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Stanislas Dehaene  
College de France and INSERM-CEA  
Cognitive Neuroimaging Unit, France

**How Brains Think: The Embodiment Hypothesis**

George Lakoff  
Departments of Linguistics and Cognitive Science, University of California, Berkeley, USA

**Young Children’s Self-Control and the Health and Wealth of Their Nation**

Terrie E. Moffitt  
Institute for Genome Sciences & Policy, Duke University, USA

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CYNTHIA GARCÍA COLL, Carlos Albizu Universidad – San Juan, PR, USA
JÜRGEN SCHUPP, German Institute for Economic Research, DIW Berlin, Germany
ELDAR SHAFIR, Princeton University, USA
DAVID HALPERN (Discussant), Director, Behavioural Insights Team, Cabinet Office, United Kingdom

THE INTERGENERATIONAL TRANSMISSION OF PSYCHOPATHOLOGY
JAY BELSKY, University of California, Davis, USA
DEBORAH M. CAPALDI, Oregon Social Learning Center, USA
MICHAEL E. LAMB, University of Cambridge, United Kingdom
MICHAEL J. MEANEY, Douglas Mental Health University Institute and McGill University, Canada
MARINUS H. VAN IJZENDOORN, Leiden University and Erasmus University Rotterdam, The Netherlands

LIFESPAN DEVELOPMENT OF EXECUTIVE CONTROL
EVELINE CRONE, Leiden University, The Netherlands
JUTTA KRAY, Saarland University, Germany
YUKO MUNAKATA, University of Colorado Boulder, USA
PHILIP D. ZELAZO, University of Minnesota, USA
ANNETTE D. KARMILOFF-SMITH (Discussant), Birkbeck, University of London, United Kingdom

MAKING SENSE: SOCIETY, CULTURE, AND MEANING SYSTEMS
GÜN R. SEMIN (Chair and Discussant), Faculty of Psychology, ISPA – Instituto Universitário, Portugal; Koç University, Turkey; and Utrecht University, The Netherlands
BENJAMIN K. BERGEN, University of California, San Diego, USA
HANNE DE JAEGHER, University of the Basque Country, San Sebastián, Spain; and University of Sussex, Brighton, United Kingdom
ELINOR OCHS, University of California, Los Angeles, USA
SHIHUI HAN, Peking University, China

UNDERSTANDING AND TRAINING ATTENTION AND THE CONSCIOUS MIND
NILLI LAVIE, University College London, United Kingdom
AXEL N. CLEEREMANS, Université Libre de Bruxelles, Belgium
JONATHAN W. SCHOOLER, University of California, Santa Barbara, USA
YI-YUAN TANG, Texas Tech University, USA
TANIA SINGER, Max Planck Institute, Germany

INTENSIVE LONGITUDINAL DATA AND DYNAMICAL SYSTEMS
NIAL P. BOLGER, Columbia University, USA
DENNY BORSBOOM, University of Amsterdam, The Netherlands
ULRICH W. EBNER-PRIEMER, Karlsruhe Institute of Technology, Germany
MARIEKE WICHERS, University of Groningen, The Netherlands

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HARRY T. REIS (Discussant), University of Rochester, USA

RELIGION PAST AND PRESENT: EVOLUTIONARY ORIGINS AND CONTEMPORARY FUNCTIONS OF SPIRITUALITY
PASCAL R. BOYER, Washington University St. Louis, USA
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VASSILIS SAROGLOU, Université catholique de Louvain, Belgium
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NON-VERBAL COMMUNICATION
BEATRICE DE GELDER, Maastricht University, The Netherlands
DAVID A. PUTS, The Pennsylvania State University, USA
JESSICA L. TRACY, University of British Columbia, Canada
KLAUS R. SCHERER (Speaker and Discussant), University of Geneva, Switzerland

ASSESSING PSYCHOLOGICAL CHANGE
JAN DE HOUWER, Ghent University, Belgium
CYNTHIA FU, University of East London, United Kingdom
WOLFGANG LUTZ, University of Trier, Germany
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Faith or Fear?
Scientists Study How the Threat of Divine Wrath Shapes Human Behavior

Researchers in psychology and anthropology have discovered heightened patterns of honesty and civility among people who view their gods as more punitive than forgiving. This integrative research is generating new insights into religion’s influence on mores and behaviors, both at the individual and societal levels.

25 Years of Psychological Science
Birthplace of a Journal

The first issues of APS’s flagship journal were edited at a fitting location — the historic Cambridge, Massachusetts, home of the father of American psychology, William James.

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In her 7 years as the journal’s editor, APS James McKeen Cattell Fellow Elaine F. Walker expanded its exposure both within the psychological community and in the larger sphere of public policymakers and the general public.

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Teaching Current Directions in Psychological Science

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Juvenile Justice for Some

I have known Sandra Graham’s work nearly my entire career, for years before I met her. She is a leader among developmental scientists studying aggression, educational outcomes, social cognition, and issues related to the role of ethnicity/race in diverse development processes and outcomes. In this column, Graham shares some of her personal thoughts and insights as a psychological scientist regarding the recent killings of unarmed Black adolescent males.

-Nancy Eisenberg

Rayvon Martin, 17, as he walked home after buying snacks at a local convenience store; Michael Brown, 18, after an altercation with a police officer in a patrol car; and Tamir Rice, 12, as he waved a toy gun in a park 100 yards from home. The American public has been riveted by the lethal shootings of these unarmed Black youth — Rayvon at the hands of a private citizen “standing his ground,” Michael and Tamir at the hands of trained police officers.

As an African American mother of two young adult sons, I feel the pain of the mothers of these three slain boys. I also shudder at the thought that it could have been one of my own sons — good kids, maybe a bit reckless at times in their teen years, but never a danger to anyone and never armed. These killings of unarmed Black male youth seem so random but recurring, in good neighborhoods as well as bad; it could happen to anyone’s Black male child.

As a developmental psychologist, I am compelled to turn to our science — two literatures in particular — to help me make sense of these horrific events. One literature is at odds with the treatment of Black youth like Rayvon, Michael, and Tamir, and the other tells me why that might be so.

The Adolescent Brain

The last 2 decades of research on adolescent psychosocial and brain development have helped to reconceptualize adolescence as a period of increased vulnerability (Steinberg, 2014; Casey, 2013). The science of adolescent development documents that youth between the ages of 10 and 20 are biologically and psychosocially less mature than adults. Stimulated by the hormonal change of puberty, their brains are undergoing a period of great plasticity in which the socioemotional system that controls emotions and sensitivity to rewards is developing more rapidly than (or “hijacking”) the cognitive control system that regulates planning, thinking ahead, and self-control. These asynchronously developing brain systems in part account for why many adolescents are risky decision makers, impulsive, quite susceptible to peer influence, and not very future oriented. Individual differences aside, the general consensus is that adolescence is a period of life characterized by vulnerability, malleability, and immaturity in judgment.

The new science of adolescent development is having a profound impact on perceptions of adolescent criminal culpability, which moves us closer to the contexts in which Rayvon, Michael, and Tamir lost their lives. If adolescents are biologically less mature than adults, then they should not be held to the same standards of culpability as adults who commit similar crimes. Three transformative Supreme Court decisions of the past decade have drawn explicitly on this science: Roper v. Simmons in 2005 outlawed the juvenile death penalty, Graham v. Florida in 2010 banned life sentences for juveniles convicted of crimes other than homicide, and Miller v. Alabama in 2012 struck down the use of mandatory life sentences without possibility of parole for juveniles convicted of murder. Even recent reforms of the juvenile justice system have taken a developmental approach less mature than adults. Stimulated by the hormonal change of puberty, their brains are undergoing a period of great plasticity in which the socioemotional system that controls emotions and sensitivity to rewards is developing more rapidly than (or “hijacking”) the cognitive control system that regulates planning, thinking ahead, and self-control. These asynchronously developing brain systems in part account for why many adolescents are risky decision makers, impulsive, quite susceptible to peer influence, and not very future oriented. Individual differences aside, the general consensus is that adolescence is a period of life characterized by vulnerability, malleability, and immaturity in judgment.

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Sandra Graham is an APS Board Member and a professor in the Human Development and Psychology Program in the Department of Education at the University of California, Los Angeles. Graham’s major research interests include the study of academic motivation and social development (including peer victimization and aggression) in children of color, with a special emphasis on development in school contexts that vary in racial/ethnic diversity.
Echolocation Helps Visually Impaired

Human echolocation operates as a viable “sense,” working in tandem with other senses to deliver information to people with visual impairment, according to new research published in Psychological Science.

Ironically, the proof for the vision-like qualities of echolocation came from blind echolocators wrongly judging how heavy objects of different sizes felt.

The experiment, conducted by psychological scientist Gavin Buckingham of Heriot-Watt University in Scotland and his colleagues at the Brain and Mind Institute at Western University in Canada, demonstrated that echolocators experience a “size–weight illusion” when they use their echolocation to get a sense of how big objects are, in just the same way as sighted people do when using their normal vision.

“Some blind people use echolocation to assess their environment and find their way around,” said Buckingham. “They will either snap their fingers or click their tongue to bounce sound waves off objects, a skill often associated with bats, which use echolocation when flying. However, we don’t yet understand how much echolocation in humans has in common with how a sighted individual would use their vision.”

The researchers had three groups taking part in the experiment: blind echolocators, blind nonecholocators, and control subjects with no visual impairment. All three groups were asked to judge the weight of three cubes that were identical in weight but differed in size.

“The blind group who did not echolocate experienced no illusion, correctly judging the boxes as weighing the same amount as one another because they had no indication of how big each box was,” said Buckingham. “The sighted group, where each member was able to see how big each box was, overwhelmingly succumbed to the ‘size–weight illusion’ and experienced the smaller box as feeling a lot heavier than the largest one.

“We were interested to discover that echolocators, who only experienced the size of the box through echolocation, also experienced this illusion,” Buckingham added. “This showed that echolocation was able to influence their sense of how heavy something felt. This resembles how visual assessment influenced how heavy the boxes felt in the sighted group.”

The findings are consistent with earlier work showing that blind echolocators use “visual” regions of their brain when listening to their own echoes. This new work shows that echolocation is not just a functional tool to help visually impaired individuals navigate their environment, but actually has the potential to be a complete sensory replacement for vision.

LeDoux Recognized by APS for Fear, Anxiety Research

Joseph E. LeDoux, a 2015 recipient of the APS William James Fellow Award, will speak at the 27th APS Annual Convention in New York City, to be held May 21–24, 2015. LeDoux will speak about how the brain learns to cope with fear, anxiety, and threat states.

LeDoux’s groundbreaking research on brain–behavior relationships has shown how neural and molecular mechanisms support Pavlovian aversive conditioning, a form of learning in which stimuli associated with harm become threatening and both trigger innate defense reactions and motivate novel actions. In recognition of his achievements, he was elected to the American Academy of Arts and Sciences in 2006 and to the National Academy of Sciences in 2013.

The celebrated neuroscientist has also written two influential books — The Emotional Brain and Synaptic Self — on how our brains learn to react to threat states over time. A new book, Anxious, is due out in July. His research has informed numerous articles in Scientific American and was part of the inspiration for APS Fellow Daniel Goleman’s Emotional Intelligence, which played a key role in bringing public awareness to the idea that the rational and emotional aspects of our brains combine to create and influence our whole personality. LeDoux’s research and writings have therefore contributed greatly to the public’s understanding of the field of psychological science.

More recently, LeDoux has reexamined his earlier research to offer new conceptualizations about how and why the emotions of anxiety and fear — and our responses to them — arise. His new exploration of these negative emotions could lead to significant implications in the field of emotion study, which may ultimately benefit both clinicians and researchers.
APS Honors Golinkoff and Hirsh-Pasek for Lifetime Contributions to Psychological Science

APS Fellows Roberta M. Golinkoff (University of Delaware) and Kathryn Hirsh-Pasek (Temple University) will receive the 2015 APS James McKeen Cattell Fellow Award for their collaborative research on language, literacy, education, and spatial development.

Golinkoff and Hirsh-Pasek changed the field of developmental psychology in the late 1980s when they introduced the Intermodal Preferential Looking Paradigm (IPLP), which allows researchers to measure preverbal infants’ language abilities by presenting side-by-side visual stimuli along with an auditory stimulus and then observing whether infants look at the visual stimulus that matches the auditory stimulus. For example, in an early IPLP experiment, infants were simultaneously shown two videos on separate screens: In one, an actress was drinking from a cup, and in the other, the same actress was blowing on a piece of paper. The infants heard a voice say, “One is drinking and one is blowing. Which one is drinking?” The babies’ eye movements showed Golinkoff, Hirsh-Pasek, and their colleagues that even before they have begun using verbs in their own speech, babies often understand verbs.

The IPLP has been adapted for the study of “knowledge in the areas of phonology, semantics, syntax, and morphology in infants not yet speaking” (Golinkoff, Ma, Song, & Hirsh-Pasek, 2013, p. 316).

In addition to this groundbreaking methodological contribution, Hirsh-Pasek and Golinkoff are known for showing that preschoolers learn best from play rather than from scholastic methods such as flash cards. For example, play with blocks, puzzles, and “shape sorters” provide children with valuable spatial-thinking experience, which strengthens mathematical thinking. In 2010, they held a mammoth event in Central Park called The Ultimate Block Party to illustrate the value of play and playful learning with 25 hands-on activities. Additional Block Parties were held in Toronto and Baltimore.

The advantages of play-based learning are detailed in Hirsh-Pasek and Golinkoff’s 2009 book A Mandate for Playful Learning, as well as in their book Einstein Never Used Flash Cards, for which the duo won the 2003 Books for a Better Life Award in the category of psychology. Other notable publications by Golinkoff and Hirsh-Pasek include the book How Babies Talk (1999), Origins of Grammar (1996), and the monograph Breaking the Language Barrier (2000).

At the 2015 APS Annual Convention in New York City, Golinkoff and Hirsh-Pasek will deliver an award address on “Living in Pasteur’s Quadrant: Navigating the Uncharted Waters Between Basic and Applied Research.”

Reference

New Books


To submit a new book, email apsobserver@psychologicalscience.org.
Why People Go on Dates They Know Won’t Work Out

How could kindness and compassion ever clash with the romantic essence of Valentine’s Day? According to a recent study published in *Psychological Science*, it may be the very desire to spare someone’s feelings that leads us to accept undesirable date requests.

Across two studies, psychological scientists Samantha Joel and Geoff MacDonald of the University of Toronto, Canada, and Rimma Teper of Yale University found evidence that the feelings of a potential romantic partner strongly influence decisions, even when that means choosing a date’s self-interest over one’s own.

Instead of making romantic decisions based purely on our own emotions, Joel, Teper, and MacDonald hypothesized that our prosocial tendencies may compel us to accept advances from clearly incompatible dates to avoid hurting them. In addition, we underestimate how much of a role these prosocial feelings play in our decisions to consider — or not to consider — unsuitable potential partners.

In two studies, Joel and colleagues showed single college students three dating profiles, ostensibly from other people in the study. The participants then picked out their favorite profile. In one study, the participants were then given additional materials on their selection, including a photo showing that their date was unattractive. In the second study, the added materials revealed that the potential date possessed several of the traits that the participant had marked in a survey as deal breakers, such as incompatible political views or a smoking habit.

Participants were then informed that their chosen date wanted to exchange contact information to arrange a meeting. The students had to decide whether to give their own contact details to the unsuitable prospective date, thereby letting that person know whether or not they were interested in meeting up.

In both studies, half of the students were assigned to a “real-life” condition in which they were told that the people whose profiles they’d seen were currently in the lab and they would have the opportunity to meet in real life; participants in the “hypothetical” condition were told to just imagine whether they’d go out with the potential dates, since they weren’t currently available in the lab.

Importantly, people in the study overestimated their willingness to ditch a bad date. Joel and colleagues found that people were actually swayed to say yes out of concern over hurting the other person’s feelings.

In the real-life condition, when people thought that a real person’s feelings were on the line, they were significantly more likely to say yes to going out with the unsuitable partner than were those who were just imagining how they would respond in the hypothetical scenario.

“People fail to anticipate the extent to which other-focused concerns influence their mate choices. Thus, people are more willing to reject unsuitable potential partners in the abstract than they are in reality,” Joel and colleagues concluded.

These findings suggest that romance seekers may have to overcome the potential pain of inflicting rejection — not just the pain of experiencing it — in order to find their perfect match.

Reference
Fast-Tracking Intimacy

A close relationship between two people can take months, even years, to develop — it simply takes time to feel comfortable enough with another person to reveal the parts of your personality and your life that you tend to keep private. But a recent story in The New York Times sheds light on psychological research published almost 20 years ago indicating that, given the right conditions, it may be possible to develop a feeling of intimacy with another person in less than an hour.

In three studies led by APS Fellow Arthur Aron of Stony Brook University, researchers created 190 pairs of university students — some cross-gender and some same-gender — none of whom were already friends. The pairs were instructed to take turns asking each other 36 questions provided in three lists. The questions were intended to promote self-disclosure, covering personal topics like family relationships, childhood memories, personal values and desires, and even attitudes toward death. Importantly, the researchers ordered the questions such that they became more intense as the students worked their way through the lists.

Afterward, the students completed a survey that gauged their feelings of closeness and intimacy with their partner. The results of the first study showed that the student pairs who asked each other personal questions reported significantly stronger feelings of closeness than the student pairs who answered more superficial questions about themselves.

Data from the subsequent studies indicated that the effect was not influenced by whether participants agreed on important issues, whether they expected to like their partner, or whether they were explicitly told that closeness was the goal of the task. More than a third of the student pairs reportedly talked or spent time together after the study, but the researchers emphasized that the aim of their research was to be able to study how relationships form in a controlled experimental setting, not to produce long-lasting friendships or romances.

“We think that the closeness produced in these studies is experienced as similar in many important ways to felt closeness in naturally occurring relationships that develop over time,” Aron and colleagues wrote in their paper. “On the other hand, it seems unlikely that the procedure produces loyalty, dependence, commitment, or other relationship aspects that might take longer to develop.”

And yet, it seems like the question-and-answer procedure may have contributed to some real-life love connections: One student pair ended up getting married after they got to know each other in the study, and the New York Times writer later married the college friend to whom she posed the same questions.

Together, the findings underscore the importance of studying relationships “in the wild” as well as in the lab to obtain the richest account of how we form close bonds with others.
The University of Louisville Grawemeyer Awards program is proud to announce the 2016 award in Psychology. This award recognizes outstanding ideas in all areas of Psychological Science. The award is designed to recognize a specific idea, rather than a lifetime of accomplishment. Nominations are judged on the basis of originality, creativity, scientific merit, and breadth of impact on the discipline.

The Nomination Process
The University invites nominations from throughout the world by individuals, professional associations, university administrators, and publishers or editors of journals and books in Psychology. Self-nominations are not permitted. Upon receipt of their nomination, nominees will be notified about the award conditions, the selection process and the supporting materials needed.

Nominations Must Include:
- A one-to-two-page letter of nomination, in English, identifying the specific idea being nominated and delineating the reasons why the idea merits the award, based on the criteria above.
- A current mailing address, telephone number, fax number and e-mail address for the nominee.

Send Nominations (by mail, fax or email) no later than February 16, 2015 to:
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<td>2002</td>
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One of psychological science’s most historic sites has dual legacies: It was the home of the field’s foremost figure and — decades later — the birthplace of one of its leading empirical journals.

William James moved into the stately home at 95 Irving Street in Cambridge, Massachusetts, in 1889, just as he was completing his formative work *Principles of Psychology*. He continued his prolific writings in his new home, where he resided until his death in 1910. Members of James’s family continued to occupy the house long after his death, but his grandson sold it to the President of Fellows of Harvard College in 1968.

Enter William (Bill) and Katherine (Kay) Estes. The couple purchased the home in 1981, where within the decade they would begin work on what would become APS’s flagship publication.

Bill Estes was the founding editor of *Psychological Science* and Kay its managing editor. Bill edited the first issue in the same corner of the house where James penned many of his works. The journal debuted in 1990.

A pioneering figure in empirical psychology, Bill Estes made the James home an educational resource, hosting students and talking with them about James and the rich history of the house.

Bill and Kay passed away within months of each other in 2011, but their former home remains a landmark.
Fred Kavli Keynote Address
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Michael I. Posner
University of Oregon
Co-author: Mary K. Rothbart
University of Oregon

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Self-Regulation Across Individuals and Development

Nancy Eisenberg (Chair)
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Humans as Animals: Politics, Culture, and Morality

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Regulation Across the First Decade of Life: Brain and Behavior, Health and Pathology

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Building a Better Student Body
The Case for Noncognitive Assessments in College Admissions

College admissions offices typically rely on two major cognitive measures to supplement prospective students’ applications: high-school grade point average (GPA) and SAT or ACT scores. But for too long, these measures have been given disproportionate weight as indicators of whether a student will thrive in a college environment and be an asset to the university, argued APS James McKeen Cattell Fellow Neal Schmitt in his award address at the 26th APS Annual Convention.

Schmitt, who is University Distinguished Professor Emeritus at Michigan State University, has spent the past decade developing alternative methods of measuring students’ abilities — and working to convince testing boards and admissions offices of their validity. These ”noncognitive” measures, says Schmitt, may be more accurate predictors of which students will flourish or founder in an institution of higher learning.

In meetings with the College Board, “we told them that they couldn’t possibly improve on the SAT in combination with high-school GPA if the only outcome they were considering was first-year GPA. We said, ‘Broaden the scope of student outcomes that you’re considering and the set of capabilities considered in college admissions, and you may be able to do better,’” Schmitt said.

To that end, Schmitt and his colleagues have been working to develop noncognitive methods of measuring students’ abilities. These methods have three criteria: They must be “valid, practical in terms of time and effort required to assess, and less susceptible to faking.”

The researchers began by reviewing universities’ websites to see what college administrators hope to develop in their graduates.

“Obviously, you want them to graduate [and] to do well academically,” Schmitt said, “but most Web pages also mentioned things like developing leadership, social responsibility, ethics, perseverance, and adaptability. We took them to heart.”

**The Standout Traits**

By combining this anecdotal evidence, interviews with Michigan State University staff responsible for promoting student life on campus, and the available scientific literature, Schmitt’s team created a list of 12 characteristics that seemed to be important to admissions departments and resident life offices. The list included intellectual (knowledge and mastery of general principles, intellectual interest and curiosity, and artistic/cultural appreciation), interpersonal (appreciation for diversity, leadership, and interpersonal skills), and intrapersonal (social responsibility and citizenship, physical/psychological health, career orientation, adaptability/life skills, perseverance, and ethics/integrity) components.

The researchers then developed two noncognitive measures: situational judgment questions (e.g., “What would you do if faced with [a certain hypothetical situation]?”) and biodata (e.g., multiple choice reports of past experience/background or interest/preferences). These measures were designed to reflect the 12 dimensions relevant to admissions offices and resident life departments.

To view the video of Neal Schmitt’s 2014 James McKeen Cattell Fellow Award Address on “Measurement in a Complex World,” visit www.psychologicalscience.org/r/Neal-Schmitt.
Schmitt and his colleagues found the situational judgment questions particularly useful for determining how college students would react to a variety of scenarios they might face in college. Admissions officers might, for example, present the following hypothetical situation to applicants to see how they would deal with a situation requiring leadership: “You are assigned to a group to work on a particular project. When you sit down together as a group, no one says anything. What would you do?” Answers might range from “Look at them until someone eventually says something” (the worst option, according to the answer key) to “Get to know everyone first and make sure the project’s goals are clear to everyone” (the best choice). Although these sorts of questions do not measure cognitive intelligence, Schmitt explained, they might give administrators a better idea of a student’s behavior when facing a variety of realistic problems, adding a valuable dimension to assessment measures that often fail to take things like leadership potential into account.

“We wanted [these questions] to broadly represent student life as a student would experience it in our institution and hopefully in others,” he added. “What we ended up doing was to use them as a composite reflecting what we call judgment — common sense, perhaps.”

The researchers also asked first-semester college students open-ended questions about their activities, hobbies, and academic lives to learn more about how different kinds of students had behaved in high school. The questions that resulted from an analysis of their answers were also grouped to reflect the 12 behavioral dimensions and served as the second set of noncognitive measures. Consistent with the literature, Schmitt and his colleagues called these measures biodata.

To validate these noncognitive measures, the researchers collected a variety of student outcomes including things like self-rated class attendance, grades, organizational citizenship behavior (e.g., mentoring students, attending extracurricular activities, participating in community service), deviance (e.g., cheating on exams, destroying school property), and continuation in school and education.

“When administrators raised questions about the use of organizational citizenship as a relevant student outcome, we mentioned that it also could reflect the number of alumni who would give gifts to the university later, and they automatically quit objecting,” the researcher said to laughter.

**Getting Buy-In**

Joking aside, Schmitt admitted one of the biggest obstacles to his research was convincing colleges and universities to try combining cognitive and noncognitive testing measures when evaluating potential students. But his research shows adopting such a strategy could help academic institutions build stronger student bodies: Although using only cognitive tests might originally have been a good method for evaluating a student’s potential, it’s now nearly universally recognized that being academically talented and intelligent is not the only important measure of whether a person will do well in college — or in life.

Schmitt demonstrated this concept by correlating the scores on cognitive and noncognitive tests with student measures of performance for different demographic subgroups.

When Schmitt and his colleagues evaluated differences in just the cognitive measures (SAT/ACT and high-school GPA) among three subgroups — Caucasians, Hispanic Americans, and African Americans — they found large and significant differences among the three populations. In the SAT/ACT comparison, African Americans scored nearly 1.5 standard deviations lower than their Caucasian counterparts, and Hispanic Americans scored more than one standard deviation lower than Caucasians.

By contrast, Schmitt said, most of the mean deviations for the noncognitive measures were close to zero among all three subgroups. “In some cases, the minority group actually scores better … one reason to develop and use measures like this, with respect to adverse impact [on minority groups], is if they are included in a battery along with high school grades and ACT/ SAT scores that contributes to admissions decisions, we will dampen the adverse impact on these groups,” he explained. Subgroup differences still exist, but they are smaller.

Schmitt emphasized that his team’s nontraditional measures were developed to increase the ability of administrators to get a better picture of a student’s overall personality and abilities: “You can use these noncognitive measures, but they’re not going to have a great deal of impact on the quality of the student body overall as reflected [only] by GPA.”

Such measures, Schmitt added, could be helpful even after students have been admitted to a university — for example, advisors could use them to tailor their counseling based on individual needs. To that end, he and his team did a profile analysis to classify subgroups of students based on different configurations of scores on GPA, SAT/ACT, and noncognitive variables. They were able to identify five types of students — low academic but career-oriented, high ability but culturally limited, marginal, artistically able, and academically able and well-rounded — each with specific needs and abilities. Marginal students, for example, might need early academic intervention to prevent them from dropping out; academically able individuals would likely be good peer mentors.

Despite Schmitt’s substantial findings on the practicality of noncognitive measures, both before and after students are admitted to universities, noncognitive measures have not been widely implemented, he said. Among the reasons he listed were the cost of administering new tests, a lack of consensus on effectiveness, the cost of implementation, pressure on college admissions offices to continue business as usual, and the willingness to share responsibility during the beginning stages.

“Introducing something new like this is not only a lot of work, but it also can impact [the process] in unknown ways,” Schmitt said. Most importantly, he hopes to impart to his colleagues that “if we’re going to implement some of the products of our research, we need to engage in the political process that is instrumental in getting new things adapted.”

–Mariko Hewer
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Faith or Fear?

Scientists Study How the Threat of Divine Wrath Shapes Human Behavior

By Sarah Schroeder
Across religious traditions, bad behavior gets punished. Islam teaches that the future holds a day of reckoning when all humans will be judged for their deeds; those who don't measure up will be sent to hell. Some Christians believe in a similar judgment day, which corresponds with Jesus Christ's long-awaited return to Earth. For Hindus, Buddhists, and Sikhs, negative actions may cause consequences in future lives.

In the United States alone, 7 in 10 people believe in hell, according to a 2007 Gallup poll. Today’s psychological scientists seek to explain the evolutionary origins of this pattern with the only clues available: a limited understanding of history and the behavioral characteristics of modern humans.

But working with colleagues from anthropology, sociology, and other disciplines, they’ve uncovered evidence that belief in punitive deities has a buffering effect on dishonest and immoral conduct — at both the individual and societal levels.

This work raises a question about religion’s role in human character: How much are mores and manners driven by fear of divine retribution versus unconditional piety? Researchers are exploring how images of the supernatural that vary across cultures, religions, and even sects influence motivation, decision making, behavior, and community.
An Extra Buffer

In a 2006 *Evolutionary Psychology* paper, Dominic Johnson (University of Oxford, United Kingdom) and Jesse Bering (University of Otago, New Zealand) argued that natural selection may have favored a widespread human belief in supernatural punishment among our ancestors. The team noted that two important features set humans apart from other organisms. First, humans instinctively use “theory of mind” (a belief in mental states outside of oneself) to explain others’ behavior; second, human language allows us to communicate complex ideas quickly.

Insight into others’ behavior, combined with an ability to tell about that behavior, put early humans in a unique position to keep each other’s selfishness in check. As Johnson and Bering wrote, “Chimpanzees can be selfish in front of other chimpanzees without their behavior being reported to absent others.” Not so for humans: “People could hear, discover, infer, remember, report, hypothesize, plan, and act on others’ behavior — even long after the event” (p. 225).

Johnson and Bering thought that, as language-rich communities developed among humans, individuals who believed in both human punishment and divine punishment behaved in a way that gave them an extra layer of protection against their selfish impulses — protection above and beyond what was experienced by individuals whose bad behavior was deterred by community punishment alone.

In an environment where people who lied, cheated, or stole for their own gain already were likely to pay dearly at the hands of their communities, belief in divine punishment provided an extra buffer against selfish missteps. Importantly, according to Johnson and Bering’s analysis, god-fearing beliefs provided a better social strategy than Machiavellian-style conniving because even if prehistoric “Machiavellians” were exposed only rarely, the cost of such exposure — in the form of community punishment — was prohibitively high. Fear of divine punishment, on the other hand, might prevent such individuals from misbehaving in the first place, increasing their chances of reproductive success.

Forgiving Deities

Of course, the complexities of religion extend far beyond threats of punishment, and throughout history religious people have seen their gods not only as punishing but also as loving. Could these comforting characteristics of our gods also inspire good behavior? Azim Shariff of the University of Oregon and APS Fellow Ara Norenzayan of the University of British Columbia, Canada, have studied this question in a modern context.

In one of their experiments, 61 ethnically and religiously diverse undergraduate students — including many who identified as agnostic or atheist — completed a test designed to measure their religiosity. They also filled out a Views of God scale, which gauged their concepts of a god as “positive” (i.e., forgiving, loving, gentle, peaceful, etc.) or “negative” (i.e., vengeful, harsh, angry, punishing, etc.). Participants who identified as atheist were asked to simply describe how much the positive and negative traits applied to their culture’s conception of a god or gods.

Next, the participants were asked to perform 20 addition problems without scratch paper. Before the test, an experimenter explained that there was a “glitch” in the computer program being used to administer the test and that the participants needed to press the space bar immediately after each question appeared in order to avoid seeing the answers. Cheating behavior was measured according to whether participants followed these instructions.

The results, published in 2011 in *The International Journal for the Psychology of Religion*, indicated that although religious people were no more or less likely than nonbelievers to cheat on the addition task, participants who applied more punitive attributes to a god — regardless of their religious beliefs — cheated less than those who attributed positive traits to supernatural agents.

The outcome was confirmed by a second experiment, in which measures of religious affiliation, religiosity, and attitudes about god were embedded in a longer survey administered before the cheating test. “How much you believe in God,” concluded Shariff and Norenzayan, may matter “less than what kind of God you believe in” (p. 92).

Belief in heaven and hell was a better predictor of national crime rates than GDP per capita, predominant national religious affiliation, national incarceration rates, or prevalence of specific personality traits.

Although the two experiments in question focused on the behavior of individuals, the authors outlined potential societal development benefits of belief in punishing gods. “As societies expand in size, relations become more anonymous; anonymity, in turn, makes it harder to monitor and punish cheating and uncooperative behaviors,” wrote Shariff and Norenzayan, citing previous work by APS Fellow Robin Dunbar (2003), Joseph Henrich (2006), and Frans L. Roes and Michel Raymond (2003). “In the absence of successful monitoring, societies collapse” (p. 93). Belief in punishing deities may have protective implications not only for individuals but also for entire societies.

Not everyone shares this view. In a 2013 *Trends in Cognitive Sciences* article, Nicolas Baumard and Pascal Boyer* point out that many societies of the past — including Egyptian, Greek, Roman, Aztec, Inca, and Mayan societies — institutionalized gods who demanded sacrifices and obedience for themselves but showed little interest in how well humans treated one another. The success of these civilizations led Baumard and Boyer to question Norenzayan’s theory that fear of divine punishment has been
a driving force in the large-scale growth of societies. Instead, they argued that moral behavior emerged through natural selection as the result of evolutionary pressure that motivated cooperation among humans. According to Baumard and Boyer, the idea of institutionalized religious punishment was built upon these evolved moral intuitions, not vice versa.

**A Predictor More Powerful Than GDP**

Regardless of how religion and justice came to be linked in the human psyche, psychological scientists continue to gather evidence of the connection. A 2012 study by Shariff and his collaborator Mijke Rhemtulla (University of Amsterdam, the Netherlands) relied upon data from the World Values Surveys and European Values Surveys, which included information on anywhere from 362 to 9,016 participants from each of 67 countries. The respondents in those surveys represented Christianity, Islam, Hinduism, Shintoism, and traditions that combined major religions with indigenous belief systems. Participants were orally asked whether they believed in heaven, hell, and/or a god. They were also asked how often they attended religious services.

Taking belief in hell as evidence of belief in a punishing god and belief in heaven as evidence of belief in a benevolent god, Shariff and Rhemtulla compared data from the values surveys with national crime rates from the United Nations Office on Drugs and Crime.

Although religious people were no more or less likely than nonbelievers to cheat on the addition task, participants who applied more punitive attributes to a god — regardless of their religious beliefs — cheated less than those who attributed positive traits to supernatural agents.

"Controlling for the effect of belief in heaven, a 1 [standard deviation] increase in belief in hell resulted in an almost 2 [standard deviation] decrease in national crime rate," Shariff and Rhemtulla reported. "Conversely, controlling for the effect of hell, a 1 [standard deviation] increase in belief in heaven resulted in an almost 2 [standard deviation] increase in national crime rate."

The team reported that this same pattern also held for 8 of the 10 individual crimes assessed, which included assault, homicide, rape, and theft. In fact, belief in heaven and hell was a better predictor of national crime rates than GDP per capita, predominant national religious affiliation, national incarceration rates, or prevalence of specific personality traits.

**Striking a Balance**

Paradoxically, separate research published last year by Shariff with Lara B. Akinin of Simon Fraser University, Canada, suggests a connection between a belief in hell and "lower happiness and life satisfaction at the national and individual level." Belief in heaven, on the other hand, was associated with greater happiness and life satisfaction according to the same report.

The fact that people continue to believe in hell even though doing so puts them at risk for negative emotional consequences suggests that the evolution of divine-punishment beliefs may be part of a delicate balance among the well-being of individuals, the well-being of groups, and continuous, large-scale social shifts. Although groups "benefit from the ethical behavior of the group's members," Shariff and Akinin wrote, the individual "shoulders the emotional costs of a society that follows norms out of fear."

When historical circumstances provide effective, secular rule enforcement, individuals may get a break as the community relies less on divine punishment than on human punishment to encourage positive behavior. As belief in the wrath of a higher power wanes, religions may focus on the benevolent facets of their respective god in order to win converts. Of course, Shariff and Akinin acknowledged that further research is needed to confirm these hypotheses about the social and psychological role of religion.

**A Broader View**

Even though surveys, laboratory studies of college students, and analyses of broad national datasets have proven informative, such work may not take into account the nuances and diversity of world religions, which range from "major" traditions with millions of adherents to local customs little known by outsiders. As psychological scientists work to identify specific social and evolutionary functions of "punishing gods," research has become broader and more inclusive.

A recent study led by Rita Anne McNamara and her University of British Columbia colleagues Norenzayan and Henrich focused on the inhabitants of Yasawa Island, Fiji, who commonly believe in both the Christian "Bible God" and "less powerful deified ancestors" known as Kalou-vu.

For McNamara and her colleagues, the belief systems in Yasawa presented "an opportunity to examine how distinct kinds of supernatural agents might lead to different behavioral consequences" (p. 3).

The scientists used a random allocation game (RAG) in their study. Participants were given a pile of coins to distribute between two pairs of participants (first, themselves and an outsider from another island and second, a person from their extended kin group and a different outsider from another island). The rules of the game were as follows:

1. Mentally pick one of the two cups.
2. Roll the [two-colored] die.
3. If the die comes up black, place a coin in the cup originally selected in Step 1. Alternatively, if the die comes up white, place a coin in the other cup.
4. Repeat until all the coins have been placed in either cup (p. 5).
When participants mentally picked one of the two cups, the choice was completely private; they did not share it with experimenters. Therefore, researchers could not determine exactly when a participant was violating these rules. But comparing the actual experiment results with the statistically probable results of the RAG allowed the researchers to determine when it was likely that participants were violating the rules.

Before playing the RAG, participants had been questioned about how punitive/benevolent they believed both Bible God and Kalou-vu to be; after playing the game, they were asked to rate their levels of material insecurity (e.g., abundance or lack of food as well as upcoming expenses). McNamara and her colleagues used this information to analyze how beliefs in different types of punishing gods might predict favoritism under different circumstances.

Belief in a punitive Bible God who emphasizes equality and fairness was associated with lower levels of local recipient favoritism (and more “egalitarian, rule-following” behavior) for only those participants who were not experiencing high levels of material insecurity. Belief in punitive Kalou-vu, who are associated with the preservation of tradition and community, also predicted less local favoritism and more rule-following behavior for participants experiencing low and moderate levels of insecurity. However, a belief in punitive Kalou-vu actually predicted more favoritism and less rule-following for people experiencing high levels of material insecurity.

Among the inhabitants of Yasawa, belief in punitive gods promotes unconditional prosocial behavior (that extends beyond local affairs) only under specific circumstances. The authors hope that future research will contribute to an increasingly complex understanding of the divine punishment concept’s place in the human experience.

“Understanding the mind of God,” the authors wrote, “requires more than simply knowing if God will punish; contents of beliefs, specifically what and whom God cares about, also matter” (p. 17).

The fear of god may compel us to help strangers as circumstances permit and help neighbors as circumstances demand. Or, it may help us think twice before we throw a punch, hurl a nasty insult, or take more than is rightfully ours. As we learn more about our beliefs in supernatural punishment, one thing seems clear: Even if we don’t believe in the wrath of the gods, it is an integral part of where we come from and who we have become.

*Pascal Boyer will speak as part of the symposium “Religion Past and Present: Evolutionary Origins and Contemporary Functions of Spirituality” at the inaugural International Convention of Psychological Science, March 12–14, 2015, in Amsterdam, the Netherlands.

References and Further Reading


Cognitive Shields

Investigating Protections Against Dementia

By Andrew Merluzzi

Novelist Terry Pratchett once noted that because aging baby boomers will spend more years as senior citizens than any previous generation, they will “run right into the dementia firing range.”

Indeed, dementia afflicts an estimated 35.6 million people across the globe, according to the World Health Organization, and that number is projected to double in the next 15 years. Pratchett himself suffers from an atypical form of Alzheimer’s disease.

Unfortunately, cures for various types of dementia remain elusive, making rising life expectancies look like a curse as much as a blessing.

But psychological researchers and other scientists are closely investigating some apparent cognitive shields against age-related impairment. In doing so, they have discovered that several protective factors appear to operate even in brains that have all the molecular signs of dementia. A 2006 study from Rush University, for instance, found that about a third of post-mortem brains with telltale features of dementia — protein tangles or miniature strokes — came from people who never exhibited symptoms during life. How is it that the cellular pathologies so seemingly intertwined with Alzheimer’s and other forms of dementia don’t always produce illness?

According to psychological scientist Barbara B. Bendlin, Alzheimer’s investigator at the University of Wisconsin–Madison, certain individuals may build buffers over their lifetimes, a phenomenon called cognitive reserve.

What’s interesting is that there are several protective factors against developing dementia, including higher education, and higher physical and possibly mental fitness,” Bendlin explains. “Some individuals remain cognitively healthy even in the face of increasing burdens of brain pathology.”

If that’s true — if cognitive reserve can help protect against the onset of dementia — the next question is obvious: How do we develop more of it?

Energizing the Mind

Over the last couple of decades, researchers have found evidence that various behavioral therapies can strengthen mental buffers and help people maintain memory later in life, often at a fraction of the cost required for large-scale drug development. These therapies — cognitive training, exercise, and a healthy diet, for instance — are the same factors that ward off other chronic diseases, and psychological scientists are investigating them in earnest as a means to offset a dementia epidemic.

To date, most studies examining lifestyle factors and dementia have been retrospective and correlational, with researchers relying on participants to report how frequently they engaged in certain activities and when their symptoms began to emerge. That kind of research is valuable for tracking trends, but only a few studies have actually examined lifestyle factors in an experimental context, directly pitting one set of activities against another to see which produces the greatest cognitive benefits.

One study published in *Psychological Science* did just that, examining how actively engaging the brain can actually boost older adults’ recall power.

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In this experiment, Past APS Board Member Denise C. Park and colleagues at the University of Texas at Dallas randomly assigned more than 200 older adults (ages 60–90) to engage in a particular type of activity for 15 hours a week over the course of 3 months. Some participants learned skills that required significant cognitive investment, like digital photography or quilting. Other participants were asked to take part in more leisurely activities — say, listening to classical music or completing word puzzles. Park wanted these activities to mirror the types of activities people might engage in anyway, rather than using obscure memory-training tasks.

“I think it’s very important to understand the types of everyday tasks or hobbies that maintain or improve cognitive health,” she explains. At the end of 3 months, Park and her colleagues tested the participants’ overall cognitive abilities.

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As it turned out, the participants who engaged in digital photography or quilting showed a significant improvement in memory compared with those who took part in the leisure activities. Importantly, the researchers accounted for participants’ overall social contact throughout the 3-month period, which allowed them to conclude that it was the psychological challenge, and not social interaction, that was critical for bolstering participants’ cognitive performance.

Another recent study from the University of California, San Francisco, revealed similarly encouraging results. In this experiment, led by psychological scientists Adam Gazzaley and Joaquin A. Anguera, 16 older adults were recruited to play a videogame called “Neuroracer.” In the game, participants attempted to drive a car down a virtual road, keeping constant speed and lane position. While doing so, they also had to pay attention to sporadically appearing shapes, pressing a button whenever they observed a green circle. As participants improved, the game became increasingly more challenging, ensuring that it was always difficult enough to be mentally engaging.

For comparison, another 15 participants played an easier version of the game, requiring that they drive or pay attention to the shapes, but not both. Fifteen more participants didn’t play Neuroracer at all. After 1 month, the researchers brought all the participants back to complete several cognitive tests.

The results indicated that those who played the difficult version of Neuroracer were much better at multitasking within the game, and they also scored better on unrelated cognitive tests. This kind of transfer — with improvement on one task leading to a more general boost in cognitive functioning — has been notoriously elusive in studies of so-called “brain games,” making the Neuroracer results particularly intriguing. Brain imaging with EEG revealed noticeable differences at the neural level: Participants who played the difficult version of the game showed more coherent activation patterns in cognitive control networks, including the prefrontal cortex.

And the benefits seemed to last: Adults who played the difficult game maintained the cognitive gains 6 months later.

Although these results are promising, it’s not clear how these particular cognitive improvements would actually play out in the daily lives of older adults, much less whether they might aid in curbing full-blown dementia; larger, longitudinal experiments will be required to answer these questions. As Park points out, such studies might address a crucial gap between animal and human dementia research.

“The animal literature suggests that without continued engagement in a stimulating activity, gains for engaging in cognitive challenges are quickly lost,” she says. Just like booster shots, periodically revisiting the challenging activities may be necessary to buffer against later dementia.

Still, these experiments reveal that it’s never too late to challenge the mind, and that even short stints of training can produce tangible benefits.

Moving to Protect the Brain
Continuing to exercise the mind in the later years of life is important, but research suggests that physical exercise is equally critical. According to Art Kramer, APS Fellow and director of the Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana–Champaign, both the mind and brain thrive when the body is in motion.

Kramer and colleagues have designed numerous randomized experimental studies to identify the types of exercise that are most effective at boosting cognition later in life. In one study, Kramer randomly assigned 120 older adults to either an aerobic fitness routine — about 40 minutes of brisk walking 3 days a week — or a less intense stretching routine for the same amount of time. Both groups stuck to their respective routines for about a year, and Kramer used MRI to assess any change in the structure and size of participants’ brains over time.

In doing so, he and his colleagues hoped to determine whether demonstrated changes in memory map onto specific changes in the brain. That is, is there evidence for “brain reserve” that can be linked to cognitive reserve?

Their findings suggest so. Participants in the stretching group — who didn’t undergo aerobic exercise over that year — showed a typical age-related decrease in volume of the hippocampus, a brain region crucially involved in memory. Participants in the aerobic group, on the other hand, exhibited *increases* in hippocampal volume, effectively offsetting 1–2 years’ worth of volume loss.

Together, the findings suggest that aerobic fitness produced increased hippocampal volume, which in turn was directly related to improvements on memory tests in the walking (aerobic training) group. Because of these potential neuroprotective effects, Kramer and his coauthors stress the importance of
squeezing in an exercise routine at any stage in life and especially as we age.

Other studies support these findings. Stephen Rao, professor at the Schey Center for Cognitive Neuroimaging at the Cleveland Clinic, was interested in whether exercise can grant neuroprotective effects in people who are at genetic risk for Alzheimer’s. Alzheimer’s is considered a heritable disease, and a variation in one particular gene, APOE, confers an elevated risk. For this investigation, Rao and his colleagues studied about 100 older adults, many of whom carried the APOE gene. The participants explained their normal exercise habits and had their brains scanned twice over a period of 18 months.

By comparing the first and second brain scans, Rao and his colleagues found evidence suggesting that exercise was critically important for the at-risk group: People with the APOE gene who didn’t routinely exercise exhibited about a 3% decrease in hippocampal volume over time. By contrast, those carrying the gene who did incorporate exercise into their lives — more than 15 minutes of moderate exercise at least 3 days a week — didn’t show any decreases in hippocampal volume. People without the risk gene did not show a decrease in hippocampal volume, whether they were sedentary or exercised regularly. This finding suggests that the neuroprotective effects of exercise may be specific to persons at risk for Alzheimer’s.

Although the study doesn’t point to a specific mechanism linking exercise and brain volume, Rao and colleagues have some hypotheses: for example, staying active might reduce inflammation in the brain and promote neuronal growth in the hippocampus, effectively building up cognitive reserve and brain reserve in people at risk for developing Alzheimer’s.

The Language Buffer

Although studies have identified the hippocampus as one area of the brain linked with cognitive reserve and brain reserve, other studies suggest an important role for networks involved in executive control. Investigations of bilingual people have shown that the networks we use for language — and the executive control required for learning new languages — are the same networks that seem to deteriorate with dementia.

The first hints that bilingualism might promote cognitive reserve came from epidemiological research. Two investigations led by APS Fellow Ellen Bialystok and APS William James Fellow Fergus I. M. Craik, psychological scientists from the Rotman Research Institute at Baycrest, Canada, indicated that older adults who regularly used at least two languages for most of their lives were, on average, diagnosed with dementia 4 years later than their monolingual counterparts. And that held true even when the researchers accounted for potentially related factors like education, cognitive skills, occupation history, and immigration status.

Bialystok and Craik believe that because using two languages requires the recruitment of many higher order cognitive abilities, bilingualism may delay dementia in the same ways as other cognitive challenges. The ability to learn diverse grammatical rules, suppress one language in favor of another, and quickly switch sentence styles is difficult, and difficult tasks have the potential to strengthen cognitive reserve.

Several dementia-research studies have provided neural evidence in support of the protective effects of bilingualism. In one investigation, Tom Schweizer from the University of Toronto, Canada, used CT scans to measure brain atrophy in 40 older adults with probable Alzheimer’s disease, some of whom were bilingual and some of whom were monolingual. Crucially, the researchers ensured that both groups exhibited the same level of dementia symptoms; that way, any differences in the brain could not be accounted for by dementia severity.

Compared to monolingual individuals, patients who spoke two languages exhibited more atrophy in regions most associated with Alzheimer’s disease decline.

These findings may seem paradoxical at first blush, but they are actually directly predicted by the cognitive reserve hypothesis. As Schweizer and colleagues hypothesized, a lifetime of speaking two languages may build stronger shields against the effects of brain atrophy — which may explain why bilinguals’ symptoms of dementia weren’t worse than their monolingual counterparts, despite the greater degree of atrophy. In effect, it’s as if the bilingual individuals were cognitively “younger” than one would predict by simply looking at the deterioration in their brains.

In another recent study, Gigi Luk of Harvard University, along with Craik, Bialystok, and Cheryl Grady of the University of Toronto, discovered that bilingual older adults had more robust white matter tracts than did monolingual participants. This suggests that the myelin on axons in these nerve bundles is more intact (less degraded), which would help to maintain efficient transmission of nerve signals. Ultimately, preservation of white matter among bilinguals may help to buffer against age-related changes in the size and structure of critical areas of the brain.

Mark Antoniou, a psychological scientist from the Chinese University of Hong Kong, is especially convinced by these findings and has suggested that language training later in life might be a useful method for reducing rates of dementia. “The end result of foreign language learning may be that language function is promoted, the integrity of brain structures involved is maintained, and a greater number of potential neural circuits could be available that allow for compensation of age-related cognitive declines,” write Antoniou and his colleagues.

Just as with physical exercise and other cognitive training techniques, however, moving from principle to practice is not so straightforward.

“Motivation also plays a larger role in determining language-learning success in older adults,” Antoniou suggests. “Therefore, it is crucial to identify the optimal learning method for older learners, namely by ensuring that older learners are motivated, that the material has immediate practical value, and is personally rewarding.”

From Cortex to Community

The results of these studies are exciting, but translating the science of cognitive reserve into healthier people is another problem entirely.
Research has shown, for example, that although people may have a vague understanding that they can shield themselves against age-related memory decline, they’re fuzzy on the details. Funded by the US Centers for Disease Control, a collaborative research effort among nine universities found that most people recognize the link between exercise and cognitive health, but they’re unsure about how much exercise they should be getting and what types of exercise are most effective. That is, they have difficulty translating what they should do into actual healthy actions.

Kristen Felten, a social worker and dementia specialist in the Wisconsin Department of Health Services, believes fixing this problem is of paramount importance.

“You can have a good quality of life, you can mitigate the symptoms of the disease, you can affect the trajectory of its progression with lifestyle changes,” Felten explains. “Often, people don’t realize they can take control.”

As the research suggests, it’s crucial that early symptoms be taken seriously. Some symptoms simply reflect the quotidian annoyances of an aging brain, but, in other cases, they may be early signs of dementia.

And this issue underlies perhaps the most critical policy measure societies can take: early dementia screening. Studies have shown that detecting signs of cognitive impairment early and targeting intervention programs appropriately can provide significant government savings in the long run. Furthermore, it can reduce the time patients spend in severe stages of the illness, leading to reduced emotional stress for families.

To address these dementia challenges, state and local authorities are beginning to develop strategic plans using the most recent scientific evidence. In her home state of Wisconsin, Felten has worked tirelessly to construct a systematic response to what is most certainly a large-scale problem, including building public awareness campaigns, disseminating evidence-based educational materials, and conducting outreach with rural and minority populations.

Perhaps most importantly, Felten and others are developing “dementia-capable” communities.

“We work with local businesses, grocery stores, pharmacies, banks, and restaurants — anywhere someone with dementia might go as part of their daily life,” she says. “It’s important that older individuals stay socially active and engaged, and communities need to be ready and willing to have that happen.”

These opportunities for community engagement, she adds, may promote cognitive reserve.

Helping people make lifestyle changes that boost cognitive reserve is an important component of addressing the dementia epidemic, but there is no magic bullet. Invariably, there will be people who exercise, stay mentally fit, and keep an eye out for the early symptoms, but still develop dementia. These cases reinforce the notion that the onset of cognitive impairment is governed by a complex mix of biological and environmental risks, and there is much about the ailment that scientists don’t yet know. Detaching dementia from aging will be an important part of ensuring that well-being increases alongside human longevity.

A symposium on “Game-Based Cognitive Training for the Aging Brain” will be held at the inaugural International Convention of Psychological Science, March 12–14, 2015, in Amsterdam, the Netherlands.

References and Further Reading


THE PROBLEM

More than 35,000 people are using Wikipedia to learn about psychology every month. Yet, of the more than 8,000 psychology-related articles in Wikipedia, fewer than 0.01% have been assessed to have the quality of a professional encyclopedic entry. Hundreds of articles are missing accurate content and reliable citations.

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A high-quality journal of juried review articles on issues of broad social importance is needed now more than ever. Psychological science is directly relevant to the most pressing social, economic, and health problems of our day, yet is vastly underutilized. To be sure, PSPI has increased the uptake of behavioral research in policy and practice, but so much more potential exists. Building on the success of prior editors, I want to propel the scientific and practical influence of behavioral research forward.

This journal should influence — and be influenced by — the latest scientific theories as well as speak to the mysteries of human conflict, motivation, achievement, learning, feelings, disorders, and decision making.

Why theory? We need evidence-based theory in order to understand how to apply what we learn about human behavior. Theory explains and predicts behavior, so that it is possible to know what the “active ingredient” is when interventions change behavior. Theory also explains and predicts who will benefit from specific practices and policies. Therefore, I will emphasize causal mechanisms when appropriate, with a view to understanding how to generalize results of research to policy and practice. There is no reason why PSPI cannot be a cutting-edge theoretical and translational journal, and its audience should encompass scientists, practitioners, and policy makers.

Another important role of PSPI is to reconcile different viewpoints from researchers across disciplines. Scholarship means taking account of all of the relevant prior evidence, not just evidence produced by those with similar worldviews. Psychology as a cumulative science, in which current work builds on prior findings and ideas, is crucial for scientific and social progress. I have had the opportunity to interact with scholars from many different disciplines, and I will draw on those experiences to build bridges between psychology and other disciplines.

PSPI connects members of the Association for Psychological Science (APS) to members of the public — including policy makers. It should also serve as the go-to source for behavioral scientists from different disciplines because it provides the most rigorous evidence and the most exciting ideas about the most important issues.

Valerie Reyna can be contacted at ReynaPSPI@cornell.edu.

About Valerie F. Reyna

Incoming PSPI Editor Valerie F. Reyna is a professor of human development at Cornell University, where she is also director of the Human Neuroscience Institute, codirector of the Cornell University Magnetic Resonance Imaging Facility, and codirector of the Center for Behavioral Economics and Decision Research. Her research integrates brain and behavioral approaches to understand and improve judgment, decision making, and memory across the lifespan. Her recent work has focused on the neuroscience of risky decision making and its implications for health and well-being, especially in adolescents; applications of cognitive models and artificial intelligence for improving understanding of genetics (e.g., in breast cancer); and medical and legal decision making (e.g., about jury awards, medication decisions, and adolescent culpability).

In addition to being an APS Fellow, Reyna is a fellow of the Society of Experimental Psychologists, the American Association for the Advancement of Science, and several divisions of the American Psychological Association, including the Divisions of Experimental Psychology, Developmental Psychology, Educational Psychology, and Health Psychology. She has been a Visiting Professor at the Mayo Clinic, a permanent member of study sections of the National Institutes of Health, and a member of advisory panels for the National Science Foundation, the MacArthur Foundation, and the National Academy of Sciences. She has also served as president of the Society for Judgment and Decision Making.

Reyna helped create a new research agency in the US Department of Education, where she oversaw grant policies and programs. Her service also has included leadership positions in organizations dedicated to creating equal opportunities for minorities and women, and on national executive and advisory boards of centers and grants with similar goals, such as the Arizona Hispanic Center of Excellence, National Center of Excellence in Women’s Health, and Women in Cognitive Science.
How can we leverage our understanding of resilience to help victims of disasters recover? Are the secret algorithms used by dating sites really superior to more conventional methods for finding our perfect mate? Do seemingly ubiquitous learning techniques such as highlighting text and taking practice tests really help us learn better?

These are just a few of the questions that have been explored with exceptional depth in the pages of the seven volumes of Psychological Science in the Public Interest published during the tenure of Editor-in-Chief Elaine F. Walker.*

Walker, an APS James McKeen Cattell Fellow and the Samuel Candler Dobbs Professor of Psychology and Neuroscience at Emory University, took on the role after spending more than 20 years conducting a formidable body of research on a variety of topics related to the neurodevelopmental aspects of psychopathologies such as schizophrenia. She took over the editor role from APS Past President Morton Ann Gernsbacher and APS Past Board Member and Founding Editor Stephen J. Ceci, who launched the journal in 2000.

In a November 2008 interview in the Observer announcing her editorship, Walker said she recognized the vital niche that the journal fills as a bridge between the scientific community and the public. She praised PSPI as “a forum in which the most accomplished investigators and seminal thinkers offer their informed perspectives for the benefit of the general public, with no expectation of direct compensation for their efforts,” and she vowed to use her position as editor to strengthen and build upon that connection.

Consequently, one of Walker’s primary goals for her editorship from the outset was to increase the exposure for PSPI reports, both within the psychological science community and in the larger spheres of public policy and the general public. “It is my impression that psychologists have an admirable sense of social responsibility, and this includes a commitment to sharing their knowledge with the larger community,” she said.

She didn’t waste any time: The first PSPI issue published in her tenure was 2009’s “Enrichment Effects on Adult Cognitive Development: Can the Functional Capacity of Older Adults Be Preserved and Enhanced?” In June of that year, two of the report’s authors held a press conference at the National Press Club in Washington, DC, to explain the important findings contained in the report — one of the most comprehensive critical reviews ever compiled of the techniques and behaviors that can effectively maintain cognitive functioning with age — to a national audience of reporters and policymakers.

Since that first issue, Walker has commissioned reports that cover the full spectrum of psychological inquiry, from why people cooperate even when it may affect them negatively to why we are so susceptible to misinformation and how to correct inaccurate information and public perceptions. A 2010 report, “Weighing the Costs of Disaster: Consequences, Risks, and Resilience in Individuals, Families, and Communities,” used
evidence about the psychological effects of disasters to shape recommendations for intervention strategies to help victims manage their mental health in the aftermath of a disaster. In a similar vein, a 2013 report outlined the barriers to widely disseminating effective evidence-based treatments for post-traumatic stress disorder (PTSD) and proposed strategies for overcoming these obstacles in order to deliver the mental health care necessary to help our nation’s veterans and other sufferers of PTSD in need of healing.

Sometimes, the journal’s reports revealed surprising connections across scientific disciplines. A 2009 issue titled “Bilingual Minds” examined the impacts of bilingualism on linguistic acquisition and processing as well as on cognitive functioning. The authors found evidence that the increased executive control shown in individuals who speak more than one language may slow the cognitive decline that can lead to Alzheimer’s disease. That groundbreaking discovery was covered in leading media outlets — both in the United States and internationally — such as Discover Magazine, National Geographic, The Guardian (UK), and The Times of India, illustrating the truly global reach of the journal.

The journal has also at times provided a kind of scientific rejoinder to popularly held ideas — such as the notion that lies can be readily detected by certain nonverbal signals, or “tells.” Although some researchers have found evidence for specific nonverbal markers of deception detection, the review of evidence provided in the 2010 report “Pitfalls and Opportunities in Nonverbal and Verbal Lie Detection” dispels many assumptions about lie detection while presenting certain methods, such as asking someone to recall events in reverse order or asking open-ended questions, that are much more effective.

A 2012 report, “Improving Students’ Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology,” similarly challenged conventional belief in the effectiveness of various learning strategies such as highlighting, rereading, and the use of mnemonic devices. The authors examined 10 common techniques and found those that spread study sessions over time (so-called “distributed practice”) to be the most effective, a revelation that could potentially impact the study habits — and intellectual growth — of millions of students.

The findings contained in the journal’s reports have attracted increasingly larger audiences under Walker’s stewardship. Several authors of PSPI reports have translated their results for general audiences in the pages of mainstream media outlets such as Newsweek and The New York Times, including in the paper’s renowned “Gray Matter” op-ed column. From this influential platform, APS Fellows Eli J. Finkel* and Benjamin R. Karney debunked the “scientific matching algorithms” of online dating sites, relaying their findings from a 2012 PSPI report showing that these services do not predict more successful relationship outcomes than conventional dating. (The primary utility of these sites, the authors concluded, lies in the ease of access to an enormous pool of potential romantic partners.)

During Walker’s time at the helm of Psychological Science in the Public Interest, she has commissioned reports from the most prominent researchers in fields that span what can sometimes seem like an oceanic gap between theory and practice. When she began her term, Walker remarked of PSPI, “To my knowledge, there is no comparable journal in any other field of science.” As the last 7 years of in-depth analyses of scientific issues with real-world impact affirm, that statement still holds true today. •

-Amy Drew

*Elaine F. Walker will be speaking at the 2015 APS Annual Convention in New York City, May 21–24, as part of the PSPI Symposium.

*Eli J. Finkel will be speaking at the inaugural International Convention of Psychological Science, March 12–14, 2015, in Amsterdam, the Netherlands, as part of a symposium on E-Relationships.
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Remembering Carolyn Rovee-Collier

April 7, 1942–October 2, 2014

After decades of refusing to give in to multiple sclerosis, Carolyn Rovee-Collier lost her brave battle with breast cancer on October 2, 2014.

Carolyn’s empirical research reflected a paradigm shift within the field of infant memory development. When she began her research, the prevailing view of infants was relatively dim and uninformed by data. Infants were thought to learn little and remember even less. But Carolyn’s research, and the research of her students, has forever changed that view, showing that infants learn quickly, remember over long periods of time, and can retrieve and use their memories in a wide range of different circumstances.

Carolyn had excellent academic training. She earned a BA from Louisiana State University (1962) and a Master of Science (1964) and PhD (1966) in Experimental Child Psychology from Brown University, where she was mentored by Trygg Engen and Lewis P. Lipsitt. Her doctoral dissertation explored olfactory discrimination in the newborn infant, but while carrying out this work she was serendipitously distracted by an interesting aspect of her own infant’s behavior. This discovery provided the platform for the rest of her research career.

Carolyn accepted her first academic job at Trenton State College (now The College of New Jersey). She moved to Rutgers University in 1970 and quickly rose through the academic ranks. She was promoted to Professor in 1980 and Distinguished Professor in 1990. Over the course of her distinguished career, Carolyn received numerous honors and awards. She was elected to The Society of Experimental Psychologists in 1999 and received that society’s prestigious Howard Crosby Warren Medal in 2003. Carolyn received a James McKeen Cattell Fellowship, a Medal for Distinguished Achievement from the Brown University Graduate School, the biannual Award for Distinguished Scientific Contributions to Child Development from the Society for Research in Child Development, and the Senior Scientist Lifetime Contribution Award from the International Society for Developmental Psychobiology. Her oral history has been recorded and placed in the public archive of The Society for Research in Child Development’s Oral History Project.

Carolyn’s research on infant learning and memory received continuous Public Health Service grant funding for more than 35 years, including an NIMH MERIT Award and two successive NIMH Research Scientist Awards. She served for 18 years as Editor of Infant Behavior & Development in addition to serving as coeditor (with Lipsitt) of Advances in Infancy Research (Vols. 3–12), Secretary–Treasurer of the Society of Experimental Psychologists, and President of the International Society on Infant Studies, the International Society for Developmental Psychobiology, and the Eastern Psychological Association. Over the course of her career, Carolyn published hundreds of peer-reviewed journal articles and chapters, and she mentored dozens of PhD, master’s, and undergraduate research students.

Although these facts are impressive, they do not begin to capture the immense intellect and fierce tenacity that characterized Carolyn’s iconoclastic scientific career. Albert Einstein once said, “The person who follows the crowd will usually go no further than the crowd. The person who walks alone is likely to find himself in places no one has ever seen before.” Carolyn often walked alone — blazing a trail that many have yet to find. Like all pioneers, her work was often controversial and sometimes overlooked.

Her first publication (Rovee & Rovee, 1969) set the stage for the uphill scientific battle that would dominate her career. Her demonstration of operant conditioning by very young human infants flew in the face of traditional Piagetian theory. Despite her rigorous experimental methods, it took years to get that paper published. Her subsequent work on infant long-term
memory (Rovee & Fagen, 1976; Rovee-Collier, Sullivan, Enright, Lucas, & Fagen, 1980) was similarly controversial because it was inconsistent with the view that infants remembered for only seconds or minutes at best. Her most recent theoretical work presents a direct challenge to current neural models of memory development (Rovee-Collier & Giles, 2010; Rovee-Collier, Hayne, & Colombo, 2001). Again, publication of these ideas was often difficult; only time will tell whether the research community embraces and tests them. Although Carolyn was sometimes bruised by the publication process, she was a firm believer that the data would speak for themselves; as long as you could get the data in print, people would eventually have to take notice.

Carolyn was also a firm believer in serendipity. Her hallmark task, the mobile conjugate reinforcement paradigm, was developed as a means to settle her own fussy infant. While trying to write her dissertation, Carolyn used a hair ribbon to connect her son’s ankle to his overhead mobile. She stood by her son’s crib and watched as he quickly learned to control both the rate and vigor of the mobile’s movements by altering his foot kicks. Other forms of serendipity continued to dominate her professional and personal life. Her offices at Rutgers and at home were always stacked with reprints. Despite no formal filing system, the paper she was looking for always managed to make its way to the top of the stack. In an attempt to avoid the New Jersey traffic, Carolyn often took the back roads home, discovering along the way new restaurants, antique shops, and stray cats that became part of the family.

Above all else, Carolyn was highly committed to training graduate students and other emerging researchers. She taught them everything that they needed to know to succeed in their careers — for example, that spelling counts, and that just because a reviewer (or an editor) says something doesn’t make it so. Most importantly, she taught them that some battles are definitely worth fighting. Like any great coach, Carolyn pushed people to their limits, but she never asked more from others than she was willing to do herself. She was always the first person in the lab in the morning and the last one to leave. Working with Carolyn was a cross between boot camp and a luxurious bed and breakfast: She might keep you up working for 2 to 3 nights in a row, but during that time, she generously provided ample amounts of home cooking and southern hospitality.

Carolyn was many things to many people. She was a beloved wife to George Collier and a dedicated mother of two sons and three stepsons. For those of us who had the privilege of working with her, Carolyn Rovee-Collier was always our staunchest critic and our fiercest ally. Speaking on behalf of her students, her postdocs, her colleagues, and her friends, it is safe to say that we all drew an immeasurable degree of personal and professional strength knowing that Carolyn was in our corner. For all of us, that corner has suddenly become far too quiet.

One of Carolyn’s favorite enjoyments was watching the Rutgers women’s basketball team. During my years as Carolyn’s graduate student (1990–1995), she and I would regularly attend the games together. She would drive to the game (always an adventure to be in the car with Carolyn), and we would talk about my research, or science in general, or life events. It was our time to just connect. There was one moment at a game between Rutgers and Marquette when she recounted a bit of sage advice that has stayed with me ever since. She told me that in a sleigh pulled by dogs, if you are not the leader, the view never changes.

This approach led Carolyn to conduct groundbreaking research on infant learning and memory. She challenged scientific dogma in an unwavering and uncompromising way, overturning the long-held view (still held by some today) that memories formed in infancy last for only a few seconds — minutes at most. In well over a hundred papers, she established that infants are capable of forming long-term memories early in life. She worked on infantile amnesia, the early development of implicit and explicit memory, memory modification, and the interface between perception and memory in infancy.

Carolyn never missed an opportunity to impart the principles that guided her research: Think of the big picture, be interested in robust effects, and never go beyond your data. These principles became so ingrained that now my students have heard the same lines that I heard from Carolyn. The passing down of scientific principles from one research generation to the next is reminiscent of parents passing down life principles to their children. And that is how Carolyn treated her students, and how I have always viewed her — in her words, as our intellectual “mother hen.” Carolyn was the leader in memory development in infancy, and in training researchers, myself included, who continue to expand on the foundation she built. That is her legacy.

Scott A. Adler
York University, Canada

I was the first in my family to attend college. I was an ambitious student and had aspirations to attend graduate school in psychology, but I had no idea how to pursue this goal. I knew I needed an advisor and research opportunities to develop my knowledge and skills. I met with Carolyn to learn about her infant memory research. She gave me a chance, and I began my training in counting infant foot kicks. Carolyn then gave me the opportunity to pilot a new memory study with preschoolers for my honors thesis. Little did I know at the time that this study, which used a short Winnie the Pooh clip to reward participants, would serve as the beginning of my career in studying the effects of media on children!

Whenever I was acknowledged for my career achievements, I always called Carolyn to let her know and invited her to share in the recognition. I was proud to recognize her as my first mentor. She was the professor who gave me a chance to join her research team, took the time to get to know me as a person, and encouraged me to pursue a career in developmental psychology. Carolyn always downplayed her role in my achievements and said, “I showed you the door, but you walked through it.” My response:
“You shined a light on a door that I didn’t even know existed!”

Carolyn was unique in that she took the time to get to know all of her students (undergraduates, graduate students, and postdocs). Yes, she had strong opinions and didn’t hold back from expressing them because she cared and wanted us to pursue career paths that were best suited for each of us. I am eternally grateful to Carolyn for shining a light on my career path. I will always strive to follow her example and guide students and staff on their career paths.

Rosemarie T. Truglio
Sesame Workshop

I joined the faculty at Rutgers in 1980, having been recruited by Carolyn and by her dear friend, the late Marilyn Shaw. Carolyn remained busy until her last month, constrained by the illness but still writing, working on a project, and keeping close with her family. Even when consumed by her fight to recover, the first thing she did on each of my visits was to recount her recollection of the status of my daughters’ adventures in school or with their jobs, and then ask for detailed updates — never failing to offer some words of approval or advice.

Carolyn was a vivid presence at Rutgers, speaking up and speaking out, regardless of how controversial her views or who might disagree. The annual Christmas dinners at her farm out near the Delaware River, cohosted by her husband and fellow Rutgers professor, George H. Collier, were legendary. She took on volumes of work, from editing Infant Behavior and Development for years to training teams of students who trekked all over New Jersey to infants’ homes because, Carolyn said, you get better data in the home than if you bring babies to the lab.

Carolyn never ducked a chance to talk because she was too busy. I was always greeted with her broad smile as she recounted the litany of projects that were keeping her up nights working. When I considered buying a house in 1986, I consulted Carolyn, tapping her years of accumulated wisdom from living on her farm in New Jersey. Carolyn, always decisive, visited my prospective house, took a look around, and announced that the property could not be passed up, and that if I wasn’t going to take it right away, she would contact the realtor and buy it herself. And that was that. I’m still in the house, and I will always miss my friend.

Eileen Kowler
Rutgers University

To read the full remembrance of Carolyn Rovee-Collier, visit www.psychologicalscience.org/r/rovee-collier.

ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Call for Fellows Nominations
Deadline: April 1, 2015, for Spring Review

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

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For more information and to submit a nomination, please visit www.psychologicalscience.org/fellows

Electronic submissions are required.
PRESIDENTIAL continued from Page 5

in support of policies that are more rehabilitative than punitive (National Research Council, 2013).

The fates of Trayvon, Michael, and Tamir are completely misaligned with the new science of adolescent development. In the moments before each one’s death and in the aftermaths, none of these boys was seen as vulnerable and immature. Who could forget George Zimmerman’s attorney in closing arguments portraying Trayvon as so sinister, threatening, and with adult-like criminal intent that his client had no choice but to shoot in self-defense? Who did not feel outrage at the Ferguson County police officer who told a grand jury he felt “like a 5-year-old” being pummeled by Hulk Hogan, and who likened Michael Brown to a “demon”? And who did not listen with disbelief as the officer who fatally shot Tamir claimed that from a distance he thought the boy was about 20 years old? Dangerous, demonic, bigger, and older seeming than they are — that was the collective portrayal of Trayvon, Michael, and Tamir.

Troubling Associations

Why the misalignment between developmental science and the perceptions and treatment of these young Black victims? Here is where social psychological literature on racial stereotypes becomes relevant. Even though privately held beliefs about African Americans have become more positive over the last 50 years, studies of racial stereotypes continue to show that respondents from many different backgrounds associate being Black (and male) with hostility, aggressiveness, violence, and danger (Jones, Dovidio, & Vietze, 2014). Moreover, racial stereotypes often are activated and used outside of conscious awareness (Banaji & Greenwald, 2013). By automatically categorizing people according to racial stereotypes, perceivers can manage information overload and make decisions more efficiently.

Although primarily studied with adults as targets, implicit racial biases can shape judgments of Black youth. In my own research (Graham & Lowery, 2004), I used a priming methodology with police officers and probation officers in the juvenile justice system to examine implicit racial stereotypes about adolescent males. Participants in whom racial stereotypes were subliminally primed judged a hypothetical Black adolescent offender as more dangerous, responsible, and blameworthy for his alleged offense than did participants in an unprimed control condition. In a provocative set of studies, Goff and colleagues (2014) presented college students and police officers with vignettes that manipulated the age of Black, White, or Latino boys ages 10–17 who had allegedly committed a felony or a misdemeanor. Participants perceived the alleged Black felons, compared to White or Latino felons, as older than they were (by as much as 4 years), less innocent, and more culpable for the same crime. And in Rattan, Levine, Dweck, and Eberhardt (2012), simply priming participants to think about a Black rather than White juvenile offender resulted in less support for legislation to ban life sentences for juveniles convicted of crimes other than homicide (Graham v. Florida, 2010). These studies tell us that, when it comes to young Black males, the view of adolescents emerging from developmental science (that they are less mature and less culpable than adults) may be superseded by more pernicious implicit beliefs (that they are violent, dangerous, and possess adult-like negative intent).

I believe findings from the science of adolescent development and the science of implicit racial bias can aid our understanding about next steps to prevent situations like those that took the lives of Trayvon Martin, Michael Brown, and Tamir Rice. If we think about law enforcement and the justice system as critical points of contact, then new efforts are needed to educate critical stakeholders (police officers, defense attorneys, prosecutors, and judges) about the science of adolescent development as well as the meaning and function of implicit racial bias. Just because biases get activated outside of conscious awareness does not mean that they cannot be changed. The empirical literature on reducing implicit racial bias is sufficiently large to inform us about what types of interventions appear to be most effective (see Lai et al., 2014). Tailoring these interventions for law enforcement and juvenile justice stakeholders will require teams of developmental psychologists, social psychologists, curriculum specialists, and stakeholders themselves working together as partners in translational research.

But let me not overstate the importance of psychological science. Understanding and ameliorating conditions that led up to the tragedies of Trayvon, Michael, and Tamir will require confronting issues of race and crime in this country that are far beyond the range of convenience of psychological theory. What our science does offer is a framework for asking some of the right questions about ways to foster a justice system that is fair to everyone.

References


**Shining the Light on Dark Personalities**

By C. Nathan DeWall

How can Barry Minkow escape immediate attention as a career criminal and enjoy a level of success that few experience? According to APS Fellow Delroy Paulhus (2014), Minkow has a personality that resembles a sweet onion whose layers have a dark hue. His personality has several interrelated components — narcissism (grandiose and unstable high self-esteem), Machiavellianism (being a master of manipulation), psychopathy (low empathy and impulsive antisocial behavior), and sadism (getting pleasure out of making others suffer) — that all are socially harmful but not severe enough to trigger anyone’s immediate attention. Everyone has varying levels of each component. There are even times when one part of a dark personality serves a specific need.

Studying dark personalities helps us better understand others. Minkow has an extensive history of fraud, but he shows little sign of sadistic violence. He also committed crimes that required extensive planning instead of impulsive action, which reduces his chances of maxing out on the psychopathy scale. Most likely, he is someone who scores high on narcissism and Machiavellianism.

“"The odd thing is that students already know about dark personalities — or think they know," says Paulhus. "Therefore, teaching this topic at the introductory level is about undoing mistaken assumptions."

To bring this cutting-edge science to the classroom, instructors can begin by listing the key features of each component of the dark personality (see Paulhus, 2014, Table 1, at tinyurl.com/paulhus-jpsp). Next, ask students to list four characters from movies, television shows, or books who may score high on some,
but not all, components of the dark personality. Instructors can also allow students to nominate currently living or historical figures.

“There are usually plenty of famous candidates, especially if I allow for historical and fictitious examples,” Paulhus notes. “For example, Kanye West for narcissism; Bernie Madoff for Machiavellianism; Hannibal Lecter for psychopathy; Vlad the Impaler (or Christian Grey) for sadism. With famous examples, I can collect photos to display on PowerPoint.” Discussion can ensue on some of the following questions:

- What do the characters have in common?
- In what ways are they different?
- Which characters would make students fear for their lives?
- Which characters would make students fear for their emotional well-being, even if they were physically unharmed?

The second activity, titled “Finding Your Dark Niche,” encourages students to take the perspective of one or more of the characters they listed in the first activity. (If instructors choose not to do the first activity, ask students to list a movie, television, or book character who might score highly on some, but not all, of the features.) Instructors can then ask students to identify at least one professional and one relationship situation in which the character would flourish. When might it pay off for a company to have a Machiavellian chief executive officer? Would someone who scores highly on sadism function well in a job that requires causing others harm? How might the short-term benefits associated with each part of the dark personality produce later costs? For example, how does an understanding of dark personalities explain why narcissists do well on first dates but make awful long-term relationship partners (Campbell, Foster, & Finkel, 2002; Dufner, Rauthmann, Czarna, & Denissen, 2013; Paulhus, 1998)?

Some people have hidden lusts or greed, whereas others embezzle millions. Understanding the science of dark personality helps us avoid labeling people as simply good or bad. By shining a light on the ingredients of a dark personality, we can learn who we ought to fear and when to fear them.

The good news is that psychological science can also teach us when to relax. Barry Minkow lives in a federal prison near my house. If he escapes, I do not worry that he will physically harm my family. That is not his style. If I were to worry, it would be for the safety of my bank account.

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**Health Psychology Meets Neuroscience: Brain↔Body**

*By David G. Myers*


How does our brain influence our health? How does our health influence our brain? The new field of health neuroscience — the study of how the brain affects and is affected by physical health — seeks answers. In their 2014 article, Kirk I. Erickson, J. David Creswell, Timothy D. Verstynen, and Peter J. Gianaros defined “health” as the absence of illness and discomfort and of biopsychosocial risk factors for such.

To introduce health neuroscience, instructors might invite students to offer examples of its two core ideas:

1. The brain influences the body, top-down, and
2. the body influences the brain, bottom-up.

For example, concerning top-down brain–body interactions, students might note that

- embarrassed, we blush;
- irritated, our blood pressure rises;
- afraid, our stress hormones flow; and
- experiencing sustained stress or repeated anger, we become more vulnerable to heart disease or addiction.

Our brain and its mind play the strings of our bodily health. Concerning bottom-up brain–body interactions, students might note the following:

- Aerobic exercise reduces dementia risk.
- Smoking and other substance use change the brain.
- Nutrition affects cognition.
- Inflammation feeds depression.

But precisely how does the brain enable its top-down influence on health, and how does it receive the bottom-up influence? How does our brain’s activity get under our skin, and how do bodily events under our skin reach into our brain?

Health neuroscience explores how stress, anger, and depression affect health via neural circuits. Psychological experiences arise from the brain’s hardware. Thus, noted Erickson and his colleagues,

- the stress we feel when facing time pressures or social threats is mediated by the amygdala and medial prefrontal cortex;
- our cognitive regulation of negative emotions engages the anterior cingulate cortex, which in turn affects inflammation and hardening of the arteries; and
- smoking cessation is supported by neural activity in inhibitory brain regions.
Such research offers psychology teachers a chance to acknowledge and invite their students to engage in “neuroskeptic” doubts about how much neuroscience really contributes to human understanding and to health intervention. Playing devil’s advocate, neuroskeptics might note that one can skillfully drive a car with minimal awareness of the underlying mechanics. Is it, practically speaking, any more important for us to know about the limbic system and prefrontal cortex than for a driver to know about fuel injection, crankshafts, and drive trains? (Students could be invited to name various items they use daily without knowing how they work — from smartphones and laptops to medications and efficient lightbulbs.)

So, what do colorful brain-scan splotches tell us that we didn't already know? Didn't we already assume that brain activity underlies behavior and health — that everything psychological is also biological?

In response to such skepticism, students might respond, for example, that a neuroscience explanation may be unnecessary for some purposes and vital for others. One can do psychology without biology, biology without chemistry, and chemistry without physics, because each discipline has its own principles. Yet each also builds upon the more basic underlying science.

Students could be invited to imagine themselves as foundation grant officers and to brainstorm what, given $1 million to award, they might want health neuroscientists to explore.

And students could be reminded that one may not need to know the mechanics of combustion or electric engines to operate a car, but when a car breaks down, it helps to have those who understand and can intervene. Erickson and colleagues noted that health neuroscience likewise can point to effective interventions when health issues arise. We have learned, for example, that exercise strengthens not only the muscles, including the heart, but also the brain. And this knowledge is now being used in physical therapy interventions for the treatment of Alzheimer’s disease and memory loss.

Health neuroscientists also are exploring how hypertension leads to cognitive deficits in memory and executive function via specific brain structures and functions (Scullin et al., 2013). This neuroscientific evidence supports healthcare professionals’ awareness of cognitive risks among hypertensive patients and can point the way to preventive treatments.

Ergo, concluded Erickson and colleagues, “health neuroscience can have a significant impact on improving and transforming public health.”

References


Careless Responding on Internet-Based Surveys
Rehumanizing the Process May Improve Data Quality

By M.K. Ward

Advances in technology have spurred extensive use of Internet-based surveys, assessments, and measures. We see Internet-based surveys asking for our feedback as customers, and as students of psychology, we administer surveys to people over the Internet. Internet-based survey data inform applied work in organizations and knowledge accumulation in research, and for good reasons. Convenience for both survey researchers and respondents, ease of standardization, speed, and scalability are some of the most salient reasons why Internet-based surveys are popular (Barak & English, 2002). The utility and popularity of Internet-based surveys will likely increase commensurate with widening access to the Internet among the general population.

Although Internet-based surveys clearly have advantages, there are challenges to this mode of data collection. These challenges stem from the physical disconnection of the researcher and respondent, which is inherent to Internet-based survey methodology. This limited human-to-human interaction is one factor related to what has been termed “careless responding” (CR; e.g., Johnson, 2005; Ward & Pond, 2013). CR occurs when survey respondents, regardless of their intentions, respond to the survey in a manner that does not accurately reflect their true scores.

There are three reasons you should care about CR. First, though the precise depiction of CR depends on the indicators used to estimate it, CR is evident in many datasets derived from Internet-based surveys (Hardré, Crowson, & Xie, 2012). Second, CR is complicated, and researchers are still determining how to address it. Thus, best practices for detecting and dealing with CR are still under development. Finally, the third and perhaps most compelling reason to care about CR is that it can distort results and weaken conclusions via psychometric problems. CR can lead to problems in correlation and reliability estimates, scale development, and factor analysis — elements that underlie theoretical development and exploratory studies (Meade & Craig, 2012; Woods, 2006). For these reasons, prudent researchers in all domains of the social sciences need to address CR in their data.

Ways to Address CR in Your Internet-Based Surveys

There are a few main approaches to addressing CR. The first approach is to exclude data from certain respondents exhibiting CR. To do this, researchers can compute values of CR indicators for each respondent and exclude data from respondents with CR indicator values that are beyond a cutoff score (see “Indicators of CR” on the next page). The assumption is that removing respondent data is preferable to keeping low-quality data. Although this first approach is more researched than alternative approaches, it is a limited solution to CR. Removing respondents reduces sample size and threatens random sampling, and in turn the generalizability of results. Therefore, it is imperative to find ways of preventing CR in addition to correctly identifying CR after it happens.

The second approach attempts to prevent CR before it occurs. To this end, initial research has manipulated the perceived interaction between respondents and researchers. Changing instructions to warn respondents of the consequences of carelessness, to identify respondents (e.g., “On each page of the survey you will be asked to enter your name.”), or to promise feedback about respondent data quality (e.g., “You will receive feedback about the quality of your survey responses and whether we can use the information that you provided to us upon completion of the survey.”) have influenced some forms of CR (Meade & Craig, 2012; Ward & Pond, 2013). In one study, instructions that introduced respondents to the researchers increased the number of respondents who said they were diligent but did not change objective indicators of CR (Ward, Meade, Gasperson, & Pond, 2014). Thus, changing instructions can potentially reduce CR, but what if restrictions prevent you from manipulating your survey instructions?

Aside from manipulating instructions, there are other ways to increase perceived interaction in order to prevent CR. One potentially promising approach is rehumanizing Internet-based surveys by manipulating virtual presence. Adding a virtual human may increase the perceived human-to-human interaction between researchers and respondents. In a recent study, the presence of a virtual human did not show a significant main

M.K. Ward is a doctoral candidate in industrial–organizational psychology at North Carolina State University. A long-term goal of her research program is to connect what we know about how our brains function with topics relevant to work. To this end, her prevailing interests include organizational neuroscience, judgment and decision making, contemplative practices, measurement, and benefits of connecting work with nature. She can be contacted at mkward@ncsu.edu.
**2014–2015 APS Student Caucus Executive Board**

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**Student Announcements**

**Campus Representative Program**

The Campus Representative Program is designed to increase communication between students and APS/APSSC. Serving as a Campus Rep is a great way to network with other students and directly connect your campus with APS and the APSSC Executive Board. Sign up at www.psychologicalscience.org/r/campus_rep_app. Current a Campus Reps, be sure to reapply for the next academic year to maintain your position. Contact Jonathan Waldron at apssc.mvo@psychologicalscience.org for more information.

**Mentorship Program**

The APSSC Mentorship Program is designed to connect undergraduate student affiliates with graduate mentors. We are currently accepting applications for both graduate student mentors and undergraduate student mentees. For more information on how to get involved, undergraduate and graduate student affiliates are encouraged to go to www.psychologicalscience.org/r/apssc-mentorship or contact Staci Weiss, the Undergraduate Advocate, at undergrad@psychologicalscience.org.

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This begs the question, how do you know if you have been successful in reducing CR? The values of CR indicators specify the amount of CR present in your data. There are various CR indicators because there are different types of CR, including inconsistent responding and long strings of identical responses. Fortunately, researchers can choose from numerous CR indicators, some of which are outlined below (see Meade & Craig, 2012, for a more complete discussion of CR indicators).

A commonly used CR indicator is instructed-response items. An example of an instructed-response item is, “Select ‘strongly disagree’ for this item.” The metric is clear for scoring correct versus incorrect responses on instructed-response items. Note that embedding instructed-response items too frequently (i.e., more than once every 50 items) can irritate respondents. Currently, researchers use their best judgment to determine the appropriate frequency of instructed-response items for a given survey. Even–odd consistency is another CR indicator that shows the extent to which participants choose equivalent response options to items measuring similar constructs. The rationale for even–odd consistency is based on the logic that an individual respondent would not agree strongly and disagree strongly with items assessing the same construct. A third CR indicator bears mentioning because it enables detection of a notorious type of CR in student samples, namely, survey items consistently answered with the same response pattern. LongString is the CR indicator that identifies response patterns where respondents repeatedly chose the same response option. The longest string of identical responses becomes the LongString value for a respondent. As it stands, researchers use their best judgment to determine cutoff values for the LongString CR indicator; more research is needed to determine the most useful cutoff values for different types of surveys.

Aside from the three CR indicators just described, there are several other options, including self-report items (directly asking respondents at the end of the survey whether they think their survey responses are of adequate quality for use in the study), outlier analysis, and bogus items. These three alternatives, as well as the three indicators described, have differential utility in detecting various types of CR. Thus, the researcher must decide what indicators are most relevant (see Meade & Craig, 2012, for a more complete discussion).
Conclusions
In sum, the prevalence of CR and the potential detriment to the quality of survey data makes this an important topic. Various CR indicators can identify CR post hoc, whereas virtual presence and instructions hold promise for CR prevention. To address CR in your survey project, consider including carefully crafted instructions, virtual presence, and instructed-response items, and review post hoc CR indicators. In these ways, researchers can rehumanize Internet-based surveys to improve data quality.

References and Further Reading
Members in the News


Jay Belsky, University of California, Davis, NPR, December 19, 2014: Some Early Childhood Experiences Shape Adult Life, But Which Ones?

Camilla Benbow, Vanderbilt University, *The Huffington Post*, December 8, 2014: Why Men May Not Try to “Have It All” the Same Way Women Do.


Stephen Casner, NASA Ames Research Center, Slate, December 12, 2014: Dumbing It Down in the Cockpit.


For the Love of Stuff

Attachment to physical objects is often seen as shallow or overly sentimental, but there may be complex motivations behind saving a piece of jewelry or an old teddy bear. According to studies conducted by APS James McKeen Cattell Fellow Mihaly Csikszentmihalyi and colleagues, artifacts from our past may hold more value because they represent connections to family and friends as well as journeys — physical and metaphorical — we have made.

December 10, 2014

Are Teenagers Getting Less Lonely?

D. Matthew T. Clark and Stephanie J. Tobin have found that today’s teens describe high levels of “social network isolation,” such as having fewer people to rely on. Yet over the past 2 decades, teenagers have reported decreased levels of loneliness, perhaps due to a greater sense of independence and a higher tolerance for the weaker support systems they have grown up with. APS Past President John Cacioppo says researchers should continue to explore this paradox among both teens and adults.

December 10, 2014


Nicholas Epley, University of Chicago Booth School of Business, NPR, December 2, 2014: Study Shows Riding the Quiet Car Is Crushing Your Spirit.


Harrison Kell, Vanderbilt University, *The Huffington Post*, December 8, 2014: Why Men May Not Try to “Have It All” the Same Way Women Do.

Who Needs a Hug? Anyone Trying to Ward Off a Cold This Winter

In a study published in Psychological Science, James McKeen Cattell Fellow Sheldon Cohen and colleagues found that people who reported high levels of perceived social support, measured in part by the intimacy of physical comfort such as hugs, were less likely to contract infections associated with stress. These same people also tended to have milder forms of illness if they did get sick.

December 19, 2014

aps Gary Latham, University of Toronto, Canada, Scientific American Mind, January 1, 2015: The Secret to Raising Smart Kids.

aps David Lubinski, Vanderbilt University, The Huffington Post, December 8, 2014: Why Men May Not Try to “Have It All” the Same Way Women Do.

Samuele Marcora, University of Kent, UK, The New Yorker, December 12, 2014: What Is Fatigue?


Lee Raby, University of Delaware, NPR, December 19, 2014: Some Early Childhood Experiences Shape Adult Life, but Which Ones?


Juliana Schroeder, University of Chicago Booth School of Business, NPR, December 2, 2014: Study Shows Riding the Quiet Car Is Crushing Your Spirit.


Study Shows Riding in the Quiet Car Is Crushing Your Spirit

It has become a habit for most of us to pull out our books or smartphones as soon as we get on the bus or the metro. But new research from APS Fellow Nick Epley and Juliana Schroeder, University of Chicago Booth School of Business, says we are more likely to have a positive commute if we strike up a conversation with the person next to us. As soon as the ice is broken, most interactions on public transportation leave us feeling better than we did beforehand.

December 2, 2014


aps Kali Trzesniewski, University of California, Davis, Scientific American Mind, January 1, 2015: The Secret to Raising Smart Kids.

Elaine Wong, University of California, Riverside, NPR, December 3, 2014: Examining Flip Side of a Firm’s Social Responsibility Record.

The APS Employment Network is your connection to the best jobs in psychological science. Employers from colleges and universities, government, and the private sector use the APS Employment Network to recruit candidates like you.

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**Indiana**

**Indiana University**  
**IU Psychological & Brain Sciences**  
**Visiting Assistant Professor - Developmental**  
Developmental Psychology, Indiana University-Bloomington: The Department of Psychological & Brain Sciences Indiana University-Bloomington: The Department of Psychological and Brain Sciences is seeking applications for a visiting assistant professor to teach undergraduate courses. The ideal candidate will be an experienced instructor at the college level with an interest in adding value to the undergraduate program. We have particular needs for an instructor who can teach courses related to developmental psychology. Experience with cognitive psychology is encouraged but not required. This will be a 1 year appointment, renewable for one additional year. The teaching load is five courses a year. Applicants should have an advanced degree (a PhD in Psychology or related field is preferred), and documented teaching experience. Applicants should submit a letter of application that includes a statement of teaching philosophy and experience, evidence of teaching effectiveness, a curriculum vita, and have three letters of recommendation. Interested candidates should review the application requirements and submit their application at https://indiana.peopleadmin.com/postings/1297. Questions regarding the position or application process can be directed to: Dr. Tom Busey, Associate Chair, ATTN: Instructor Search, Department of Psychological and Brain Sciences, 1101 E. 10th Street, Bloomington, IN 47405-7007. Applications are encouraged by January 30, 2015. Information about the department and the university is available at http://www.psych.indiana.edu Indiana University is an equal employment and affirmative action employer and a provider of ADA services. All qualified applicants will receive consideration for employment without regard to age, ethnicity, color, race, religion, sex, sexual orientation or identity, national origin, national origin, disability status or protected veteran status.

**Indiana University**  
**IU Psychological & Brain Sciences**  
**Clinical Assistant Professor**  
Clinical Psychological Science, Indiana University-Bloomington: The Department of Psychological and Brain Sciences is seeking applications for a clinical assistant professor to spearhead a new, highly innovative, and rigorous Undergraduate Certificate Program in Clinical Psychological Science. The certificate program will enroll high-achieving undergraduates in psychology and related fields and provide training in several areas, including experimental psychopathology and evidence-based assessment, intervention, dissemination, and implementation. Job duties consist primarily of undergraduate teaching, community outreach, coordination and supervision of applied clinical experiences (i.e., internships & practica), and curation of this one-of-a-kind certificate program. Minimum qualification for application is a Ph.D. in Clinical Psychology. Preferred qualifications include training in the clinical science model of clinical psychology with PCSAS or similar accreditation; undergraduate teaching experience; supervision and clinical experience in evidence based services; and license eligibility/attainment in the State of Indiana. This will be a full-time non-tenure track, faculty appointment beginning with a 3 year renewable appointment. Interested candidates should review the application requirements and submit their application at https://indiana.peopleadmin.com/postings/1299. Questions regarding the position or application process can be directed to: Dr. William Hetrick, Chair, ATTN: Clinical Science Search, Department of Psychological and Brain Sciences, 1101 E. 10th Street, Bloomington, IN 47405-7007. Applications are encouraged by February 2, 2015. Information about the department and the university is available at http://www.psych.indiana.edu Indiana University is an equal employment and affirmative action employer and a provider of ADA services. All qualified applicants will receive consideration for employment without regard to age, ethnicity, color, race, religion, sex, sexual orientation or identity, national origin, national origin, disability status or protected veteran status.

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**Minds on the Road**

www.psychologicalscience.org/motr
Leading scholars in psychology and other disciplines are striving to help scientists enhance the way they conduct, analyze, and report their research. They advocate the use of “the new statistics” — effect sizes, confidence intervals, and meta-analysis. Evidence suggests that people are more likely to interpret research results correctly when they’re presented using a new-statistics technique than with null-hypothesis significance testing, the traditional statistical approach.

In this workshop, Geoff Cumming, a leading expert in new statistics, explains why all these changes are necessary and suggests how psychological scientists can implement them. The workshop was recorded at the 2014 APS Annual Convention in San Francisco and is available in six video segments. It makes extensive use of interactive simulations to illustrate concepts and provides a wealth of practical guidance.

APS’s flagship journal, *Psychological Science*, has been inviting authors to use the “new statistics” as part of a comprehensive effort to enhance research methodology. Learn about the new, innovative guidelines for *Psychological Science* and APS’s efforts to support research replication at www.psychologicalscience.org/NewStatistics.
A central part of the mission of the International Convention of Psychological Science (ICPS) is to promote skill-building in integrative psychological science. The program includes workshops by some of the field’s leading experts on various cutting-edge methodologies. There is no additional charge for these workshops; they are included with ICPS registration.

WORKSHOPS

**ALTERNATIVE METHODS TO REVEAL THE ROLE OF EMBODIED PERCEPTUAL AND MOTOR SYSTEMS IN LANGUAGE PROCESSING**

BENJAMIN K. BERGEN, Language and Cognition Lab, Department of Cognitive Science, University of California, San Diego, USA

**ANALYZING INTENSIVE LONGITUDINAL DATA**

NIALL P. BOLGER, Department of Psychology, Columbia University, USA

**ANALYZING NEURAL TIME SERIES DATA: A BROAD AND CRITICAL (AND ADMITTEDLY BIASED) OVERVIEW**

MICHAEL X. COHEN, Faculty of Social and Behavioural Sciences, Programme Group Brain and Cognition, University of Amsterdam, The Netherlands

**BAYESIAN HYPOTHESIS TESTING USING JASP**

ERIC-JAN WAGENMAKERS, Department of Psychology, University of Amsterdam, The Netherlands

RICHARD D. MOREY, School of Psychology, Cardiff University, United Kingdom

JONATHON LOVE, Faculty of Social and Behavioural Sciences, University of Amsterdam, The Netherlands

**BIG DATA FROM SOCIAL MEDIA**

ALEKSANDR B. KOGAN, Department of Psychology, University of Cambridge, United Kingdom

**ETHICAL, LEGAL AND SOCIETAL ISSUES IN NEUROBEHAVIOURAL SCIENCE**

MARTHA J. FARAH, Department of Psychology and Center for Neuroscience & Society, University of Pennsylvania, USA

**FEELING BETTER WITHOUT KNOWING WHY: IMPLICIT PROCESSES IN EMOTION REGULATION**

SANDER L. KOOLE, Department of Social Psychology, Vrije Universiteit Amsterdam, The Netherlands

**MEASURES OF EXECUTIVE FUNCTIONING**

PHILIP D. ZELAZO, Institute of Child Development, University of Minnesota, USA

**MINDFULNESS MEDITATION: MECHANISM AND APPLICATION**

YI-YUAN TANG, Department of Psychology, Texas Tech University, USA

**USING IMPLICIT MEASURES**

JAN DE HOUWER, Department of Experimental Clinical and Health Psychology, Ghent University, Belgium

**MEASURING INDIVIDUAL PATIENT CHANGE IN PSYCHOLOGICAL TREATMENTS**

CYNTHIA FU, School of Psychology, University of East London, United Kingdom

WOLFGANG LUTZ, Department of Psychology, University of Trier, Germany

**QUALITATIVE STRATEGIES AND DATA SOURCES IN SOCIAL SCIENCE RESEARCH**

JACQUELINE S. MATTIS, Department of Psychology, University of Michigan, Ann Arbor, USA

**DYNAMICAL NETWORKS**

DENNY BORSBOOM, Faculty of Social and Behavioural Sciences, University of Amsterdam, The Netherlands

**THE HUMAN VOICE: A PROMISING APPROACH TO INTEGRATIVE RESEARCH ON COMMUNICATION**

PART 1: RESEARCH PERSPECTIVES

PART 2: RESEARCH METHOD DEMONSTRATION AND GENERAL DISCUSSION

KLAUS R. SCHERER (Co-Chair), Department of Psychology and Educational Sciences, University of Geneva, Switzerland

ANNE MAASS (Co-Chair), Department of Developmental Psychology and Socialisation, Università di Padova, Italy

JODY KREIMAN, Voice Perception Laboratory, Department of Head and Neck Surgery, University of California, Los Angeles, USA

DAVID R. FEINBERG, Voice Research Laboratory, Department of Psychology, Neuroscience, & Behaviour, McMaster University, Canada

PASCAL BELIN, Voice Neurocognition Laboratory, Department of Psychology, University of Glasgow, Scotland, United Kingdom

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### MEETINGS

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<td>28th World Congress of the International Association for Suicide Prevention</td>
<td>June 16–20, 2015</td>
<td>Montreal, Canada</td>
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<tr>
<td>International Meeting of the Psychonomic Society</td>
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### GRANTS

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<th>Grant</th>
<th>Description</th>
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<tr>
<td>National Institutes of Health Publishes 4 Funding Opportunities</td>
<td>The Science of Behavior Change (SOBC) Common Fund Program, part of the National Institutes of Health, intends to support a collaborative research infrastructure involving an interdisciplinary team of basic and clinical scientists to develop the foundation for an experimental medicine approach to behavior change. Research funded is meant to support activities focused on behavior change targets. For more information on these opportunities visit <a href="http://www.psychologicalscience.org/r/behavior-change-funding">www.psychologicalscience.org/r/behavior-change-funding</a>.</td>
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<td>ISSBD and Jacobs Foundation Offering 2-Year Fellowships</td>
<td>The International Society for the Study of Behavioural Development (ISSBD) and the Jacobs Foundation are offering 10 doctoral fellowships of 2 years each, with a 1-year extension possible. The fellowships will be located at the applicants' home institutions and will begin in July 2015; the working language will be English. Admitted students will receive a monthly stipend of up to $1,500, and half of the fellowships are reserved for students from currency-restricted countries. Applicants should hold, or anticipate very soon receiving (as shown by supporting documents), a master's degree, diploma, or equivalent in one of the relevant fields and should be planning a doctoral project in developmental research. For more information, visit <a href="http://www.psychologicalscience.org/r/jacobs-foundation">www.psychologicalscience.org/r/jacobs-foundation</a></td>
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<td>Memrise Prize Aimed at Spurring Innovations in Language Learning</td>
<td>Scientists in the Division of Psychology and Language Sciences at University College London, United Kingdom, are offering a prize to “create the most powerful methodology for memorizing new information.” Contestants will devise a 1-hour learning program to teach English speakers previously unfamiliar Lithuanian vocabulary. In addition to a monetary prize of $10,000, the winner or winners of the competition will be invited to coauthor a scientific publication highlighting their winning strategy. The contest deadline is February 28, 2015. For more information visit <a href="http://www.memrise.com/prize">www.memrise.com/prize</a>.</td>
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### TRAINING

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<td>22nd Annual RAND Summer Institute</td>
<td>The institute will be held July 6–9, 2015, Santa Monica, California. Two conferences addressing critical issues facing our aging population: Mini-Medical School for Social Scientists, and Workshop on the Demography, Economics, Psychology, and Epidemiology of Aging. Interested researchers can apply for financial support covering travel and accommodations. The application deadline is March 16, 2015; for more information visit <a href="http://www.rand.org/labor/aging/rsi.html">www.rand.org/labor/aging/rsi.html</a>.</td>
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Time-sensitive Material

The new BioNomadix Logger allows researchers to record high quality data from any BioNomadix dual-channel wearable device. The logger provides a color display for visual feedback, speaker for auditory feedback, vibration for haptic feedback, voice journal for participant comments, event markers and alarms.

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