer conversations away from focusing on specific individuals and toward asking broader questions about methods and practices. A Community Board of scholars from a diversity of research areas, career stages, and institution types has helped

Chris Chartier, *Ashland University*
Melissa Kline, *Massachusetts Institute of Technology*
Randy McCarthy, *Northern Illinois University*
Michèle Nuijten, *Tilburg University*
Daniel J. Dunleavy, *Florida State University*
Alison Ledgerwood, *University of California, Davis*

the group develop the breadth and inclusivity of both the topics discussed and the range of people who contribute to discussions. Spaces such as PsychMAP have created opportunities for faster, more broadly accessible, and more inclusive scientific discourse.

We also see the spirit of cooperation, constructive discussion, and concrete progress in the Society for the Improvement of Psychological Science (SIPS), a recently created academic organization aimed at bringing scholars together to improve methods and practices in psychological science. SIPS has held three meetings, at which there are no prescheduled lectures but rather a mixture of hands-on workshops and “hackathons” geared toward learning a new skill or solving a concrete problem. The conferences have also included lightning talks and creatively structured sessions where attendees got to pitch and discuss new ideas. Several of the projects we mention in this letter arose from brainstorming at SIPS meetings. Notable features of this conference include the number of pretenure academics and graduate students in attendance, and the significant representation from teaching-focused colleges and other schools outside the well-funded and high-profile R1 universities.

A quick way to hear what participation in (and reflection on) these open science movements can actually sound like is to listen to the excellent conversations on podcasts such as the “Black Goat” (hosted by APS Board Member Simine Vazire, Alexa Tullett, and Sanjay Srivastava), “Everything Hertz” (James Heathers and Daniel Quintana), and “Circle of Willis” (APS Fellow Jim Coan and weekly guests). These podcasts engage with subjects such as improving research practices, scientific communication, interprofessional dialogue, and personal growth. Notably, these podcasts are often informed by audience questions. “Black Goat” discussions, for instance, frequently incorporate listener feedback and questions gathered from Facebook, Twitter, and emails.

New Statistical Tools and Technological Infrastructure

The cooperative revolution has also benefited from exciting statistical innovations. Scientists are designing new tools to provide straightforward solutions to some of the problems related to the replicability crisis. For instance, analyses show that roughly half of published psychology articles contain inconsistencies in reported means or statistical test results. Although these errors can easily arise through honest mistakes (e.g., copy/paste errors), they can distort substantive conclusions. To facilitate the detection of such errors, free programs and apps such as GRIM, statcheck, and p-checker have been developed. Researchers can easily use these tools to quickly screen their manuscripts for errors before they submit them to a journal.

Researchers and funders have also invested heavily in the infrastructure supporting our increasingly collaborative science, developing online platforms to archive and share our data and research materials (e.g., Databrary, the Open Science Framework) and platforms devoted to archiving the cumulative

evidence for the empirical effects underlying our theories (e.g., Curate Science). These resources create a flexible ecosystem of tools that researchers can use to speed up their current workflows and more easily adopt new practices. Many of the projects we discuss have both used and contributed to this research infrastructure to implement practices such as preregistration to meet specific research needs (e.g., PsyArXiv, OSF for Meetings), and to ease the burden of coordinating large research teams. The value of tools like these—both during these projects and after the research is complete—cannot be overstated.

Collaborations

Perhaps the most visible hallmark of the cooperative revolution has been the dramatic increase in large-scale collaborations across many areas of psychological science (e.g., ManyLabs, ManyBabies, the Psychological Science Accelerator, Registered Replication Reports, and StudySwap). Traditionally, most basic research in psychology has been conducted by individual university labs, which limits the scope of the projects a researcher can take on, especially in areas that involve studying specific hard-to-recruit participant groups (young children, bilinguals, people with specific clinical diagnoses, etc.) rather than convenience samples (e.g., college students participating in studies for course credit). Large-scale collaborations create new opportunities for conducting highly powered studies and testing moderators even in resource-intensive topic areas.

For example, by pooling the effort of more than 50 labs, the ManyBabies project has begun to build large datasets that both validate important findings in developmental psychology and provide a context in which to debate how we can best collect and analyze these data. By the middle of 2018, ManyBabies had conducted the largest lab-based study of infant cognition that we are aware of to date: a study on infants’ attention to child-directed speech (“baby talk”) with more than 2,700 young participants.

And although psychological science has often been criticized for focusing too heavily on the United States and other western countries, the recently launched Psychological Science Accelerator is a globally distributed network of psychological science laboratories (currently 210), representing 45 countries on all six populated continents, that will collect data for democratically selected studies. The network’s mission is to “accelerate the accumulation of reliable and generalizable evidence in psychological science, reducing the distance between truth about human behavior and mental processes and our current understanding.” The Accelerator is committed to five core principles that reflect the ethos of the cooperative revolution quite well: (1) diversity and inclusion with respect to researchers and participants; (2) decentralized authority; (3) transparency, by requiring and supporting practices such as preregistration, open data, analytic code, and materials; (4) rigor, both in the standards for approving individual studies and the process of managing the unique challenges of multisite collaborations; and (5) openness to criticism, by inviting and carefully considering all critical feedback.

Open and Inclusive Teaching and Training

The spirit of cooperative material sharing has extended to how we teach the next generation of scientists. Psychologists have worked together to generate excellent reading lists on methods reforms and reproducibility, which they then share freely with others to use in both graduate and undergraduate courses. Some have even taken the extremely cooperative step of posting complete syllabi and course materials to be amended and adopted by any instructor who finds value in bringing those materials into their classroom.

Platforms such as Twitter make space for new kinds of discussions, which — because they are so public — can have strikingly fast impacts on the culture of psychological research. One example is the question of how undergraduate students become involved in research labs, a critical type of experience for applying to graduate school in the sciences. A relatively large and diverse group of scientists has been discussing the importance of offering paid research opportunities instead of purely voluntary positions. Pro bono research work is simply not realistic for students who need summer income to pay their way through school and systematically excludes some students from getting research experience at a critical point in their careers. Anecdotally, we have noticed a promising uptick in advertisements for paid summer internships in some excellent labs in psychological science.

In a similar way, Twitter and Facebook have provided forums for discussion about codes of conduct, which have been common in software development and related fields for several years. As part of the much longer conversation in academia sexual harassment and assault in academia, professional


conferences in psychology have begun to adopt these codes of conduct as a way to clarify the norms of behavior we expect from our colleagues and to respond to people who violate these expectations.

Moving Forward: A Call to Action

Psychological science’s revolution is well underway and is gaining momentum. Though considerable progress has already been made, there is still much work to be done, and we cannot do it alone. Whether you are a student just getting your hands dirty in lab work, an early-career researcher carving out your scholarly niche, or a well-seasoned professor with decades of experience, we hope that you will join us in our pursuit of research integrity, transparency, and rigor.

Most researchers chose the profession for the same basic reasons: to gain knowledge about the world; to make a difference; to advance and improve society. These goals remain a shared feature of our work, regardless of the area of inquiry.

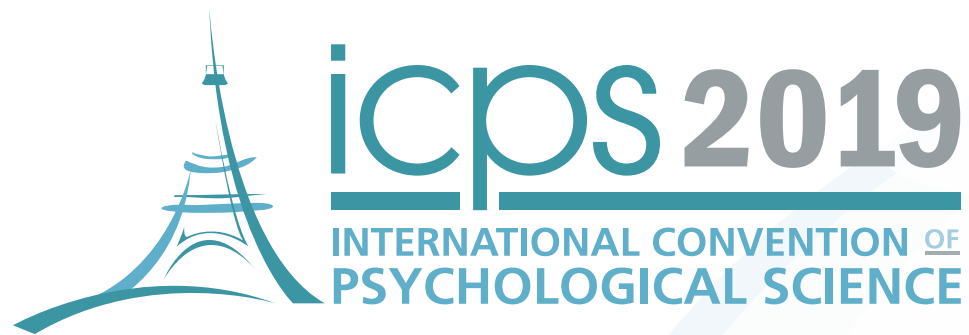
As we move forward, we are calling on all researchers (ourselves included) to continuously improve the rigor of their work. As researchers, we owe it to the scientific community and to society to produce the best research possible. This includes making our data available, thoughtfully engaging with criticism when it arises, and admitting when mistakes have been made — behaviors that reflect the scientific ideals of verifiability, organized skepticism, and fallibilism. We all make mistakes. The revolution is our attempt to identify these mistakes more quickly, to advance a cumulative science through cooperation and collaboration, and to grow as researchers and as a field. ●



Articles, tutorials, and other resources for enhancing research methods and practices

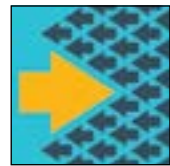
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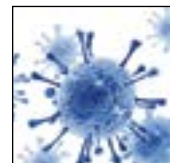
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Tom Beckman, Global Head of Creative, Prime Public Relations, Sweden

Enny Das, Centre for Language Studies Faculty of Arts, Radboud University Nijmegen, The Netherlands

Stephen Fleming, Wellcome Trust Centre for Neuroimaging, University College London, United Kingdom

Susan Michie, Centre for Behaviour Change, University College London, United Kingdom



Our Minds Are Not Our Own: The Role of Guts and Germs

Alyssa N. Crittenden, Department of Anthropology, University of Nevada, Las Vegas, USA

Robert Dantzer, Department of Symptom Research, Division of Internal Medicine, The University of Texas MD Anderson Cancer Center, USA

Jane A. Foster, Department of Psychiatry & Behavioural Neurosciences, McMaster University, Canada

William P. Hanage, Department of Epidemiology, Harvard University, USA

Mats Lekander, Department of Clinical Neuroscience, Karolinska Institutet, Sweden



The Consequences of the Evolution of Language on the Mind

Lera Boroditsky, Department of Cognitive Science, University of California, San Diego, USA

José Morais, Centre for Research in Cognition & Neurosciences, Université Libre de Bruxelles, Belgium

Jennie E. Pyers, Department of Psychology, Wellesley College, USA

Alexandra Rosati, Department of Psychology, University of Michigan, USA



Collective Emotions in Cooperation and Conflict

Emma Cohen, Institute of Cognitive and Evolutionary Anthropology, University of Oxford, United Kingdom

Paolo Gerbaudo, Department of Digital Humanities, King's College London, United Kingdom

Eran Halperin, School of Psychology, Interdisciplinary Center, Israel

Bernard Rimé, Faculté de psychologie et des sciences de l'éducation, Université catholique de Louvain, Belgium

Christian von Scheve, Institute of Sociology, Freie Universität Berlin, Germany

Dan Zahavi, Department of Media, Cognition and Communication, University of Copenhagen, Denmark



Human Culture: What Is It and How Does It Work?

Marcus Feldman, Department of Biology, Stanford University, USA

Miriam N. Haide, Heidelberg Academy of Sciences and Humanities, Germany

Henrike Moll, Department of Psychology, University of Southern California, USA

Dan Sperber, Institut Jean Nicod, France



How Changing Our Bodies Changes Our Selves

Henrik Ehrsson, Department of Neuroscience, Karolinska Institutet, Sweden

Carolyn Mair, Psychology for Fashion, United Kingdom

Melvyn Slater, Department of Clinical Psychology and Psychobiology, Universitat de Barcelona, Spain



From the Heart to the Eye: Interoception and Awareness

Lisa Feldman Barrett, Department of Psychology, Northeastern University, USA

Martin Paulus, Laureate Institute for Brain Research, USA

Catherine Tallon-Baudry, Laboratoire de Neurosciences Cognitives, Ecole Normale Supérieure, France

Manos Tsakiris, Department of Psychology, Royal Holloway, and the Warburg Institute, School of Advanced Study, University of London, United Kingdom



Studying Perception: Is It Worth It?

Ned Block, Department of Philosophy, New York University, USA

John McGann, Department of Psychology, Rutgers, The State University of New Jersey, USA

Yael Niv, Princeton Neuroscience Institute and Department of Psychology, Princeton University, USA

Aude Oliva, Computer Science & Artificial Intelligence, Massachusetts Institute of Technology, USA

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Long Live Psychology! ... and Long-Lived Psychologists

By David G. Myers

Turning 76 years old in a week, and still loving what I do, I find myself inspired by two recent emails. One, from social psychologist Thomas Pettigrew, age 87, responded to my welcoming his latest work by attaching 14 of his recent publications. The second, from C. Nathan DeWall, pointed me to an interesting new article coauthored by developmental psychologist Walter Mischel, age 88 (who, sadly, died just hours before this essay was posted).

That got me thinking about other long-lived people who have found their enduring calling in psychological science. My late friend Charles Brewer, the longtime editor of *Teaching of Psychology* (who once told me he took 2 days a year off: Christmas and Easter), taught at Furman University until he was nearly 82, occupied his office until age 83, and was still authoring into his 80s.

But Charles's longevity was exceeded by that of:

- B. F. Skinner, whom I heard address the American Psychological Association convention in 1990 at age 86, just 8 days before he died of leukemia.
- Carroll Izard, who coauthored three articles in 2017, the year of his death, at age 93.
- Jerome Bruner, who, the year before he died in 2016 at age 100, authored an essay on "The Uneasy Relation of Culture and Mind."

And in earlier times, my historian-of-psychology friend Ludy Benjamin tells me, Wilhelm Wundt taught until 85 and supervised his last doctoral student at 87, and Robert Woodworth lectured at Columbia University until 89 and published his last work at 90.*

So, I then wondered, who of today's *living* psychological scientists, in addition to Pettigrew and Mischel, are still publishing at age 85 and beyond? Daniel Kahneman and Paul Ekman almost qualify, but at 84 are youngsters compared to those below. Here's my preliminary short list — other nominees welcome! — with their most recent PsycINFO publication. (Given the era in which members of their age received PhDs, most are — no surprise — men.)

Philip Zimbardo: Age 85
(born March 23, 1933)

Unger, A., Lyu, H., & Zimbardo, P. G. (2018). How compulsive buying is influenced by time perspective — cross-cultural evidence from Germany, Ukraine, and China. *International Journal of Mental Health and Addiction*, 16, 525–544.

Gordon Bower: Age 85
(born December 30, 1932)

Bower, G. H. (2016). Emotionally colored cognition. In R. J. Sternberg, S. T. Fiske, & D. J. Foss (Eds.), *Scientists making a difference: One hundred eminent behavioral and brain scientists talk about their most important contributions* (pp. 123–127). New York, NY: Cambridge University Press.

James McGaugh: Age 86
(born December 17, 1931)

McGaugh, J. L. (2018). Emotional arousal regulation of memory consolidation. *Current Opinion in Behavioral Sciences*, 19, 55–60.

Lila Gleitman: Age 88
(born December 10, 1931)

Gleitman, L. R., & Trueswell, J. C. (2018). Easy words: Reference resolution in a malevolent referent world. *Topics in Cognitive Science*.

Roger Shepard: Age 89
(born January 30, 1929)

Shepard, R. N. (2016). Just turn it over in your mind. In R. J. Sternberg, S. T. Fiske, & D. J. Foss (Eds.), *Scientists making a difference: One hundred eminent behavioral and brain scientists talk about their most important contributions* (pp. 99–103). New York, NY: Cambridge University Press.

Jerome Kagan: Age 89
(born February 25, 1929)

Kagan, J. (2018). Three unresolved issues in human morality. *Perspectives on Psychological Science*, 13, 346–358.

Albert Bandura: Age 92
(born December 4, 1925)

Bandura, A. (2016). *Moral disengagement: How people do harm and live with themselves*. New York, NY: Worth Publishers.

Aaron Beck: Age 97
(born July 18, 1921)

Kochanski, K. M., Lee-Tauler, S. Y., Brown, G. K., Beck, A., Perera, K. U., Novak, L., ... Ghahramanlou-Holloway, M. (2018). Single versus multiple suicide attempts: A prospective examination of psychiatric factors and wish to die/wish to live index among military and civilian psychiatrically admitted patients. *Journal of Nervous and Mental Disease*, 206, 657–661.

Continued on Page 31 ➡



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Continued from Page 29

Eleanor Maccoby: Age 101

(born May 15, 1917)

Maccoby, E. E. (2015). Historical overview of socialization research and theory. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 3–32). New York, NY: Guilford Press.

And a drum roll for:

Brenda Milner: Age 100

(born July 15, 1918)

Milner, B., & Klein, D. (2016). Loss of recent memory after bilateral hippocampal lesions: Memory and memories — looking back and looking forward. *Journal of Neurology, Neurosurgery & Psychiatry*, 87, 230.

At age 100, she still, I'm told, comes in a couple times a week to the Montreal Neurological Institute, which recently celebrated her centennial (with thanks to Melvin Goodale for the photo at right).

Life is a gift that ends unpredictably. Having already exceeded my at-birth life expectancy, I am grateful for the life I have had. But as one who still loves learning and writing (and can think of nothing else I'd rather do), why not emulate these esteemed colleagues while I continue to be blessed with health, energy, and this enduring sense of calling?

*The “major early women psychologists” — Mary Calkins, Margaret Washburn, Christine Ladd-Franklin, Helen Woolley, Leta Stetter Hollingworth — all died before age 85, reported Benjamin, who added that some other psychological scientists have stayed too long in the profession without knowing “when to hang up their spikes” and make way for fresh faces in the classroom and laboratory.



APS Fellow David Myers is a professor of Psychology at Hope College

This article is adapted from his personal blog. For Myers' other weekly essays on psychological science and everyday life, visit TalkPsych.com. ●



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Département de Psychologie, Université Paris Nanterre, France

Leveraging Learning Principles Online

*How Morton Ann Gernsbacher's Online Classes
Manifest the Cognitive Psychology of Learning*

Marathons push runners to their limits. To prepare, athletes run dozens of miles per week, eat carb-rich diets, and learn to listen to their bodies, spacing out training and recovery days to avoid running themselves into the ground.

Similarly, cognitive psychologists have shown that skill development works best when students engage incrementally and repeatedly with new materials across time. Much like a runner who prepares for a marathon by training just once a week, students who try to pass a class by cramming a week's worth of readings and assignments into a single night, or even a few hours, may fall short of the finish line, says APS Past President Morton Ann Gernsbacher, Sir Frederic C. Bartlett Professor of Psychology at the University of Wisconsin-Madison. That's where Gernsbacher's innovative series of online classes comes in.

"I really wanted to design a course that manifested the notion of distributed learning," Gernsbacher said in an interview. "I wanted assignments to be ones that students had to process deeply."

A 2010 meta-analysis of 50 study effects by the US Department of Education found that online learners performed modestly but consistently better than students in a traditional classroom setting. This boost isn't due to the medium, but rather to online classes' potential to capitalize on established principles of learning, Gernsbacher explained.

In that spirit, Gernsbacher's current online offerings — including "Research Methods" and "Psychological Effects of the Internet" for undergraduate students — are packed with readings, videos, and daily assignments ranging from writing summaries to completing review sheets and creating multimedia term projects. While most college classes meet once or twice a week — making massed study an attractive, and even practical, option, Gernsbacher said — her format encourages students to continuously engage with content multiple times throughout the week.

Students aren't learning in a vacuum, however. According to the Stanford Study of Writing, Internet-native students are far more experienced at writing for the public than previous generations were at the same age. The idea that no one other

than the professor is going to see their work can seem like a wasted opportunity to students who have been blogging and posting on social media since they were young, Gernsbacher said. Showing their work to peers through discussion-board posts and group chats, on the other hand, can push students to perform at a higher level.

"Having that audience is another way that [an online class] really does augment learning," Gernsbacher said. "I think that it raises the bar."

The asynchronous communication style common in online environments does double duty by allowing students to engage with materials and their classmates at each person's optimal time of day, she continued. Many professors may be at an age where they can teach an 8 a.m. power lecture at peak performance, but the data on sleep and aging show that most undergraduate students' brains don't hit their strides until later in the day, making early classes a struggle for night owls.

This flexibility also makes it easier for nontraditional students, including those with caretaking responsibilities, returning adults, and working students, to balance classes with their increasingly demanding schedules, Gernsbacher said. When she designed her first online course more than 16 years ago, the idea was to make psychological science classes more accessible to students in remote locations — not those living in apartments half a mile from campus. But the demand was quickly made evident.

"The more I taught online, the more it became clear that those were the students who really wanted to take advantage of that type of learning," Gernsbacher said.

Gernsbacher likened designing an online course to writing a textbook, although her students aren't expected to buy any: Outlining weekly units and amassing open-access resources for a semester-long course takes a lot of time and organization, but it's a very front-loaded process, she explained. Instead of planning as she goes along, Gernsbacher said she likes to have everything laid out ahead of time, with room for adjustments throughout the semester. This way, students, who are required to review the course content before registering for the course know exactly what they're getting into.

By **Kim Armstrong** APS staff writer

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Continued from Page 33

"It's a deal, it's a contract that I'm making with the student. 'This is what I'm going to offer you, and you need to make sure that you're okay to take this type of course,'" she said.

Despite their potential to deepen learning, promote critical thinking, and enhance writing skills, online courses aren't for everyone, Gernsbacher recognizes. Some students may need the structure of sitting in a lecture hall twice a week to keep them focused, or may even prefer preparing for a set of make-or-break exams instead of completing a large number of smaller assignments.

"It's not the case that I think every class should be online [or] every student should be online. Not by any stretch of the imagination," she explained. For certain students and certain professors, though, online classes can offer a distinct

advantage, Gernsbacher said. It all depends on how they're looking to run the marathon. ●

For more on Gernsbacher's approach to online learning, see her October 2016 Observer article, "Five Tips for Improving Online Discussion Boards," at bit.ly/2PXUTm6.

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Teaching Current Directions in Psychological Science

Edited by C. Nathan DeWall and David G. Myers

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

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

Visit David G. Myers at his blog "Talk Psych" (www.talkpsych.com). Similar to the APS *Observer* column, the mission of his blog is to provide weekly updates on psychological science. Myers and DeWall also coauthor a suite of introductory psychology textbooks, including *Psychology* (12th Ed.), *Exploring Psychology* (10th Ed.), and *Psychology in Everyday Life* (4th Ed.).

When More Isn't Better: The Costs of Extreme Personalities

By C. Nathan DeWall

Carter, N. T., Miller, J. D., & Widiger, T. A. (2018). **Extreme personalities at work and in life.** *Current Directions in Psychological Science*. Advance online publication. doi:10.1177/0963721418793134

Extreme personalities rivet our attention. People are talkative or timid, friendly or ferocious, dependable or dodgy, tense or tepid, and open to new experiences or opting for the status quo. Yet it remains unclear whether extreme personality traits help or hinder your work and life. According to Nathan Carter, Joshua Miller, and Thomas Widiger (2018), moderation helps.

The authors argue that common approaches to the study of personality assume that extremely high levels of a trait indicate that it is adaptive. But sometimes extremity is counterproductive. Agreeable people are often helpful, whereas

disagreeable people often experience ostracism (Hales, Williams, Kassner, & Graziano, 2016). Taken to extremes, however, agreeable people can be so nice that they suffer in silence or avoid having productive arguments.

Why does personality research ignore the potential downsides of extremely high levels of personality traits? Carter and colleagues pinpoint two reasons. First, researchers often sum participants' scores rather than using item response theory (IRT) — an advanced technique that identifies *ideal points* in scoring to let researchers know whether participants' responses are above or below what one might expect from someone answering the question. Second, personality psychologists simply haven't yet theorized about the benefits and costs of extremely high levels of personality traits.

To bring this cutting-edge research into the classroom, instructors can ask students to complete one or two personality questionnaires. The activities might work well when teaching trait theory to Introduction to Psychology or Personality Psychology courses. These activities will also show students how to score personality questionnaires — a useful skill that will pay off if they take more advanced psychology courses.

For each activity, show students the following instructions (from Soto & John, 2017):

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement (1 = Disagree strongly; 2 = Disagree a little; 3 = Neutral, no opinion; 4 = Agree a little; 5 = Agree strongly).

Activity #1: Conscientiousness

- Tends to be disorganized.
- Tends to be lazy.
- Is dependable, steady.
- Is systematic, likes to keep things in order.
- Has difficulty getting started on tasks.
- Can be somewhat careless.
- Keeps things neat and tidy.
- Is efficient, gets things done.
- Is reliable, can always be counted on.
- Leaves a mess, doesn't clean up.
- Is persistent, works until the task is finished.
- Sometimes behaves irresponsibly.

After students respond to the conscientiousness questions, have them score their responses. First, they'll need to reverse-score the following questions: 3, 4, 5, 8, 9, 10. For an easy shortcut, students can subtract their responses from the number 6 (e.g., a response of 2 would be reverse-scored to $6 - 2 = 4$). Next, ask students to average all of their responses to compute their overall conscientiousness score (responses / 12). Finally, share with students the average student conscientiousness score (3.44; men: 3.34, women: 3.54).

With a partner, students can discuss their conscientiousness scores. Were they higher, lower, or about the same as the average student score? How might extremely high levels of conscientiousness cause people problems in their work lives or personal relationships? What about how extremely low levels of conscientiousness might predict difficulties at work and at home? In what work and personal situations might moderate amounts of conscientiousness pay off?

Instructors can then review Carter and colleagues' arguments regarding the potential downsides of extremely high and low levels of agreeableness. At extremely high levels of conscientiousness, people can become preoccupied with orderliness and making sure that they have complete control over their minds and social environments (Lynam & Widiger, 2001). Highly conscientious people can also struggle when they receive negative job feedback performance (Cianci, Klein, & Seijts, 2010). Extremely low levels of conscientiousness can also plague work and health outcomes, such as failing to meet

deadlines or getting adequate exercise (Barrick & Mount, 1991; Bogg & Roberts, 2004). Moderate conscientiousness and self-efficacy, however, bode well for school performance and emotional well-being (Carter et al., 2016; 2018).

Activity #2: Extraversion

- Is outgoing, sociable.
- Has an assertive personality.
- Rarely feels excited or eager.=
- Tends to be quiet.
- Is dominant, acts as a leader.
- Is less active than other people.
- Is sometimes shy, introverted.
- Finds it hard to influence people.
- Is full of energy.
- Is talkative.
- Prefers to have others take charge.
- Shows a lot of enthusiasm.

Similar to Activity #1, ask students to score their responses to the extraversion items. They will need to reverse-score the following questions: 3, 4, 6, 7, 8, 11. Students can use the same reverse-score shortcut by subtracting their responses from the number 6 (e.g., a response of 4 would be reverse-scored to $6 - 4 = 2$). To compute their overall extraversion score, students will average their responses (responses / 12). Finally, let students compare their score to an average student's extraversion score (3.25; Men: 3.20, Women: 3.31).

Students can again discuss their scores with a partner and brainstorm the boons and banes of extreme extraversion. Have they known people with extremely high or low extraversion? What benefits and costs did those people experience?

Carter and colleagues (2018) describe several findings that question the upsides of extremely high levels of extraversion. Taken to extremes, gregariousness can border on an obsessive need for attention and sexual promiscuity (Wilt & Revelle, 2017). The fearless dominance/boldness component of extraversion — what might get you into the boardroom or the Oval Office — is also a feature of psychopathy (Lilienfeld et al., 2012; Patrick, Krueger, & Fowles, 2009). At extremely low levels of extraversion, people can struggle with anxiety and depression (Jylhä & Isometsä, 2006; Spinhova, 2014). Who tends to show good sales performance, prosocial behavior at work, and safe behavior? People with moderate levels of extraversion (Grant, 2013; Williamson & Carter, 2016; Yuen et al., 2018).

Extreme personalities make headlines, but that doesn't mean having one will always improve your work and life. Sometimes moderation is the way to go.



APS Fellow **C. Nathan DeWall** is a professor of psychology at the University of Kentucky. His research interests include social acceptance and rejection, self-control, and aggression. DeWall can be contacted at nathan.dewall@uky.edu.

The Gaps Among Us: Understanding and Assessing Inequality

By David G. Myers

Arsenio, W. F. (2018). The wealth of nations: International judgments regarding actual and ideal resource distributions. *Current Directions in Psychological Science*, 27, 357–362.

Consider three facts about today's income inequality:

Inequality has sharply increased. The rising economic tide is lifting the yachts faster than the dinghies — especially in India, China, Russia, and the United States (see Figure 1; World Inequality Lab, 2018).

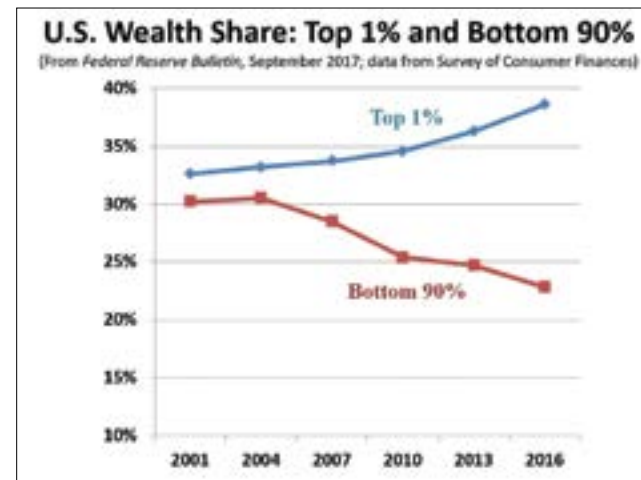


Figure 1.

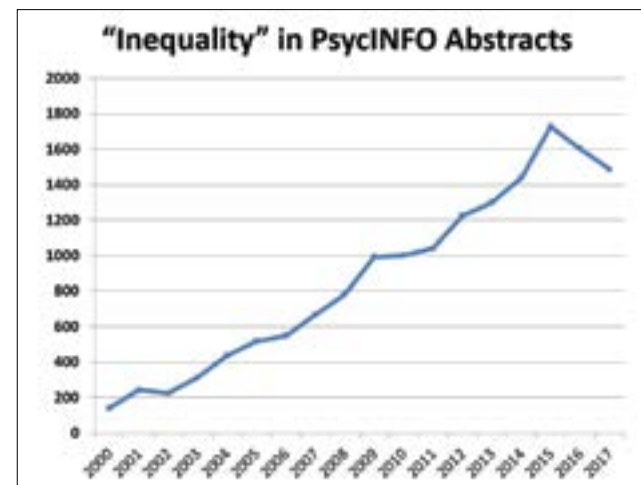


Figure 2.



APS Fellow **David G. Myers** is a professor of psychology at Hope College. His scientific writing has appeared in three dozen academic periodicals, and he has authored or coauthored 17 books, including *Psychology* (11th ed.), *Exploring Psychology* (9th ed.), and *Social Psychology* (12th ed.). Myers can be contacted via his website at www.davidmyers.org.

In response, *psychological scientists are now studying the accompaniments and public understandings of inequality* (see Figure 2). One of their findings:

Unequal places tend to be unhappy places. Countries and states with greater inequality tend also to have more unhealthiness, social problems, dissatisfaction with life, and mental disorders (Burkhauser, De Neve, & Powdthavee, 2016; Payne, 2017; Wilkinson & Pickett, 2017a,b). Where there is less inequality, humans more often flourish.

As a standout example of the new inequality research, consider surveys by Michael Norton, William Arsenio, and others of how much inequality people *perceive* and how much inequality they would ideally *prefer*.

The survey questions asked of adults and adolescents in the United States and elsewhere could be simplified for your students:

“Make a guess: In your country, what percent of the wealth is owned by the top 20%?”

“Ideally, what percent of the wealth *should* be owned by the top 20%?”

Arsenio (2018; and Norton & Ariely, 2011) report that, across variations in question wording, people recognize that inequality exists. In the United States, for example, adolescents have estimated that the top 20% own 48% of the wealth, while adults have guessed 59%. But both greatly underestimate the actual wealth inequality (with 84% owned by the top 20% and 0.1% by the bottom 20% — an 840:1 disparity that is 42 times greater than adults guessed).

A second finding, notes Arsenio, is that (my italics) “*people prefer a more egalitarian wealth distribution than the one they believe exists.*”

Moreover — and more surprisingly — Republicans (or “conservatives”) and Democrats (or “liberals”) offer similar estimates of actual and ideal wealth distributions. Across political persuasions, most Americans favor the richest 20% owning about 30% to 40% of the wealth — which is much closer to the reality in Sweden than in the United States. Worldwide, people also would prefer much smaller pay gaps between corporate CEOs and their workers. As Sorapop Kiatpongsan and Norton (2014) summarize, “People all over the world and from all walks of life would prefer smaller pay gaps between the rich and poor.”

Are these findings true for your students as well? Do they, too, underestimate wealth inequality? And do they — whether describing themselves as more Republican/conservative or as more Democrat/liberal — prefer a more egalitarian wealth distribution than what they think exists (much less than what actually exists)?

A final note: Might teaching about the realities and perceptions of inequality expose us teachers to accusations of “liberal bias”? If so, there are two possible responses:

The psychology of inequality does not dictate economic policy.

One could argue, as do progressives, that income redistribution, an increased minimum wage, and inequality-reducing tax policies would entail psychological and social benefits. (Think Sweden.)

Or one could argue, as do conservatives, that inequality is inevitable (attributable to variations in competence and effort), and that free-market incentives that inspire some to attain wealth also promote innovation and economic growth.

Students could also be encouraged to ponder: What extent of inequality would optimally enable both human flourishing and economic growth? And how might society balance the benefits of free-market incentives with exacerbating the social costs of inequality?

Beyond this lesson, psychology's data sometimes support liberal thinking (about, say, the realities of sexual orientation or the pervasiveness of prejudice) *and sometimes support conservative thinking* (about, say, the benefits of marriage and coparenting or the effects of teen exposure to pornography). As a science, psychology aims not to advance liberal or conservative thinking per se, but to let evidence inform our thinking. And for us teachers of psychology that, no matter our political identities, is perhaps the biggest lesson of all. ●

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QUOTE OF NOTE

“We're putting more and more technology in the car that just does not mix with driving. We're expecting to see more problems associated with distracted driving as more stuff is at the fingertips of the driver to distract them.”

-APS Fellow **David Strayer**, University of Utah, on a study he led for the AAA Foundation for Traffic Safety showing that vehicle infotainment features take drivers' attention off the road for too long to be safe.

Getting Involved On and Off Campus

By *Iiona D. Scully*

For many people, the first few years of graduate school are pretty much alike: spending hours reading journal articles, taking classes, formulating research questions, doing the research, and writing papers. Aside from the occasional required self-care (e.g., sleeping, eating, bathing), graduate school becomes all about the academics. Sure, during first-year orientation I learned about the events I could be attending, the graduate student government, and the community, but those concerns were easy to ignore while I focused intently on research. At the time, I didn't understand the *importance* of the idea that, even in graduate school, it was important to have and maintain a work-life balance.

My involvement started small; I began as a Campus Representative for the APS Student Caucus (APSSC). Soon after, I gained experience in other leadership positions (e.g., Representative to the Graduate Committee) at the departmental and college levels. At first glance, these experiences seemed only to increase my workload. Eventually, however, they also made graduate school more enjoyable. I had more people to talk to and a variety of things to occupy my mind. In my fourth and fifth years I raised the bar by joining the Lehigh Graduate Student Senate and becoming the Membership and Volunteers officer for APSSC. So why did I do it? Why is it important to get involved outside of academia as a graduate student?

Networking

One of the more obvious benefits of getting involved in organizations and positions outside of your research is the opportunity to network. Joining organizations such as APS can help you connect with other professional psychological scientists as well as with other students in fields adjacent to yours. Student government also offers excellent networking opportunities: You get to work with other graduate students, faculty, and university leadership across your campus. This gives you opportunities to learn about other fields and create connections for future job or internship opportunities.

Working as a Team

Depending on the size of your research lab, you may not get the chance to work as part of a team. Collaborating in

Iiona D. Scully is the 2018–2019 Membership and Volunteers Officer for the APS Student Caucus. She is a fifth-year doctoral candidate in the Psychology program at Lehigh University, where her research examines the dynamic nature of human memory, focusing on mechanisms of long-term memory change.

student government or another organization helps you to think differently. Solving a problem from a team-based perspective requires unique skills. Experience in group projects is an essential skill for many jobs, especially those outside of academia.

People Skills

Getting involved in student government or other leadership positions is essential for developing better communication and interactive skills. You will have the chance to practice talking about your work more broadly and develop ways to communicate with new people.

Honing Strengths You Already Have

Getting involved in extracurricular activities can help you better the skills you will need during and after graduate school. Time management is among the most important. If you do not come up with a system to manage your time effectively, it will be almost impossible to truly get involved with experiences outside of your academic studies. I use reminders on my phone to keep me on track. Other strategies may include setting aside a certain amount of time for a task or working in groups to ensure accountability. Additionally, being a student leader helps with organization skills, as you often need to switch gears between graduate school and leadership activities.

Experience With Diversity

Joining an organization or club gives you many opportunities to engage with diverse groups of people. Interacting with such groups helps to broaden your knowledge and understanding of others and allows you to foster new ideas and perspectives. It gives you experiences that you may otherwise overlook. Take the chance to learn about and celebrate diversity.

A Chance to Make a Difference

One of the greatest rewards of getting involved with activities outside of your graduate studies is the ability to make a difference in your community. In student government, you will get the chance to plan events and create spaces for creative thinking and networking. You can be a force of change for your graduate student community by helping to advocate for and protect your constituency, improving graduate student life and policies affecting graduate students.

I also recommend being active at the national or international level. Joining organizations such as APS can foster relationships

between other students and the organization. You can help create opportunities, such as new funding sources, for students. In addition, it is useful to get involved with organizations such as the National Association of Graduate and Professional Students, which effects changes for graduate students at the national level. This organization fosters communication between graduate students and their congressional representatives and senators. It is also engaged in legislation that affects graduate students.

Have Some Fun!

Undertaking projects outside of your graduate studies is fun! Not only do you make new friends, but you get the chance to relax. Give yourself something to do to get away from research/teaching/practicums. Help plan events, but also attend those events. Get involved in a group that allows you to travel. Get involved with something that really matters to you. You'll enjoy your graduate school years more and have a better quality of life.

How Can You Get Involved?

The Association for Psychological Science Student Caucus

- Run for an Executive Board position (bit.ly/2OuVKKR)

- Become a Campus Representative (bit.ly/2CnLnBs)
- Review grant and award submissions (bit.ly/2PGctaM)
- Become a mentor for an undergraduate student through the Mentorship Program (bit.ly/2yp5qMY)
- Write an article for the *Observer* (bit.ly/2QUPzNe)

Other Ways to Get Involved

- Get involved in your student government
- Join a university, college, or department committee
- Join a community service organization
- Join or create a graduate student club
- Join another organization that offers services and leadership opportunities to graduate students. For example:
 1. The American Psychological Association of Graduate Students
 2. The National Association for Graduate and Professional Students
 3. The National Association of School Psychologists
 4. The National Education Association
 5. The Association of Women in Science
 6. The Association for Support of Graduate Students
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Jude Buckley, University of Auckland, New Zealand, *The Washington Post*, September 21, 2018: You Really, Really Want to Go to the Gym but Still Avoid it. New Research May Explain Why.

 **Laura Carstensen**, Stanford University, *The Washington Post*, November 1, 2018: Why We Often Remember the Bad Better Than the Good.

Studying the After Effects of Depression



Psychological scientists often focus on patients in the midst of depression, but what is life like after receiving treatment? In a paper published in *Perspectives on Psychological Science*, **Jonathan Rottenberg** and colleagues suggest that researchers study a chronically overlooked demographic — those who have overcome depression.

The New York Times


October 22, 2018


Wen-Bin Chiou, Sun Yat-sen University, China, *Scientific American*, October 16, 2018: Visualizing Specific Impacts of Climate Change Could Change Behavior.

 **Margaret S. Clark**, Yale University, *Scientific American*, October 17, 2018: Most Initial Conversations Go Better Than People Think.

Paul Costa, Duke University, *Scientific American*, October 10, 2018: How Accurate Are Personality Tests?

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 **Andrew Devendorf**, University of South Florida, *The New York Times*, October 22, 2018: What's Life Like After Depression? Surprisingly, Little Is Known.

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 **Jonathan Haidt**, New York University, *Scientific American*, October 17, 2018: Can You Quantify Awe?

Julianne Holt-Lunstad, Brigham Young University, *The Atlantic*, October 17, 2018: To Prevent Loneliness, Start in the Classroom.


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Kristina Olson, University of Washington, *The Washington Post*, October 4, 2018: MacArthur 'Genius' Grant Winners Ponder a New Future: 'Your Life Can Change in an Instant.'

James Pennebaker, University of Texas at Austin, *The New York Times*, October 25, 2018: What's All This About Journaling?


Combating Loneliness With Childhood Education



Loneliness begins in childhood and can result in a variety of negative health consequences. APS Fellow **Julianne Holt-Lunstad** calls for an in-school "social education" program — similar to those that promote health or sex education — that could help kids form and maintain friendships.

The Atlantic


October 17, 2018

 **Jonathan Rottenberg**, University of South Florida, *The New York Times*, October 22, 2018: What's Life Like After Depression? Surprisingly, Little Is Known.

Scott Stanley, University of Denver, *The Atlantic*, October 24, 2018: So Is Living Together Before Marriage Linked to Divorce or What?

Kate Sweeny, University of California, Riverside, NPR, November 5, 2018: Can't Stop Worrying? Try Tetris To Ease Your Mind.


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Simine Vazire, University of California, Davis, *Scientific American*, October 10, 2018: How Accurate Are Personality Tests?

 **Mark Whisman**, University of Colorado Boulder, *TIME*, October 1, 2018: A Good Marriage May Help You Live Longer. Here's Why.

Daniel T. Willingham, University of Virginia, *The New York Times*, October 4, 2018: Are You a Visual or an Auditory Learner? It Doesn't Matter.

 **Jia Wei Zhang**, University of Memphis, *Scientific American*, October 17, 2018: Can You Quantify Awe?

Are Teen Aggression and Violent Videogames Linked?



Do violent videogames promote aggressive behavior in teens? A new meta-analysis of 24 studies conducted by **Jay Hull** and colleagues has psychological scientists on both sides of the aisle debating the question — again. While some say the results are statistically insignificant, APS Fellow **Douglas Gentile** says they're worth examining more closely.


Scientific American

October 2, 2018

 **Coverage of research from an APS journal**

 **Podcast included in coverage**

 **Video included in coverage**

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Washington, DC, USA, May 23–26, 2019

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CALIFORNIA

University of California, Santa Barbara Department of Psychological and Brain Sciences Assistant Professor—Affective Science

The Department of Psychological and Brain Sciences at the University of California, Santa Barbara invites applications for a tenure-track faculty position at the level of Assistant Professor, with an anticipated start date of July 1, 2019. The Department is looking for exceptional individuals with particular emphasis in the area of Affective Science. Responsibilities of faculty members generally include teaching at undergraduate and/graduate levels, recruitment, supervision, and mentorship of graduate students, participation in university service and professional activities, and the development of an actively funded research program of the highest quality. Applicants must have completed all requirements for a PhD (or equivalent) except the dissertation at the time of application. The appointed person will be able to establish a strong program of research in areas related to affective science broadly defined as the study of emotions, moods, stress, and temperament. Examples of research areas include, but are not limited to, emotion elicitation, experience, expression and recognition, regulation, development, the functional and cognitive architecture of emotions, neural processes, and implications for health, group processes, interpersonal relationships, decision making and cognition. A demonstrated record of excellence in research, and a record of (or potential for) outstanding teaching are desired. Preferred candidates will have an outstanding record or promise of research accomplishment commensurate to the stage of their career, and a commitment to excellence in teaching and mentoring at the undergraduate and graduate levels. Recent and prospective Ph.D. recipients, post-doctoral researchers, and current Assistant Professors are all encouraged to apply. Successful candidates will have a record of collaborative research, and will be able to leverage synergies within the Department of Psychological and Brain Sciences and Division of Mathematical, Life & Physical Sciences. Applications should be submitted electronically, and must include: Curriculum Vitae, Cover Letter, Statement of Past and Future Research Interests, Statement of Teaching, Up to 3 Publications Representative of Your Work. Applicants will need to arrange for 3 References to submit letters of recommendation on their behalf via the recruitment website. Applications received by NOVEMBER 19, 2018, will be given priority consideration, but the position will remain open until filled. To apply please visit <https://recruit.ap.ucsb.edu/apply/JPF01324>. Questions can be directed to the Affective Science Search Chair, Dr. Heejung Kim via email at: heejung.kim@psych.ucsb.edu. The Department is especially interested in candidates who can contribute to the diversity and excellence of the academic community through research, teaching and service appropriate to the position. The University of California is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic by law.

NEVADA

University of Nevada, Los Angeles

Assistant/Associate Professor, Health Disparities Research Initiative

The University of Nevada, Las Vegas invites applications for Assistant/Associate Professor, Health Disparities Research Initiative, Supervisory Organization UNLV Kinesiology and Nutrition Sciences [R0112274]. UNLV is a doctoral-degree-granting institution of approximately 30,000 students and more than 4,000 faculty and staff that is classified by the Carnegie Foundation for the Advancement of Teaching as a research university with high research activity. UNLV offers a broad range of respected academic programs and is on a path

to join the top tier of national public research universities. The university is committed to recruiting and retaining top students and faculty, educating the region's diversifying population and workforce, driving economic activity through increased research and community partnerships, and creating an academic health center for Southern Nevada that includes the launch of a new UNLV School of Medicine. UNLV is located on a 332-acre main campus and two satellite campuses in Southern Nevada. For more information, visit us on line at: <http://www.unlv.edu>. The successful candidate will demonstrate support for diversity, equity and inclusiveness as well as participate in maintaining a respectful, positive work environment. The UNLV School of Allied Health Sciences is seeking two full-time tenure track faculty at the Assistant or Associate Professor ranks for the Health Disparities Research Initiative. The initiative spans several schools and colleges at the University and is designed to foster interdisciplinary research and collaboration in health disparities research. The faculty members will conduct a program of research related to health disparities. The university-wide health disparities research initiative will increase the impact of research on health disparities at local, state and national levels, and strive to achieve targeted metrics including external federal grant funding for a health disparities research program. The faculty members also will teach and collaborate with other faculty in the university-wide health disparities research program at UNLV. These faculty members will promote health equity by facilitating collaborative research, education, and training opportunities in the biomedical, clinical, behavioral, social science and health policy disciplines addressing racial, ethnic, socioeconomic, gender, sexual gender minorities (SGM), and other disparities in health and healthcare. In particular, we would be interested in hiring faculty who conduct health disparities research related to neurodegenerative diseases, although this is not a requirement for the position that will integrate into existing strengths at UNLV in Las Vegas. Additional areas of interest include chronic diseases that influence overall health and confer risk for other disorders (e.g., diabetes, hypertension, and others), cancer, or infectious diseases that adversely affect disadvantaged populations that include racial and ethnic minorities (African American, Hispanic American, American Indian, Asian American, Native Hawaiian, Pacific Islander, or rural populations). The successful candidate is expected to establish an extramurally funded research program, as well as collaborate on interdisciplinary grant funded research with other investigators throughout UNLV. Successful programs of research might include, but are not limited to, prevention and management, early detection and intervention among minority populations, identification and prevention of specific diseases known to be at high risk for specific minority groups (e.g., prostate and breast cancer among African Americans, stomach cancer among Asian Americans), research on differential access to care, and health policy research. The School of Allied Health Sciences has academic programs in nutrition, exercise, rehabilitation, wellness and kinesiology and thus, faculty who have research interests in these specific areas would be especially welcome. These prospective faculty members will facilitate and conduct university-wide research on health disparities through interdisciplinary research. S/he will disseminate research outcomes in peer reviewed high impact journals and at conferences, seminars, and symposia. The successful candidates will need to have a demonstrated track record or significant potential for securing external grant awards from such agencies as the National Institutes of Health, the Center for Disease Control and Prevention, the National Science Foundation and other federal agencies as well as foundations including the American Cancer Society, the American Heart Association, etc. The successful candidate is expected to: Have earned a PhD, or doctoral degree in the health science or behavioral sciences related fields from a regionally accredited college or university. Possess a strong record or strong potential of a record of external research funding from NIH and other federal funding agencies. Have a strong scholarship and publication record in health disparities research as this research pertains to disease prevention, disease management, healthcare access, or health policy. Have the potential for a national reputation as a health disparities researcher as evidenced by a record of peer reviewed published research and external grant support. A record of utilizing creative leadership and promoting interdisciplinary research collaboration. Although the position is primarily devoted to research, the candidate must demonstrate excellent teaching skills. Salary competitive with those at similarly situated institutions. Position is contingent upon funding. Submit a letter of interest, a detailed resume listing qualifications and experience, and the names, addresses, and telephone numbers of at least three professional references who may be contacted. Applicants should fully describe their qualifications and experience, with specific reference to each of the minimum and preferred qualifications because this is the information on which the initial review of materials will be based. Although this position will remain open until filled, review of candidates' materials will begin immediately. Materials should be addressed to Dr. Janet Dufek, Search Committee Chair, and are to be submitted via on-line application at <https://hrsearch.unlv.edu/>. For assistance with UNLV's on-line applicant portal, contact UNLV Employment Services at (702) 895-3504 or applicant.inquiry@unlv.edu. UNLV employees or employees within the Nevada System of Higher Education (NSHE) MUST use the "Find Jobs" process within Workday to find and apply for jobs at UNLV and other NSHE Institutions. Once you log into Workday, type "Find Jobs" in the search box which will navigate to the internal job posting site. Locate this specific job posting by typing the requisition number, "R0112274" in the search box. If you complete an application outside of the internal application process, your application will be returned and you will have to reapply as an internal applicant which may delay your application. UNLV is an Equal Opportunity / Affirmative Action educator and employer committed to achieving excellence through diversity. All qualified applicants will receive consideration for employment without regard to, among other things, race, color, religion, sex, age, creed, national origin, veteran status, physical or mental disability, sexual orientation, genetic information, gender identity, gender expression, or any other factor protected by anti-discrimination laws. The University of Nevada, Las Vegas employs only United States citizens and non-citizens lawfully authorized to work in the United States. Women, under-represented groups, individuals with disabilities, and veterans are encouraged to apply.

NEW YORK

Utica College

Assistant Professor of Psychology

The Department of Psychology at Utica College invites applications for two tenure-track positions in Psychology beginning August, 1 2019. One position is in Clinical/Counseling Psychology and one position is in Developmental Psychology. A Ph.D. or Psy.D. in Clinical/Counseling Psychology is preferred to teach clinical courses. A Ph.D. in Developmental Psychology is preferred to teach developmental courses. The ideal candidates would be able to teach psychological assessment and testing and clinical practicum in psychology courses as well as introductory, developmental, and abnormal psychology courses. Founded in 1946, Utica College is a private comprehensive institution distinguished for its integration of liberal and professional study. Our dedicated faculty and staff have built a tradition of excellence in teaching and learning with particular emphasis on providing individual attention to students. The College enrolls approximately

3,700 students - approximately 2,700 undergraduates and 1,000 graduate students. Utica College is located in upstate New York near the foothills of the Adirondacks offering easy access to a broad variety of recreational and cultural attractions. A city of approximately 60,000, Utica is located at the foothills of the Adirondack Mountains in the Mohawk Valley region of upstate New York. The area offers easy access to a broad variety of cultural attractions, including the historic Stanley Performing Arts Center and renowned Munson Williams Proctor Arts Institute, as well as four-season recreation. In deciding whether to apply for a position at Utica College, candidates are strongly encouraged to consider the UC mission and culture to help determine their potential success at <http://www.utica.edu/instdavance/marketingcomm/about/>. Our Mission and Values Statement includes a commitment to fostering diversity in background, perspective, and experience within an environment that is dedicated to the freedom of expression and the open sharing of ideas. At UC, diversity means that we are a community that represents a range of human experience and makes conscious choices to appreciate, respect, and learn from each other. Utica College actively seeks and welcomes applications from candidates with exceptional qualifications, particularly those with demonstrable commitments to a more inclusive society. To apply, submit a letter of application, CV, research statement, statement of teaching philosophy, and three references. Candidates are asked to submit an additional reflective statement about teaching in the required applicant document titled "diversity statement". Since Utica College strives to be a diverse and inclusive community, it is essential that you include in this statement a reflection on the kinds of experiences you have had, and the kinds of approaches you would take, teaching and working with a diverse student body. (For the definition of diversity that we use at Utica College, please see the following web page: <http://www.utica.edu/instdavance/marketingcomm/about/diversity/aboutus.cfm>.) In line with the College's Affirmative Action Policy, there is no requirement or expectation that a candidate disclose their identity or membership in any protected class or group, either in the diversity statement or in other application documents submitted to the search committee. For additional information on what to provide in your diversity statement please reference the diversity statement guide at the following link: https://www.utica.edu/hr/media/Diversity_Statement_Guide.pdf. Applications that do not address diversity will be considered incomplete. All application materials must be submitted online at the following link: <http://uc.peopleadmin.com/postings/2231>. Active consideration of candidates will begin on January 15, 2018. References will be solicited to submit letters for candidates upon application. Utica College is an affirmative action/equal opportunity employer. We encourage applications from under-represented groups, including disabled and veterans as well as individuals who have experience with diverse populations.



APS WIKIPEDIA INITIATIVE

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

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

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ANNOUNCEMENTS

Send items to apsobserver@psychologicalscience.org

GRANTS

NIH Funding for High-Priority Behavioral and Social Research Networks

The National Institute on Aging (NIA) has released two new funding announcements encouraging submission of proposals to develop research networks dedicated to behavioral research connected to aging, Alzheimer's disease, and Alzheimer's disease related dementias. Applications are limited to scientists wishing to develop networks in high-priority areas including midlife reversibility of biobehavioral risk associated with early life adversity, stress measurement, reproducibility in the social and behavioral sciences, life course health disparities at older ages, genomics and social sciences, integrating animal models to inform behavioral research on aging, rural aging, Alzheimer's disease care and services research, and coordination of international studies conducting the harmonized cognitive assessment protocol.

Successful applicants will receive up to 5 years of funding and a budget of up to \$250,000 per year. Interested applicants should submit a letter of intent by January 1, 2019 and applications are due by February 1, 2019.

NSF Funding For Integrative Research on Behavioral Science and Cybersecurity

The National Science Foundation (NSF) is soliciting proposal submissions for the Secure and Trustworthy Cyberspace (SaTC) program, which addresses security and privacy challenges through integrative research, seeking new methods for designing and operating cyber systems, protecting current systems, and educating the public about cybersecurity.

SaTC will fund investigators via the Early-Concept Grants for Exploratory Research (EAGER) award, which grants recipients with up to \$300,000 for 2 years. Current scientific and practical applications of cybersecurity involve behavioral science elements, so EAGER proposals require collaboration between principal investigators in the fields supported by the NSF Social, Behavioral, and Economic Sciences (SBE) directorate, such as psychological scientists, and investigators conducting work related to NSF's Computer and Information Science and Engineering (CISE) directorate.

NSF will fund up to 10 EAGER awards to researchers doing CISE or SBE-type work who have not previously received a SaTC award. The proposed topic must be interdisciplinary, in early stages of exploration, and new to the SaTC program. Suggested topics, which include themes in behavioral science and usability and human interaction, can be found in a recent SaTC program solicitation (NSF 18-572), but other relevant topics are welcomed by NSF.

Prior to submitting a proposal, scientists are asked to send an email and one-page summary of the project to the program

directors, who will review the described research and inform applicants if they are encouraged to apply. Approved proposals should describe the contributions of the SBE and CISE disciplines to the topic and the intellectual benefits of the research for the SaTC community. Ideal proposals will support untested but transformative new approaches, applications of expertise, or use of novel integrative perspectives.

Proposals are due December 12, 2018. For details and instructions for submissions, visit bit.ly/2Iwnc4H.

Russell Sage Foundation 2019 Summer Institutes

The Russell Sage Foundation is sponsoring summer institutes in biological approaches to social sciences, social-science genomics, and computational social science. The institutes are targeted at advanced PhD students and early career faculty/researchers. Most participant costs, including housing, meals, and travel will be covered. The three institutes include the Summer Institute in Biological Approaches to the Social Sciences (Application Deadline: January 15, 2019), the Summer Institute in Social Science Genomics (Application Deadline: February 11, 2019), and the Summer Institute in Computational Social Science (Application Deadline: February 20, 2019). For more information, visit www.russellsage.org/summer-institutes. For questions, contact Chris Bail at rsfcompsocsci@gmail.com.

MEETINGS

41st Annual National Institute on the Teaching of Psychology

January 3–6, 2019
St. Pete Beach, Florida, USA
nitop.org

3rd International Convention of Psychological Science

7–9 March 2019
Paris, France
icps2019.org

31st APS Annual Convention

May 23–26, 2019
Washington, DC
psychologicalscience.org/convention

13th Biennial SARMAC Meeting

June 6–9, 2019
Brewster, Cape Cod, Massachusetts, USA
www.sarmac.org

Conference on Children and Youth 2019

July 4–5, 2019
Columbo, Sri Lanka
youthstudies.co

HOW TO MAKE THE MOST OF MEETINGS

Ask people to imagine the life of a researcher and they might picture a scientist running an experiment, examining data, or even teaching. They probably don't imagine the researcher sitting through back-to-back meetings – and yet academic life seems to revolve around them, from advisory meetings to lab check-ins, from standing committees to university-wide town halls. A large body of research suggests that most meetings are inefficient, despite the huge amount of time and resources devoted to them, and employees who suffer through bad meetings often report low motivation and morale.

“Meetings are generally bad, but meeting science shows us there are concrete ways we can improve them,” says psychological scientist Joseph A. Allen of the University of Nebraska Omaha. “Leaders can be more organized, start on time, and encourage a safe sharing environment. Attendees can come prepared, be on time, and participate.”

In a new report, Allen, University of Nebraska Omaha researcher Joseph E. Mroz, and Clemson University researchers Dana C. Verhoeven and Marissa E. Shuffler synthesize findings from almost 200 scientific studies, providing recommendations for making the most out of meetings before they start, as they're happening, and after they've concluded.

Before the Meeting

- **Assess current needs:** Meetings should involve problem solving, decision making, or substantive discussion. They should not be held to share routine or non-urgent information.
- **Circulate an agenda:** Having an agenda makes the meeting priorities clear to all stakeholders and allows attendees to prepare beforehand.
- **Invite the right people:** Leaders should ask what the goal of the meeting is and whose expertise can help the team get there.

During the Meeting

- **Encourage contribution:** Findings suggest that high-level performers use meetings to set goals, facilitate group understanding of work problems, and seek feedback.
- **Make space for humor:** Humor and laughter can stimulate positive meeting behaviors, encouraging participation and creative problem solving, research shows. These positive meeting behaviors predict team performance concurrently and two years later.
- **Redirect complaining:** Attendees should be aware that complaining can quickly lead to feelings of futility and hopelessness, and leaders should quell complaining as quickly as they can.
- **Keep discussions focused:** Leaders also make sure the purpose of the meeting and the agenda are followed. Leaders should be ready to identify dysfunctional behaviors and intervene to refocus the meeting.

After the Meeting

- **Share minutes:** Sending meeting minutes serves as a record of the decisions that were made, a plan of action for next steps, and an outline of designated roles and responsibilities. This step also loops in people who weren't able to attend the meeting but need the information.
- **Seek feedback:** Feedback can inform the structure and content of future meetings. In particular, leaders can identify meeting problems to increase attendee satisfaction.
- **Look ahead:** To build on progress made during the meeting, stakeholders should think about future actions, follow-through, and immediate and long-term outcomes of the meeting.

Reference

Mroz, J.E., Allen, J.A., Verhoeven, D.C., & Shuffler, M.L. (2018). Do we really need another meeting? The science of workplace meetings. *Current Directions in Psychological Science*. DOI: 10.1177/0963721418776307

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