

SHINOBU KITAYAMA: OPEN
SOCIETY AND OPEN MIND

RACISM AND POLICING:
FURTHER CONSIDERATIONS

SALIVA AS A BIOSPECIMEN
IN THE ERA OF COVID-19

Observer

VOL. 33, NO. 6 • JULY/AUGUST 2020

Award-winning student and early-career researchers, including Sakshi Ghai, reveal breakthrough ideas in the APS Virtual Poster Showcase. Page 24.

The Promise of Psychological Science

a publication of
aps
ASSOCIATION FOR
PSYCHOLOGICAL SCIENCE

psychologicalscience.org/observer

Observer

ISSN: 1050-4672

© 2020 ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Federal ID Number: 73-1345573

All rights reserved.

PUBLISHER

EDITOR

DESIGN AND PRODUCTION EDITOR

ASSISTANT MANAGING EDITOR

SENIOR SCIENCE WRITER

SENIOR GRAPHIC DESIGNER

Sarah Brookhart

Leah Thayer

Raquel Herrera Fernandes

Kim Armstrong

Ludmila Nunes

Candy Cruz

APS Board of Directors

PRESIDENT

Shinobu Kitayama – *University of Michigan*

PRESIDENT-ELECT

Jennifer L. Eberhardt – *Stanford University*

IMMEDIATE PAST PRESIDENT

Lisa Feldman Barrett – *Northeastern University*

TREASURER

Richard B. Ivry – *University of California, Berkeley*

SECRETARY

Natalie Sebanz – *Central European University*

EXECUTIVE DIRECTOR (EX-OFFICIO)

Sarah Brookhart – *Association for Psychological Science*

MEMBERS-AT-LARGE

Maryanne Garry – *The University of Waikato, New Zealand*

Michele J. Gelfand – *University of Maryland*

Ann M. Kring – *University of California, Berkeley*

Vonnie C. McLoyd – *University of Michigan*

Seth Pollak – *University of Wisconsin–Madison*

Janet F. Werker – *University of British Columbia*

FOUNDING EXECUTIVE DIRECTOR

Alan G. Kraut – *Association for Psychological Science*

PAST PRESIDENTS

Barbara Tversky	2018–2019	Henry L. Roeliger, III	2003–2004
Suparna Rajaram	2017–2018	Susan T. Fiske	2002–2003
Susan Goldin-Meadow	2016–2017	John Darley	2001–2002
C. Randy Gallistel	2015–2016	Robert A. Bjork	2000–2001
Nancy Eisenberg	2014–2015	Elizabeth D. Capaldi	1999–2000
Elizabeth A. Phelps	2013–2014	Elizabeth Loftus	1998–1999
Joseph E. Steinmetz	2012–2013	Kay Deaux	1997–1998
Douglas L. Medin	2011–2012	Sandra Scarr	1996–1997
Mahzarin R. Banaji	2010–2011	Richard F. Thompson	1995–1996
Linda Bartoshuk	2009–2010	Marilynn B. Brewer	1993–1995
Walter Mischel	2008–2009	Gordon H. Bower	1991–1993
John T. Cacioppo	2007–2008	James L. McGaugh	1989–1991
Morton Ann Gernsbacher	2006–2007	Janet T. Spence	1988–1989
Michael S. Gazzaniga	2005–2006	Charles A. Kiesler	1988
Robert W. Levenson	2004–2005		

APS STAFF

<i>Executive Director</i>	Sarah Brookhart
<i>Deputy Director</i>	Aime M. Ballard-Wood
<i>Senior Director of Communications</i>	Leah Thayer
<i>Director of Media Relations & Public Information</i>	Charles Blue
<i>Design & Production Editor</i>	Raquel Herrera Fernandes
<i>Assistant Managing Editor</i>	Kim Armstrong
<i>Senior Science Writer</i>	Ludmila Nunes
<i>Director of Government Relations</i>	Andy DeSoto
<i>Visiting Behavioral Insights Scholar</i>	Heather Barry Kappes
<i>Government Relations & Policy Assistant</i>	Kekoa Erber
<i>Managing Editor, Journals</i>	Brian P. Winters
<i>Managing Editor, Meetings</i>	Rodney Atkins
<i>Director, Publications</i>	Amy Drew
<i>Peer Review Coordinator</i>	Ami Getu
<i>Peer Review Manager</i>	Becca White
<i>Senior Director of Meetings</i>	Nathalie L. Rothert
<i>Senior Manager, Meetings</i>	Elaine V. Watson
<i>Senior Manager, Meetings</i>	Michelle Johnfinn
<i>Project Manager, Meetings</i>	Emily Proppe
<i>Project Manager, Meetings</i>	K. Ashley Phayme
<i>Project Manager, Meetings</i>	Nicholas Antunes
<i>Senior Director of Membership & Marketing</i>	Jill Treby
<i>Senior Manager, Marketing</i>	Lucy Hyde
<i>Senior Graphic Designer</i>	Candy Cruz
<i>Manager, Membership & Data Analysis</i>	Lisa Lockman
<i>Membership Assistant</i>	Dominique Matthews
<i>Digital Marketing Coordinator</i>	Fiona Maylath-Bryant
<i>Senior Manager, Internal Affairs</i>	Sarah L. Schroeder
<i>Senior Director of Digital & Technical Operations</i>	Asa Boy
<i>Finance & Administration Coordinator</i>	Marilyn Talley
<i>Office Coordinator</i>	Nelson Ruble

Association for Psychological Science
+1 202.293.9300; Fax: +1 202.293.9350
apsobserver@psychologicalscience.org
psychologicalscience.org/observer

Published 10 times per year by the Association for Psychological Science, the *Observer* educates and informs the Association on matters affecting the research, academic, and applied disciplines of psychology; promotes the scientific values of APS Members; reports and comments on issues of international interest to the psychological scientist community; and provides a vehicle for the dissemination of information on APS.

REPRINT PERMISSION: Photo copying *Observer* content for classroom use is permitted at no charge. Students may not be charged more than the actual cost of producing the photocopy. Source citation must indicate that the materials are from the *Observer*, a publication of the Association for Psychological Science.

APS does not assist in copyright requests involving artwork obtained from a third party. For all other permissions inquiries, including requests to republish material in another work, please contact Copyright Clearance Center at 222 Rosewood Drive, Danvers, MA 01983, call +1 978.750.8400, or visit www.copyright.com.

ADVERTISING: The *Observer* accepts employment and commercial advertising. Information, rates, and calendar are available by calling +1 202.293.9300 or going online to www.psychologicalscience.org/advertise.

OBSERVER FORUM: The *Observer* welcomes your comments and feedback. For consideration in the *Observer* Forum, letters should be sent to apsobserver@psychologicalscience.org. Unless otherwise indicated, all correspondence received will be considered for publication. The *Observer* does not guarantee publication and reserves the right to edit all content for length and style.

SUBMISSIONS: The *Observer* accepts original manuscripts, announcements, and calendar items for publication; manuscripts must be original and should not have been published or scheduled to be published elsewhere. The *Observer* editorial calendar is at the discretion of the editor, and the *Observer* does not guarantee publication. Submissions should be sent via email to apsobserver@psychologicalscience.org. The *Observer* reserves the right to edit all content for length and style.

Send address changes to:

Association for Psychological Science
1800 Massachusetts Ave, NW Suite 402 • Washington, DC 20036-1218 USA
member@psychologicalscience.org
www.psychologicalscience.org/members (click "Update Member Profile")



More than 3,000 psychological scientists have joined the APS Wikipedia Initiative (APSWI).

Get Started With Your Class
www.psychologicalscience.org/apswi

aps
ASSOCIATION FOR
PSYCHOLOGICAL SCIENCE



5 *Presidential Column*

Open Society and Open Mind

In his first column as APS President, University of Michigan professor **Shinobu Kitayama** lays out three steps toward creating a truly open psychological science and enabling the field to play a more significant role in addressing the urgent issues facing society.

37 **Now Is Not the Time for Precrastination**

Psychological science reminds us that the preference to get things done ASAP can have far-reaching consequences. APS Fellow **David A. Rosenbaum** explores this phenomenon in the context of the rush to eradicate COVID-19.



The Promise of Psychological Science



24

Exploring topics ranging from belief amplification to body image disturbance and work-life balance, the recipients of APS's poster awards for student and early-career researchers are committed to exploring and elevating psychological science for social good. Learn about their winning ideas, and much more, in APS's first-ever Virtual Poster Showcase.

On the cover:

The photo of Sakshi Ghai was taken by her friend Anora Sandhu at Christ's College Cambridge in front of "the Milton Mulberry" tree, said to have been planted in 1609, a year after the birth of poet John Milton.

39 Predicting Behavior by Scanning the Brain: Does Task-fMRI Really Resonate as a Useful Tool?

Even as advances in fMRI technology suggest the potential for innovative new interventions, recent research injects a cautionary tone, advocating against reading too much into claims of the technology's predictive abilities.

Breaking down silos within fields is "transformative—a testament to what can happen when you bring scientists together and give them the space to change the field."

—Lis Nielsen, National Institute on Aging, Page 21

41 Saliva as a Biospecimen: Then and Now in the Era of COVID-19

Salivary bioscience has become increasingly useful in a range of areas, including behavioral science. The pandemic has accelerated this integration and will likely lead to new practices and protocols for how saliva is classified, collected, and handled.

“Black female entrepreneurs also cited significant barriers in obtaining necessary resources for their businesses including limited funding, training, and education on entrepreneurship.”

—Amber S. Rouse, Psychological Science and Entrepreneurship Poster Award, Page 34

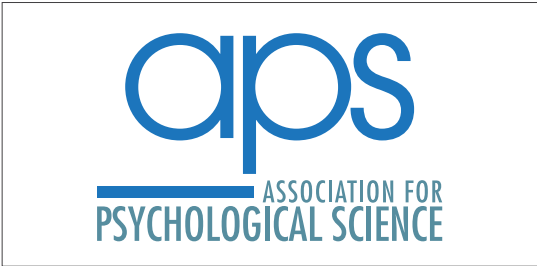
53 *Back Page* Decades of Dolphins

Janet Mann, a professor of psychology and biology at Georgetown University, dives deep into the social lives of these clever marine mammals. A 36-year long-term and longitudinal dataset creates “much to be mined and discovered.”

Departments

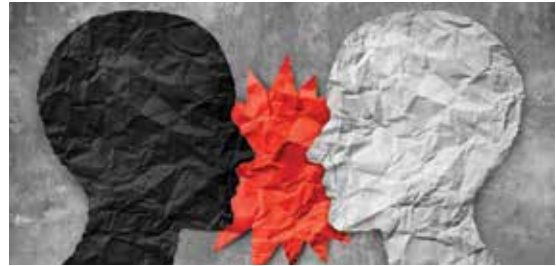


Members in the Media	8
Observer Forum	9
Research Briefs	10
Observations	12
Funding & Policy	19
Student Notebook	47
Employment Network	50
Announcements	51



APS Statement on Confronting Racism and Discrimination

The United States is once again confronting its history of racial discrimination and inequity. We must now turn grief into action and loss into calls for reform. (June 2020)



Collected Research on Racism

Psychological researchers are examining the complexities of racism and xenophobia at both the interpersonal and societal levels. (Research Topic)



Collected Research on Policing

Public trust in the police has remained flat despite decreasing crime rates, a problem that has become especially salient in the wake of recent incidents involving police use of force against unarmed people of color in the United States. (Research Topic)



Testosterone May Dampen Police Recruits' Emotional Control

A study involving Dutch Police Academy recruits suggests that aggressive individuals may be more sensitive to the effects of testosterone when faced with emotionally charged situations. (Psychological Science, June 2019)



Science of Racism, Examined

Psychological scientists describe research on the enduring and often hidden presence of racism at both the interpersonal and societal levels. (Current Directions in Psychological Science, June 2018)



Two Decades of Measuring Implicit Associations

Since its debut in 1998, an online test has allowed people to discover prejudices that lurk beneath their awareness—attitudes that researchers wouldn't be able to identify through participant self-reports. (Observer, February 2018)

Dive Into Data!

Sample the
Science!

Relish the
Research!



Experience the APS Virtual Poster Showcase

Your One-Stop Opportunity for
the latest findings from across
Psychological Science



View now until September 1
psychologicalscience.org/posters



aps
ASSOCIATION FOR
PSYCHOLOGICAL SCIENCE

OPEN SOCIETY AND OPEN MIND

By Shinobu Kitayama
 APS President

The world is facing an unprecedented threat from COVID-19. As a collective of scholars with a mission to better understand the human mind, APS has a unique opportunity to help address urgent societal issues and needs. In my first Presidential Column, I want to share some thoughts toward that end. It will help, however, if I begin by sharing some of my background as a scholar.

Formative Experience

Early in the 1980s, I was a graduate student at Kyoto University, Japan. I was studying social psychology. My fellow graduate students and I looked up all the famous names that appeared in the textbooks. From time to time, we tried to run the studies discussed in the textbooks and, better yet, to add something new to such studies. Unfortunately, however, our ambitious plans to do something new were often shuttered even before they started. Why? Many of these studies did not replicate.

A few years later, I came to the United States for graduate training. I began to witness what was going on in the labs at my new home, the University of Michigan. My great gratitude goes to all of the esteemed students back then at Michigan for open communications and friendship. They were open, friendly, and fully sympathetic to someone coming from a foreign land without much English. Thanks to all this, I quickly

realized that what we did in Kyoto was at least as good, careful, and meticulous as what was going on in Michigan. That was a liberating experience, which eventually made me wonder if part of the reason for the failure to replicate might have something to do with culture. Sometime later, Hazel Markus and I initiated a systematic effort to investigate culture as a fundamental dimension of organizing cognition, emotion, and motivation (Markus & Kitayama, 1991). There were a lot of unknowns, but we had passion and enthusiasm for identifying the nature of cultural influence. We had made a small initial step forward in the direction of globalizing psychology.

If there was any formative period in my career, those good old days were just that. My identity as a psychologist had been gradually set in stone while struggling to locate the mind at the intersection of psychological processes and social and cultural processes. If all the experience I had is a source of nostalgia right now, what I learned from it, the importance of openness, has become the basis of my scholarship.

What Will It Take to Open up Psychology?

Transparency. To make a more open field and discipline of psychology, the first indispensable component is research transparency. The term “open science” refers to the fundamental principle that science must be based on transparent procedures and honest reporting of findings. This term has been in high demand over the last decade for a good reason. In retrospect, the field was, indeed, in deep trouble 10 years ago. Some notable cases of scientific misconduct had been uncovered. Some findings in our beloved journals, including *Psychological Science*, were reported to be hardly replicable. And p-hacking and other questionable research practices were suspected to be common.

As a journal editor, I implemented some policies to promote transparency (Kitayama, 2017). At the *Journal of Personality and Social Psychology* (which I oversee), we now require the sharing of data and analytic codes. We have



APS Fellow **Shinobu Kitayama** is the Robert B. Zajonc Collegiate Professor of Psychology at the University of Michigan. Originally from Japan, he taught at the University of Oregon and Kyoto University before joining the Michigan faculty in 2003. He studies cultural variations in mental processes. Currently, he serves as editor in chief of the *Journal of Personality and Social Psychology: Attitudes and Social Cognition*. He is a recipient of a Fulbright Fellowship, a Guggenheim Fellowship, the Society of Experimental Social Psychology Scientific Impact Award, the Alexander von Humboldt Research Award, and the Society for Personality and Social Psychology Career Contribution Award. He is an elected member of the American Academy of Arts and Sciences. Kitayama can be contacted at skitayama@psychologicalscience.org.

APS is different. Cross-fertilization across different branches of psychology is crucial. So is the effort to connect to and learn from neighboring disciplines.

instituted a new section for replication studies. And all of us, including editors, authors, and reviewers, have become very cognizant of some basics of science, including the significance of sample size, how to determine it, and the imperative of sticking to the target sample size once it is determined. Simultaneously, I have had the pleasure of getting to know many scholars who work hard to reform the field and make it more transparent. Needless to say, we are still only partway through. But I firmly believe that APS will lead this effort to keep our science transparent in every possible way.

Research transparency is a prerequisite of all sciences that are open. However, is that enough? What else do we need? I suggest two additional elements that must be added to create a truly open science.

Interdisciplinarity. To begin, I take it to be a strong human tendency to restrict your domain from all others and define it neatly and clearly. You build a hedge around your domain and call it your expertise. Not surprisingly, modern psychology has always defined several seemingly distinct areas of research. If you are a cognitive psycholo-

gist, you are sitting in a cognitive silo. If you are a social cognition specialist, you are sitting in a social cognition silo that is insulated against all its neighbors, including even cognitive psychologists. If you are a clinical psychologist, you may be best off if you focus exclusively on the mental illness of interest and, perhaps, nothing else. And this tendency to draw a sharp boundary to define the in-group that is marked against out-groups is reinforced by journals devoted to this or that field, scientific societies and newsletters limited to it, and all institutional roles and duties people find themselves in and feel connected and attached to.

APS is different. It's a society established to maintain and promote the integrity of the science of the mind. Cross-fertilization across different branches of psychology is crucial. So is the effort to connect to and learn from neighboring disciplines. Our science must be open to other sciences, not just within psychology, but also with other neighbors, including neuroscience and biology (investigating micro-level processes that comprise the mind), as well as sociology, anthropology, and economics (examining macro-processes that afford and condition it).

Globalization. All open societies must, by definition, open their doors to all their neighbors. If interdisciplinarity is a vertical axis of this openness, globalization should count as its horizontal axis. The discipline of psychology must therefore aspire to open itself to all societies, cultures, and groups.

At this moment in the year 2020, psychological science remains strictly “closed” to some particular population of the world. More than 10 years ago, Jeffrey Arnett observed that American psychology is myopically focused on Americans, thereby ignoring 95% of the world population (Arnett, 2008). Shortly afterward, a similar point was made by Joe Henrich, Steve Heine, and Ara Norenzayan, who characterized the population studied by psychologists as “WEIRD”—an acronym for Western, educated, industrial, rich, and democratic (Henrich et al., 2010). Being closed to ourselves goes against openness. This, I submit, is bad enough. However, for our science—the science of the mind—this state of affairs could be causing colossal damages to the knowledge we build. Why? Because evidence could be biased, and even worse, the interpretation of this evidence could be ethnocentric.

In recent years, many scholars have revived longstanding thoughts about the social construction of daily life and argued that our world is a real world, but this real world is based on imaginations (e.g., “honor” as the worth of “man”), ideas (e.g., human rights and obligations to a group), and plans people make for themselves (e.g., the Declaration of Independence). I found a discussion by Yuval Harari, the historian, particularly lucid (Harari, 2011). Briefly put, the world many of us live in, the 21st-century Western-style democracy with much freedom and resources, presents one social reality. But this is only one of many possible worlds. Even within the boundaries of the United States, social class is increasingly crucial as a social divider. Race and ethnicity have also remained a significant divide. It is not easy to go back and forth across these societal divides. Of course, if we extend our perspectives beyond the U.S., there are many worlds out there, each presenting a unique reality that requires varying skill sets to navigate, let alone succeed in. These skills are ingrained into brain pathways, realized in psychological modules, and dynamically interacting with that reality.

Because our minds are adaptations to the reality they must adjust to, they are likely to show varying characteristics depending on the social realities they must contend with. As scientists, we aspire to pursue universal laws of behavior. But might these laws transcend the diversity of possible worlds on the globe? Or might they be contingent on it? At a minimum, we must agree that this question is to be addressed empirically. It would be a sign of immodesty at best, and could

Shinobu Kitayama began a one-year term as APS President on June 1, 2020. See the full APS Board of Directors and the APS Bylaws at psychologicalscience.org/about/who-we-are.

even be a marker of intellectual laziness at worst, to believe that our world is the only world we care about. This is an ultimate form of ethnocentrism that goes entirely against the very spirit of science. This amounts to saying that the globalization of APS is the next huge stride we must make as the premier scientific society in psychology.

Moving Forward

This brings me back to the nostalgia I shared with you to begin the column. Good science requires transparency. The open discussion with students at Michigan opened up my mind. Good science also requires interdisciplinarity. I benefited a great deal from collaborations with anthropologists, neuroscientists, and geneticists. And finally, good science must give due attention to the divergent worlds the human mind adjusts itself to. Thus, globalization is indispensable if psychology is to remain vibrant and viable across the globe. When these three components are combined with creativity, there will emerge new ideas, new ways of looking at old phenomena, and hopefully, a positive transformation of the discipline.

Back then, in graduate school, I had no idea that I was to write this Presidential Column for APS a few decades later. Many things happened since then to me for sure, but more importantly, to the field at large. Psychology has changed. So has society at large. Science has changed. So have the people who practice science. We now know the brain in great detail. Genetics is no longer heretical in any scientific discourses due in part to the remarkable growth of knowledge on social and environmental influences on the expression of genes (Cole, 2014). Moreover, there is an increasing recognition that society and the brain are hardly separable in any strict fashion

It is the integration of transparency, neighboring disciplines, and world cultures and traditions that our science must aspire to achieve. Only through this integration can we, as a field, hope to play a significant role in addressing urgent issues facing our society.

(Kirmayer et al., 2020). Our psychological dynamics, grounded in both brain and genes, are inherently intertwined with society and culture.

It is the integration of transparency, neighboring disciplines, and world cultures and traditions that our science must aspire to achieve. Only through this integration can we, as a field, hope to play a significant role in addressing urgent issues facing our society. For example, suppose we want to help people cope with the damages done by COVID-19, whether in mental health or job security. I submit that we must see the whole person in each of them and approach them from all possible disciplinary and cultural perspectives (Van Bavel et al., 2020). And I want to add that if there is any scholarly society that is well-positioned to respond to this challenge, it's APS. It's my honor and privilege to lead APS at this opportune time. ●

References

- Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *American Psychologist*, *63*(7), 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>
- Cole S. W. (2014). Human social genomics. *PLoS Genetics*, *10*(8), e1004601. <https://doi.org/10.1371/journal.pgen.1004601>
- Harari, Y. N. (2011). *Sapiens: A brief history of humankind*. New York: Harper
- Henrich, J., Heine, S., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*(2-3), 61-83. <https://doi.org/10.1017/S0140525X0999152X>
- Kirmayer, L. J., Worthman, C. M., & Kitayama, S. (2020) *Culture, mind, and brain: Emerging concepts, models, and applications*. Cambridge: Cambridge University Press.
- Kitayama, S. (2017). Journal of Personality and Social Psychology: Attitudes and social cognition [Editorial]. *Journal of Personality and Social Psychology*, *112*(3), 357–360. <https://doi.org/10.1037/pspa0000077>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Sedikides, C., & Wildschut, T. (2018). Finding Meaning in Nostalgia. *Review of General Psychology*, *22*(1), 48–61. <https://doi.org/10.1037/gpr0000109>
- Van Bavel, J.J., et al. (2020) Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behavior*. <https://doi.org/10.1038/s41562-020-0884-z>

Sigal Barsade, Wharton School of the University of Pennsylvania; **Adam Grant**, Wharton School of the University of Pennsylvania, *The New York Times*, April 16: Yes, Even Introverts Can Be Lonely Right Now.

Lawrence Calhoun, University of North Carolina at Charlotte, **Barbara Fredrickson**, University of North Carolina at Chapel Hill; *The New York Times*, April 7: On Coronavirus Lockdown? Look for Meaning, Not Happiness.

Charissa Cheah, University of Maryland, Baltimore County, *Science*, April 8: Social Scientists Scramble to Study Pandemic, In Real Time.

Sheldon Cohen, Carnegie Mellon University; **Dacher Keltner**, University of California, Berkeley, *Time*, April 10: The Coronavirus Outbreak Keeps Humans From Touching. Here's Why That's So Stressful.

Tamlin Conner, University of Otago, New Zealand, *The Globe and Mail*, April 8: The Science Behind Why Everyone Is Suddenly Baking Bread.

Chris Crandall, University of Kansas; **Rodica Damian**, University of Houston, *The Atlantic*, April: The Perks of Being a Weirdo.

Angela Duckworth, University of Pennsylvania, *Forbes*, April 5: How to Manage Your Career Through the Coronavirus Crisis: 6 Ways to Thrive When Nothing Is Certain.

Baruch Fischhoff, Carnegie Mellon University, *USA Today*, March 27: Coronavirus and Its Global Sweep Stokes Fear Over Facts. Experts Say It's Unlikely to Produce 'Apocalyptic Scenario.'

Gordan Flett, York University, Canada; **Brandon Gibb**,inghamton University, *The Washington Post*, April 17: Quarantine Survival Tips for Extroverts and Perfectionists—and Those Who Live With Them.

Elaine Fox, University of Oxford, UK, BBC, April 2: Coronavirus: 'Anxiety Rose After Lockdown Was Introduced.'

Michele Gelfand, University of Maryland, NPR, April 6: Playing Tight and Loose: How Rules Shape Our Lives.

Paul Gilbert, University of Derby, UK, *The Guardian*, April 8: 'People Want to Help You. Let Them': How to Be Compassionate in a Crisis.

John Gottman, The Gottman Institute Inc., NPR, April 21: Isolating With a Partner? Relationship Therapists Share Stress-Reduction Strategies.



WHY CORONAVIRUS THEORIES FLOURISH.

The COVID-19 pandemic has left many feeling helpless and overwhelmed, causing people to turn to conspiracy theories to satisfy their need for control over their own well-being, says APS Fellow **Karen M. Douglas** (University of Kent, England). Indulging in rumors and spreading false information may help these individuals to foster a sense of safety and power by feeding into the belief that they have access to information others don't in uncertain times. (Related: Also see the APS Backgrounder and podcast featuring Douglas: psychologicalscience.org/conspiracy-theories)

THE NEW YORK TIMES | APRIL 8

Claudia Haase, Northwestern University, *The New York Times*, April 15: When Older Relatives Shrug at Coronavirus Restrictions.

Julianne Holt-Lunstad, Brigham Young University, *Quartz*, April 3: Social Distancing Isn't the Right Language for What Covid-19 Asks of Us.

Arie Kruglanski, University of Maryland, *The Conversation*, March 20: 3 Ways the Coronavirus Pandemic Is Changing Who We Are.

Nira Liberman, Tel Aviv University, BBC, April 10: How to Make Deadlines Motivating, Not Stressful.

George Loewenstein, Carnegie Mellon University, *Los Angeles Times*, April 13: Op-Ed: How to Help Others During a Pandemic When They're Too Embarrassed to Ask.

Julie Norem, Wellesley College, *The New York Times*, April 26: In Praise of Pessimism.

Thomas Rodebaugh, Washington University; **Roxane Silver**, University of California, Irvine, *Medium*, April 21: 'A New Greatest Generation': How Our Natural Resilience May Surprise Us.

Pamela Rutledge, Media Psychology Research Center, *Insider*, April 26: Everyone Is Watching 'Contagion' Right Now. A Psychologist Explains Why It's Healthier to Watch That Than the News.

More APS Members in the
Media online at

[psychologicalscience.org/
MembersInTheNews](https://psychologicalscience.org/MembersInTheNews)

Selected responses to previous issues



How Do We Get to Mars?

By Gary Strangman (May/June 2020)

Team resilience will require learning with others in operational situations and ultimately in extremis. There are strong foundations and points of departure for this capability in medical training and military training that are more of an art than a science. A holistic approach to instructional design for continual development of collective intelligence is needed to make team resilience at once more situated and more rigorous.

—Gary Riccio, Nascent Science & Technology LLC

Mind, Body, Illness: Amidst Pandemic, Opportunities for Discovery

Presidential Column, by Lisa Feldman Barrett (May/June 2020)

Thank you for an interesting piece connecting mind-body. I would encourage us all to be very modest in our claims and very cautious in promoting the role of emotions and stress in this disease and others. We have far too much to learn to propose the emotions play a major direct (vs. emotions leading to poor self care, nutrition, less exercise, etc.) role. In my lifetime there were those attempting to make a direct link between stress and cancer and more recently, between stress and ulcers. There are clearly social determinants (poverty and income linked

with health care access; nutrition) and beliefs (invulnerability; distrust of government) that play a role that can indeed be impacted by social and psychological interventions. There are too many “pseudoscientists” out there who will take this idea of mind-body and overly promote the connection, not helping those who need help and ultimately damaging the science of psychology.

—Michael Stefanek, professor of psychiatry and human behavior, University of Mississippi Medical Center



From Antarctica to Mars

Back Page, featuring Pedro Marques Quinteiro (May/June 2020)

What an incredibly interesting and extremely important project.

—Melinda Eltenton, retired educator

Why Your Understanding of Collectivism Is Probably Wrong

(November 2019 Observer)

This is an interesting perspective on the nuances of collectivism. Cultural values, like culture itself, are not static and exist on a wide spectrum even within smaller group clusters. It would have been informative to consider how globalization influences the shift in cultural standpoints, and whether individualistic ideals are inherent or

imported. Nonetheless, this is a pretty compelling read in that it demonstrates the nuances in cultural dispositions and value differences.

—Belinda Afriyie-Ankrah, student, University of Waterloo

Want Healthier Americans? Shift the Focus from “Personal Choice”

(April 2020 Observer)

Totally agree! The downside of the decontextualized individual focused on personal choice/freedom has been particularly salient in creating the fault-lines in this pandemic. It partially explains why people break away from the advice of masks to protect others or social distance for the good of the collective.

—Ranjana Dutta, professor of psychology, Saginaw Valley State University

To share your feedback on articles, email apsobserver@psychologicalscience.org. You may also comment on articles on our website (psychologicalscience.org) and via Facebook (facebook.com/PsychologicalScience), Twitter (twitter.com/psychscience), and Instagram (instagram.com/psychscience). Comments may be edited.

Recent highlights from APS journals

Beyond Western, Educated, Industrial, Rich, and Democratic (WEIRD) Psychology: Measuring and Mapping Scales of Cultural and Psychological Distance

Michael Muthukrishna, Adrian V. Bell, Joseph Henrich, et al.

Psychological science has predominantly used data from the United States and other societies characterized as Western, educated, industrialized, rich, and democratic (WEIRD). To assess the generalizability of the data, obtained using WEIRD societies, scientists usually compare those data with East Asian nations' data, but there are many differences in small-scale societies. Thus, there appears to be a need for a tool that helps to design and plan comparative studies. Muthukrishna and colleagues introduce a method for measuring the psychological and cultural distance between any two societies. They focus on the United States and China (a common cultural comparison) and provide the code and an online application to compare any two countries.

Psychological Science

<https://journals.sagepub.com/doi/full/10.1177/0956797620916782>



PSYCHOLOGICAL SCIENCE

The Distinct Effects of Empathic Accuracy for a Romantic Partner's Appeasement and Dominance Emotions

Bonnie M. Le, Stéphane Côté, Jennifer Stellar, and Emily A. Impett

The benefits of accurately reading others' emotions—empathic accuracy—may depend on the emotion type. Romantic partners rated their relationship quality, discussed the relationship characteristics they wanted to change, and rated their perceptions of their partners' emotions. For appeasement emotions (e.g., embarrassment), empathic accuracy predicted higher relationship quality. For dominance emotions (e.g., anger), intensity of felt emotions was

a better predictor of relationship quality than empathic accuracy. The more intensely someone feels dominance emotions, the lower the quality of their romantic relationship. Empathic accuracy did not predict partners' motivation to change.

<https://journals.sagepub.com/doi/full/10.1177/0956797620904975>

CLINICAL PSYCHOLOGICAL SCIENCE

The Masking of Mourning: Social Disconnection After Bereavement and Its Role in Psychological Distress

Kirsten V. Smith, Jennifer Wild, and Anke Ehlers

Social disconnection appears to be associated with high psychological dis-

stress after losing someone close. Smith and colleagues tested the Oxford Grief-Social Disconnection Scale (OG-SD) in a sample of bereaved individuals and found that the scale appears to validly measure their negative interpretation of others' reactions to their grief expression, altered social self (including emotional suppression), and safety in solitude. A second sample completed the OG-SD and measures of prolonged grief disorder, posttraumatic stress disorder, and depression 0 to 6 months following loss and 6 to 12 months after the initial post-loss treatment. Results indicated that when social disconnection declined over time, psychological distress also declined.

<https://journals.sagepub.com/doi/full/10.1177/2167702620902748>

CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE

Your Brain Is Not an Onion With a Tiny Reptile Inside

*Joseph Cesario, David J. Johnson,
and Heather L. Eisthen*

Cesario and colleagues describe a model of neural evolution that challenges the widespread misconception that as vertebrate animals evolved, they added “newer” brain structures to the “older” existing ones, enabling them to have more complex psychological functions (e.g., language). Neurobiologists have long discredited this misconception that the reptile brain is still part of the human brain, which just added more layers. The authors provide examples of how this inaccurate view of brain evolution has impeded progress in psychology.

<https://journals.sagepub.com/doi/full/10.1177/0963721420917687>

Aging in an Era of Fake News

*Nadia M. Brashier and
Daniel L. Schacter*

Older adults appear to be particularly susceptible to misinformation (e.g., they shared the most fake news during the 2016 U.S. election). Brashier and Schacter suggest that social changes in late adulthood, including difficulty in detecting lies and less emphasis on accuracy when communicating, might be partly responsible for susceptibility to misinformation. Moreover, older adults are less experienced with social media and may struggle to evaluate the veracity of content. Interventions that take into account older adults’ social changes and digital literacy might help to reduce their susceptibility to fake news. This research is particularly relevant in an age in which fake news abounds and can cause serious harm, from sowing doubt in modern medicine to inciting violence.

<https://journals.sagepub.com/doi/full/10.1177/0963721420915872>

PERSPECTIVES ON PSYCHOLOGICAL SCIENCE

Psychological Antecedents of Refugee Integration (PARI)

*Gerald Echterhoff, Jens H. Hellmann,
Mitja D. Back, et al.*

Echterhoff and colleagues propose that perceptions of forcedness (i.e., coercion and loss of control) and associated risks and potential suffering during migration activate processes relevant to refugee integration, affecting both refugees and residents. For example, refugees’ memories of forcedness can interfere with integration-related activities, and residents’ perceptions of forcedness may enhance empathy with refugees but also magnify feelings of threat. The authors discuss the implications of these processes for occupational work, education, and mental health.

<https://journals.sagepub.com/doi/full/10.1177/1745691619898838>

The U Shape of Happiness Across the Life Course: Ex- panding the Discussion

*Nancy L. Galambos, Harvey J. Krahn,
Matthew D. Johnson, and
Margie E. Lachman*

Galambos and colleagues argue that support for a U shape of happiness—in which happiness is highest for people in their 20s, decreases in midlife, and increases again in old age—is not very robust. They suggest that studies across groups of people are not appropriate to infer happiness changes within individuals, and they review research indicating that results regarding happiness and well-being across the life span are mixed. The authors propose that considering diverse life pathways throughout life might lead to a better representation of the courses of happiness.

<https://journals.sagepub.com/doi/full/10.1177/1745691620902428>

ADVANCES IN METHODS AND PRACTICES IN PSYCHOLOGICAL SCIENCE

Average Power: A Cautionary Note

*Blakeley B. McShane, Ulf Böckenholt,
and Karsten T. Hansen*

McShane and colleagues clarify the nature of average power, a measure that quantifies the power of a set of previous studies using a meta-analytic approach. They explain that average power is not relevant to the replicability of prospective replication studies. The researchers suggest that point estimates of average power are too variable and inaccurate and that interval estimates of average power depend on point estimates, rendering both estimates difficult to use in application. These findings do not imply that meta-analyses are not useful, especially when used to calculate variation in effect sizes rather than average power.

<https://journals.sagepub.com/doi/full/10.1177/2515245920902370>

Cross-Validation: A Method Every Psychologist Should Know

Mark de Rooij and Wouter Weeda

Cross-validation assesses how accurate a model’s predictions might be for another independent data set. The researchers introduce an R package to conduct cross-validation and present examples illustrating the use of this package for different types of problems. They suggest that although most researchers might be familiar with this procedure, they seldom use it to analyze their data. Yet it might be an easy-to-use alternative to the common null-hypothesis testing, with the benefit of not requiring the researcher to make as many assumptions. ●

<https://journals.sagepub.com/doi/full/10.1177/2515245919898466>

See all APS journals at
[psychologicalscience.org/
publications](https://psychologicalscience.org/publications)

POLICING AND LAW ENFORCEMENT: FURTHER CONSIDERATIONS FROM PSYCHOLOGICAL SCIENCE



A review of research from 2005 to 2019 examines racial disparities in police stereotyping and greater use of aggressiveness against Black persons.

Incidents between police and unarmed community members over the past several years, including the police shootings of Michael Brown (2014, Ferguson, Missouri), 12-year old Tamir Rice (2014, Cleveland, Ohio), and the sleeping Breonna Taylor (March 2020, Louisville, Kentucky), have fostered a generalized discontent with the police force in the United States. This public loss of faith has been heightened by the killing of George Floyd in May 2020 in Minneapolis, Minnesota, by a police officer who pressed his knee to Floyd's neck for almost nine minutes while Floyd was handcuffed face-down in the street.

These victims of police violence all had one thing in common: they were Black, calling attention to racial bias in the police force. Here, we review some research on police and stereotyping, police aggression, and recommendations from psychological science for policing in the United States.

Police and Stereotyping

Chief among these concerns is whether and to what extent police engage in racial profiling—targeting persons of a certain race because of assumptions about their racial or ethnic group rather than because of their actual behavior. These racial disparities might also play a role in police behavior and the resulting deaths of Black persons.

Heather M. Kleider-Offutt, Alesha D. Bond, and Shanna E. A. Hegerty (Georgia State University) reviewed a series of studies suggesting that negative biases associating Black men with criminality are even more pronounced for men with certain facial features (2017) that are more Afrocentric (e.g., darker skin, a wide nose, full lips). This bias appears to occur because these men are readily categorized as stereotypically Black and representative of the category “Black male,” which also associates them with the criminal-Black-male stereotype. This type of stereotyping may lead to

negative judgments and result in violent behaviors toward stereotyped members of the category.

APS Fellow **Keith Payne** (University of North Carolina at Chapel Hill) wrote in *Current Directions in Psychological Science* about how racial stereotypes can lead people to claim to see a weapon where there is none (2006). This weapon bias appears to affect the decisions made in the proverbial split second. Payne reviewed controlled laboratory studies in which participants made visual discriminations between guns and harmless hand tools right after a human face flashed: a Black face on some trials, a White face on others. Participants were instructed to ignore the faces and respond only to the objects. When they made the decision at their own pace, race did not affect their accuracy, although they were faster in accurately identifying a gun after seeing a Black face. When participants had only a few seconds to make their decision, they falsely claimed to see a gun more often when the face was Black than when it was White.

“Such a bias could have important consequences for decision making by police officers and other authorities interacting with racial minorities,” and this bias might occur “even for those who are actively trying to avoid it,” wrote Payne. So, how to address and reduce this bias? Payne cited studies indicating that police officers with the most firearms training tend to show the least race bias, and that practice identifying weapons may also reduce weapon bias in police officers.

Other Causes of Police Aggressiveness

In a 2019 article in *Psychological Science*, Reinoud Kaldewaij (Radboud

University Nijmegen) and colleagues suggested that police officers might have difficulty controlling emotional responses partly due to the effect of high levels of testosterone on the brain circuits that control emotion. While in an MRI scanner, Dutch police recruits completed a task in which they had to approach or avoid angry and happy faces by moving a joystick. For the trials that required emotional control, brain blood flow, indicating activation, was stronger in the neural control circuits for participants with higher levels of aggression, but lower for those with high aggression and testosterone levels. Hence, aggressive individuals who are mentally healthy seem able to use a brain circuit to regulate their emotions, but this regulation might fail under challenging situations known to increase testosterone. These findings might explain why police officers, though selected for their high emotional control, may show poor control

(e.g., using excessive violence) in certain situations. This research does not serve as an excuse for excessive violent behavior, but it can have implications for selecting and training first responders.

Possible Paths to Improve Police-Community Relations

Payne (2006) cited research showing that consciously planning to link racial categories to specific counterstereotypic thoughts (e.g., when I see a Black face, I will think “safe”) might reduce automatic racial biases. Other studies also suggest that training police officers might be a key factor in eliminating their racial biases. In 2005 article in *Psychological Science*, **E. Ashby Plant** and B. Michelle Peruche (Florida State University) found that, after extensive training with a gun-identification task in which the race of the suspect was unrelated to the presence of a weapon, officers were able

to eliminate their bias toward shooting unarmed Black versus White suspects.

In addition to addressing racial bias in the police force, officers also need to improve police-community relations, which may increase police legitimacy and even reduce crime, suggested APS Fellow **Tom R. Tyler** (Yale University), Phillip Atiba Goff (John Jay College of Criminal Justice), and APS William James McKeen Cattell Fellow **Robert J. MacCoun** (Stanford University) in their 2015 article in *Psychological Science in the Public Interest*. Giving community members a voice in designing policies, allowing individuals to explain themselves in interactions with officers, and being neutral and transparent about rules and decisions would all support a “positive and proactive social-psychology-based model of policing,” the researchers concluded. ●

See the full article, including links to references, online.

SIX APS FELLOWS ELECTED TO MEMBERSHIP IN NATIONAL ACADEMY OF SCIENCES

Six Fellows of the Association for Psychological Science (APS) are among the most recent inductees into the National Academy of Sciences (NAS). Membership in the NAS is a widely accepted mark of excellence in science and is considered one of the highest honors that a scientist can receive.

The academy announced Monday, April 27, 2020, the election of 120 members and 26 international members in recognition of their distinguished and continuing achievements in original research.

APS Fellows newly elected into the NAS are:

Randall Engle, full professor, School of Psychology, College of Sciences, Georgia Institute of Technology, Atlanta.

Susan J. Goldin-Meadow, the Beardsley Ruml Distinguished Service Professor, department of psychology, The University of Chicago, Ill.

Elke U. Weber, the Gerhard R. Andlinger Professor, departments of psychology and public affairs, Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, N.J.

Janet F. Werker, the University Killam Professor, department of psychology, University of British Columbia, Vancouver, Canada.

Timothy D. Wilson, the Sherrill J. Aston Professor of Psychology, department of psychology, University of Virginia, Charlottesville.

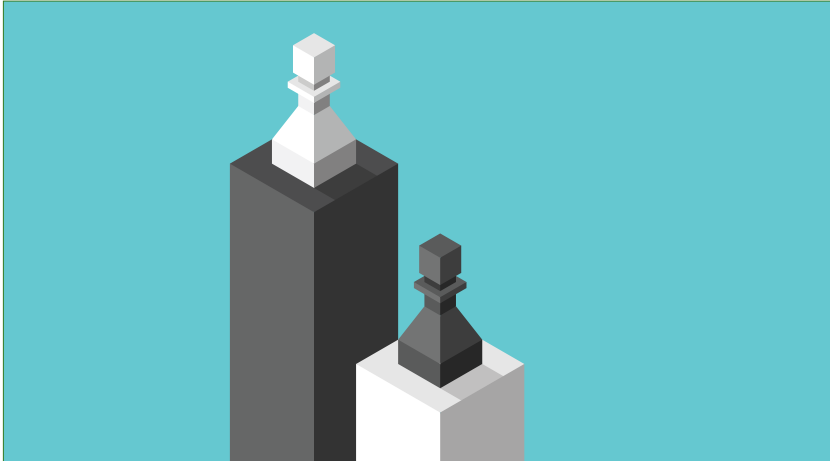
One APS Fellow was newly elected as an international member:

Anna C. Nobre, director, Oxford Centre for Human Brain Activity, department of experimental psychology, University of Oxford (United Kingdom/Brazil).

The newly elected NAS members bring the total number of active members to 2,403 and the total number of international members to 501. International members are nonvoting members of the academy with citizenship outside the United States. ●

In "Observations," the names of APS Fellows and current APS Members are denoted by boldface type.

RACISM: FURTHER CONSIDERATIONS FROM PSYCHOLOGICAL SCIENCE



Research published in APS journals in recent years addresses the nature of racism and the social processes that maintain it, examines structural and institutional racism, explores the consequences of racism, and suggests possible paths of action to combat racism.

Racism is undeniably a matter of concern across countries and cultures. In the United States, where slavery was abolished in 1865 and segregation outlawed in 1954, the effects of racism are still pervasive in everyday life. Here is a look at what psychological scientists have uncovered on the topic in recent years.

Systemic Racism and Implicit Biases

Racism is usually defined by individual psychological processes such as prejudice, stereotyping, or discrimination. But racism is not only ingrained in individual minds; it is also found at historical and cultural levels. Focusing on individual prejudice can obscure the role that institutional and cultural processes play in maintaining race-based hierarchies. In a 2018 article in *Current Directions in Psychological Science*, Phia S. Salter (Davidson College), Glenn Adams (University of Kansas), and Michael J. Perez (Texas A&M University) proposed a cultural-psychological approach to

racism. They suggested that racism is reproduced in everyday environments that afford, promote, and maintain racist processes. People shape and maintain these racist processes through their preferences and actions. This interplay between individuals and culture makes it more difficult to dismantle racism.

In *Psychological Science*, Heidi A. Vuletich and APS Fellow **Keith Payne** (University of North Carolina at Chapel Hill) analyzed individual biases and found that rather than being a property of individuals, implicit bias might be a property of social contexts, and that changing the social context (e.g., by increasing faculty diversity or removing Confederate monuments from campuses) may more effectively reduce bias than changing individual attitudes (2019). In Vuletich and Payne's reanalysis of a previous study of 18 university campuses before and after a racial bias intervention (Lai et al., 2016), the researchers found that individual at-

titudes varied randomly across time and that campus characteristics such as low faculty diversity predicted high bias. This indicates that the stability of bias may reflect stable environments rather than persistent individual biases.

Despite studies indicating the pervasiveness of systemic and institutional racism, other authors point out the importance of considering individual implicit biases. In a 2019 article in *Perspectives in Psychological Science*, APS Fellow **Bertram Gawronski** (University of Texas at Austin) discussed six lessons for a more informed understanding of implicit bias and how to conduct research on it. Gawronski noted that people are not necessarily unaware of their underlying mental biases, and yet these biases do not always manifest in an individual's behavior, suggesting additional factors may influence the relationship between bias and behavior.

Consequences of Racism

Racism's consequences are both physical and psychological. In *Perspectives on Psychological Science*, Antoinette M. Landor (University of Missouri) and Shardé McNeil Smith (University of Illinois) proposed that assaults resulting from an individual's skin tone may result in traumatic stress reactions (2019) and health and interpersonal outcomes (e.g., low self-esteem, hypertension, risky sexual behavior). Moreover, African Americans score worse than individuals with other racial backgrounds on most major physical health indicators, such as coronary heart disease, stroke, cancer, and HIV (see Lewis & Van Dyke, 2018).

Racism also results in economic and legal inequalities. Michael W. Kraus, Ivuoma N. Onyeador, **Natalie M. Daumeyer**, Julian M. Rucker, and

APS Fellow **Jennifer A. Richeson** (Yale University) suggested in *Perspectives on Psychological Science* that Americans vastly underestimate current racial economic inequality (2019), especially the racial wealth gap. When the researchers compared participants' estimates of economic disparities between White and Black families with actual economic data collected by the U.S. government, they found that participants underestimated the racial wealth gap in 1963 by 40% and the racial wealth gap in 2016 by 80%.

Ways to Combat Racism

Reminding the public of disparities between the treatment of Blacks and Whites might not be the best approach to combat racism. For example, in *Current Directions in Psychological*

Science, Rebecca C. Hetey and APS Fellow **Jennifer L. Eberhardt** (Stanford University) suggested that reminders about how Blacks are more likely to be punished by the criminal justice system than Whites may trigger fear and increase stereotypical associations between Blacks and crime, increasing biases and support for the policies that created the disparities (2018). Instead, they suggest presenting data on racial disparities in a way that emphasizes that they are not natural, but rather the result of institutions that perpetuate structural and sociocultural forms of racism.

Multiple researchers have investigated how contact with diversity should be managed to effectively combat racism. Richeson, Rucker, and **Maureen A. Craig** (New York University) propose in *Current Directions in Psychological*

Science that prejudice can be reduced if increases in diversity are accompanied by positive contact with members of different racial groups, especially when individuals share equal status and common goals.

Recently, Mitchell R. Campbell and Markus Brauer (University of Wisconsin-Madison) suggested in *Perspectives on Psychological Science* that using principles from social marketing (2020), which is mainly concerned with changing behaviors, in prejudice research might help to minimize the existing gap between what we know about prejudice and the real-world methods to reduce it, which often fail. ●

See the full article, including links to references, online.

Also see the Racism Research Topic.

THE DARK SIDE OF ACADEMIA: COMMON NEGATIVE EXPERIENCES

Academic life is not just about discovery and excitement. In a recent article in *Perspectives on Psychological Science*, Lisa M. Jaremka (University of Delaware) and colleagues share a collection of personal stories about their experiences with repeated rejection, impostor syndrome, and burnout.

Repeated Rejection

From submitted manuscripts to grant proposals and job applications, these scholars have learned that “rejection is not failure,” writes APS Fellow **Kate Sweeny** (University of California Riverside). Sweeny recommends taking a break before moving on to the next step, not dwelling on rejection, not being afraid or ashamed to seek help if the stress of rejection becomes overwhelming, and discussing one's experiences with trusted colleagues.

Impostor Syndrome

Impostor syndrome refers to the feeling that one is pretending to be something they are not. For academics, this can lead to the perception that you are undeserving of your achievements, writes Linda R. Tropp (University of Massachusetts Amherst). Tropp urges scholars to “feel the fear and do it anyway,” and remember that others are unlikely to see you as an imposter.

Brooke Vick (Muhlenberg College) believes her impostor syndrome derives from paralyzing perfectionism as a result of holding herself to high standards. These characteristics may also be exacerbated by social factors, such as being a woman of color working in predominantly White institutions in higher education. She suggests, among other strategies, diversifying “examples of ‘successful’ career paths to include

faculty positions at liberal-arts colleges, community colleges, and nonprofit and private-industry organizations.”

Burnout

APS Fellow **Bertram Gawronski** (University of Texas at Austin) writes that “the experience of burnout is different from simply feeling fatigued or exhausted; it typically stems from a lack of perceived control that leads people to feel overwhelmed and ‘at the end of their rope.’”

“Academic culture needs to change ... to make these experiences less common,” Jaremka writes. ●

See the full article, including links to references, online.

See more Observations at
psychologicalscience.org/obsonline.

APS ESTABLISHES THE SCOTT O. LILIENFELD APS TRAVEL AWARD



Scott O. Lilienfeld
Emory University

The new Scott O. Lilienfeld APS Travel Award will fund travel and lodging for one or more graduate stu-

dents attending APS Annual Convention beginning in 2021.

Initiated by a group of Lilienfeld's friends and colleagues, the award seeks to honor and extend APS James McKean Cattell Fellow **Scott O. Lilienfeld's** influence on the next generation of clinical scientists by recognizing graduate student achievement in clinical psychological science research and theory.

A professor of psychology at Emory University since 1994, Lilienfeld has made seminal contributions to the understanding of personality and personality disorders, in addition to his work on cognitive biases, memory, and traits that support scientific thinking. Lilienfeld began serving as editor in chief of *Clinical Psychological Science* in 2018, and is a past president of both the Society for a Science of Clinical

Psychology and the Society for the Scientific Study of Psychopathology.

"Scott is a scholar and a gentleman who has fearlessly confronted 'pseudoscience' in clinical psychology in reasoned, evidence-based debate," added APS Fellow **Richard J. McNally** (Harvard University). "Never reluctant to address controversial issues, his fair-minded, non-dogmatic manner is a model for everyone in our field. These are among the attributes we seek in recipients of the award in Scott's honor."

The award will provide \$1,000 to \$1,500 to recipients to be used for travel and hotel expenses. APS will also waive convention registration fees for award recipients. The Scott O. Lilienfeld APS Travel Award fund is currently accepting donations. ●

See the full article at psychologicalscience.org

AMERICAN ACADEMY OF ARTS & SCIENCES ELECTS SEVEN APS FELLOWS

Seven APS Fellows have joined the ranks of psychological scientists gaining election to the American Academy of Arts & Sciences (AAAS), an honorary society and independent research center founded in 1780. Announced April 23, the complete class of 2020 members includes 276 artists, scholars, scientists, and other leaders in the public, nonprofit, and private sectors representing five classes: Mathematical and Physical Sciences; Biological Sciences; Social Sciences; Humanities and Arts; and Public Affairs, Business, and Administration.

Newly elected APS Fellows:

- **Edith Chen**, the John D. and Catherine T. MacArthur Chair, professor of psychology, and co-director of the Foundations of Health Research Center at Northwestern University

- **Geraldine Dawson**, the William Cleland Distinguished Professor in the Department of Psychiatry and Behavioral Sciences at Duke University, and director of the Duke Center for Autism and Brain Development

- **Dacher Keltner**, a professor of psychology and co-director of the Greater Good Science Center at the University of California, Berkeley

- **Gregory L. Murphy**, a professor of psychology at New York University

- **Seth Pollak**, the College of Letters and Science Distinguished Professor of Psychology at the University of Wisconsin, Madison

- **Suparna Rajaram**, Distinguished Professor of Cognitive Science (and APS Past-President) at Stony Brook University, The State University of New York

- **Jennifer A. Richeson**, the Philip R. Allen Professor of Psychology at Yale University

More than 1,300 nominations to the Academy are considered each year. ●

NEW RECOGNITIONS FOR TVERSKY, BANAJI



Mahzarin R. Banaji
Harvard University

Two APS Past Presidents have been singled out recently with prestigious awards recognizing their contributions to science.

In June, APS Past President **Barbara Tversky** (Teachers College, Columbia University, and Stanford University) received the Kamp de Fériet Award for her research on memory, thought, spatial models, and event perception. The award, named for the French scientist Joseph Kamp de Fériet, recognizes significant work in the field of information processing and the management of uncertainty.

Tversky received the award virtually June 17th during the 18th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems. During the conference, she also presented a keynote speech on how action shapes thought. As a cognitive psychologist, Tversky, an APS Fellow, has contributed to research on everything from memory and categorization to creativity and design.

In May, APS Past President **Mahzarin R. Banaji** (Harvard University) was elected to the American Philosophical Society for her work on implicit social cognition. Banaji is among 34 individuals recognized by the society this year for their extraordinary accomplishments across the sciences, humanities, and civil or cultural life.

Banaji, an APS William James Fellow, studies how our implicit, or unconscious, mental systems influence social attitudes and beliefs, particularly in relation to in-group/out-group behavior. She pioneered the use of the Implicit Association Test (IAT) to measure the strength of associations between concepts (e.g., black, elderly) and attributes (e.g., good, bad) or stereotypes (e.g., athletic, clumsy) that may exist below conscious awareness. ●

See separate articles about both of these honors at psychologicalscience.org/obsonline.

TO BOOST STEM GRADUATION RATES, FOCUS ON WHAT YOU CAN CONTROL

Graduates with backgrounds in science, technology, engineering, and mathematics (STEM) are among the most in-demand in the job market, yet nearly half of U.S. college students who enroll in a STEM program fail to graduate with a degree in one of these competitive majors—if they graduate at all. Research in *Psychological Science* suggests that interventions that encourage students to attribute academic failures to controllable factors, such as low effort and bad study strategies, could boost graduation rates for those who performed poorly in high school.

“Beliefs about the causes of achieve-

ment failure can have long-term implications for the future motivation and educational attainment of students at risk of college dropout,” write Jeremy M. Hamm (North Dakota State University) and colleagues. Hamm and colleagues demonstrated the utility of previous findings linking attribution and academic persistence through a longitudinal study of 496 first-time college students who began their freshman years as STEM majors between 1992 and 1997.

Overall, the researchers found that 66% of participants in the intervention condition whose records indicated low high school grades (HSGs) graduated,

compared to only 51% in low-HSG participants in the control group. Low-HSG students who participated in the intervention were also significantly more likely to stick with their STEM programs.

While systemic factors such as institutional support and differences in education quality play a significant role in the reduced graduation rates of students with low HSGs, attribution interventions may provide a simple, cost-effective method to help close the “leaky STEM pipeline,” the authors conclude. ●

See the full article with reference list at psychologicalscience.org

Pass It On

Tell a friend about APS.



Foster global connections among psychological scientists by encouraging your friends and colleagues to join APS.

www.psychologicalscience.org

Call for Nominations: APS Rising Stars

Deadline: September 30, 2020



The APS Rising Star designation recognizes outstanding psychological scientists in the earliest stages of their post-PhD research careers.

Nominations will be evaluated based on the following criteria:

- Significant publications
- Significant recognitions
- Significant discoveries, methodological innovations, or theoretical or empirical contributions
- Work with potentially broad impact

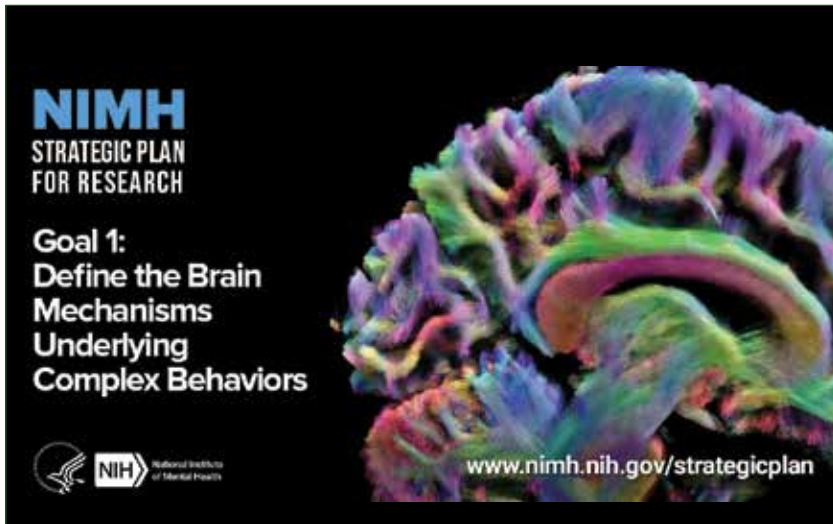
Eligibility for the 2020 nomination period is limited to individuals who received a PhD between January 1, 2014 and December 31, 2017.

Nominations Process: Each nomination must be supported by two APS Members, one of whom must be an APS Fellow. For information on submitting nominations, please visit: www.psychologicalscience.org/rising-stars

Please consider the diverse and international nature of our field in nominating colleagues. Nominations of members of underrepresented groups in psychological science are encouraged.

NATIONAL INSTITUTE OF MENTAL HEALTH UNVEILS NEW STRATEGIC PLAN

Research goals over the next five years to focus on behavior, illness trajectories



Goal one of the National Institute of Mental Health's new Strategic Plan for Research is working toward an improved understanding of the neurological, genetic, and non-genetic factors associated with mental illnesses and disorders. (Image courtesy NIMH)

The National Institute of Mental Health (NIMH), one of the largest funders of psychological science research at the National Institutes of Health, has unveiled a new strategic plan that outlines the goals and objectives that the institute will follow in its funding decisions for research over the next 5 years.

Finalized following a public comment period, the strategic plan centers on four high-level goals:

1. Define the brain mechanisms underlying complex behavior.
2. Examine mental illness trajectories across the lifespan.
3. Strive for prevention and cures.
4. Strengthen the public health impact of NIMH-supported research.

Stemming from each goal are objectives that further clarify and provide direction for the intended outcomes of each section of the plan. NIMH considers the strategic plan a living document that will be updated as scientific knowledge evolves and new discoveries are made. “Studies of

For the first time, NIMH's strategic plan is accompanied by an interactive website, accessible at nimh.nih.gov/strategicplan. Read messages from the director of the institute, view an overview of the plan, and explore cross-cutting themes the institute will pursue.

the origins of mental illnesses suggest that a combination of causes—genetic, environmental, social, and psychological—act on the brain through a complex web of interactions, resulting in a set of heterogeneous and overlapping illnesses,” said NIMH Director Joshua Gordon in his foreword. “Deciphering the meaning and mechanisms behind these causes remains a daunting task.”

The inclusion of behavioral science throughout the strategic plan's goals and objectives is likely to provide future research funding opportunities for psychological science at NIMH. This emphasis also provides visibility for the important role of psychological science and behavioral science more broadly in understanding and treating mental illnesses. Importantly, the plan features research objectives that have been broadened to include behavioral, environmental, and psychosocial factors, as well as acknowledging that research on environment and experience is important for understanding the genomic and non-genomic factors associated with mental illness (Objective 1.2 of Goal 1).

APS continues to advocate for the representation of psychological science throughout all the institutes at NIH. We will communicate relevant funding opportunities and policy changes associated with this plan through the APS Federal Research, Funding, and Policy page (psychologicalscience.org/policy).

See the NIMH Strategic Plan for Research at nimh.nih.gov/strategic-plan. ●

— **Kekoa Erber**
APS Government Relations and
Policy Assistant

APS Student and Early Career Webinar Series

These webinars are free and recordings will be available following the live events.



June Virtual Networking

July Careers Outside Academia

August Peer Review

September Online Research

October Path to Postdoc

Learn more and register:
psychologicalscience.org/webinars

A NEW FORCE FOR BEHAVIORAL SCIENCE IN AGING RESEARCH



Lisbeth Nielsen
National Institute on Aging

Good news for psychological science: In March, Lisbeth Nielsen, a top force for behavioral science at the National Institutes of Health (NIH), took over leadership of the Division of Behavioral and Social Research at the National Institute on Aging (NIA). As division director, Nielsen is responsible for overseeing a budget of nearly \$500 million supporting NIA's extramural research in the behavioral and social sciences—that is, the grants and contracts that NIA awards to the research community outside of NIH. Having Nielsen in this influential seat at NIA represents a positive development for psychological science and the behavioral and social sciences broadly. In an interview with APS, she discussed the history of NIA's behavioral division, shared her perceptions of important trending topics in aging research, and offered some advice for psychological scientists considering careers in government.

Aging—Unexpectedly

Nielsen's route to high-level government service and aging research began somewhat circuitously. As a graduate student at the University of Arizona in the 1990s, her research focused on the intersections of emotion, cognition, and psychophysiology, guided by APS Fellows **Al Kaszniak** and **John Allen** (University of Arizona), along with further training with neurologist Steve Rapsack at the Tucson Veteran's Affairs hospital. She hadn't really considered her research to be on the topic of aging—but many of the experimental populations and control groups she was studying included older adults. "I was doing aging research without knowing it," she said.

The turning point came when she met APS Fellow **Laura Carstensen** (Stanford University), whose mentorship led to an aging-focused postdoctoral fellowship supported by NIA. Carstensen's extensive understanding of NIA funding provided a valuable early crash course in the institute and helped broker important connections with NIA figures including Sidney Stahl, a social scientist who headed the institute's Individual Behavioral Processes Branch at the time. Stahl was looking for someone to take on a growing grant portfolio, and Nielsen was the person for the job.


"I had never really considered such a position," said Nielsen, noting that the speedy hiring process required a quick mindset adjustment. (See this article online for more of her thoughts on government jobs.) But in 2005, with Carstensen's encouragement, Nielsen was off to a career at NIA, leading to 15 years as a program director and

then chief of the Individual Behavioral Processes Branch.

In her new role, Nielsen oversees the activities of this branch as well as the work of the Population and Social Processes Branch.

A Healthy Environment for the Science of Aging

Nielsen speaks highly of the longstanding behavioral science legacy at NIA, noting its recognition as a strong funder of basic behavioral science research as well as integrative, transdisciplinary research. When she arrived at the institute, her division was under the direction of psychological scientist Richard Suzman, known for his forward-thinking, creative vision and skill at getting people to work across disciplinary divides, including psychological science, economics, and demography. Under the leadership of Suzman and then social scientist John Haaga, Nielsen's immediate predecessor in her role, the division expanded its support of large, population-based surveys of the aging experience that were also rich in their psychological science inquiry. In a sense, the surveys merged the individual- and population-level processes characterized by the division's two branches.

"Population science has been deeply infused with psychological and biobehavioral content," said Nielsen, adding that these developments have generated new, important 

See all government funding opportunities at the Federal Research, Funding, and Policy page on the APS website: psychologicalscience.org/policy.

opportunities for psychological scientists to participate and contribute.

Strong leadership and supportive collaboration with colleagues like APS Fellow **Jeffrey Elias** (University of California, Davis), Jonathan King, and others enabled a behavioral and social science network collectively, she noted, furthering NIA's cognitive aging portfolio as well as its support for "nonscientific" areas such as personality and social psychological science.

"We've all been part of the effort to do this," she said.

A New Chapter for Behavioral Science

According to Nielsen, personality and social processes are among some of the most interesting areas in aging and life-span developmental research currently. Both have seen considerable transformations in the last decade, and now there's a growing dialog about the causal roles these processes might play in putting individuals and groups on healthier aging trajectories and improving later-life outcomes.

To these goals and more, Nielsen's advancement is well timed to help usher NIA into a new era of behavioral and social science. An external review in late 2019 by the National Advisory Council on Aging (which advises NIA director Richard Hodes on the institute's functions) supports this notion, noting in its conclusions that committee members were "astonished at the breadth and complexity of the [behavioral and social research] portfolio.... [The division] has excelled in the past 5 years at developing its portfolio."

Further, many of the recommendations in the review align with what Nielsen and other NIA staff view as important priorities for NIA over the next 5 to 10 years. Three are especially significant, she said.

Advancing the "life-course" approach to aging. "Aging is a process, not a life stage," said Nielsen. While noting that individuals' aging trajec-

ries are set sometimes very early in life, she plans to support research toward improving trajectories in midlife. Specifically, Nielsen hopes that NIA-funded research will improve scientific understanding of what is plastic or malleable in middle age, contributing to the understanding of the phenomenon of "midlife reversibility," or how to compensate for early adversities or redirect aging trajectories during this period.

Behavior change, using science to inform attempts to change both individual and organizational behavior to foster health and reduce disease. Nielsen believes an approach focused on the mechanisms of behavior change, and the interactions among those mechanisms, is key to furthering this science. "We're interested in all levers of change you can push," she said, underscoring the need to advance the rigor of this area.

The study of Alzheimer's disease and its related dementias, for which NIA has appropriated significant government funding over the last several years. Nielsen believes that the influx of dollars provides a significant opportunity to leverage psychological science and behavioral and social science generally to understand, alleviate, and prevent these diseases. She cautions, however, that strong federal support necessitates careful stewardship. "The responsibilities are substantial," she said.

Other elements of Nielsen's work at NIA offer further promise for advancing behavioral science research. For instance, NIA's coordination with other NIH institutes, including the National Institute on Minority Health and Health Disparities, focuses on an investigation of the social determinants of health. Indeed, the review of Nielsen's division called on NIA to examine causal factors behind the substantial health disparities in our society including stigma, bias, discrimination, racism, and inequity.

And the Science of Behavior Change (SOBC) Initiative has brought together people from across behavioral science institutes and along all stages of the basic to translational pipeline to apply a systematic approach to understand the mechanisms behind successful behavior change. "It's forced us all to learn how to speak each other's languages," reflected Nielsen. Breaking down silos within individual institutes is "transformative—it's a testament to what can happen when you bring scientists together and give them the space to change the field."

A Future for the Field

Nielsen thinks it's a fantastic time to be studying aging.

"The psychological science of aging over the last 15 years has been increasingly more biobehavioral and biosocial," she said. "The intersection of pure behavioral science and all aspects of cognitive, affective, social, and decision neuroscience"—along with other fields integrating biological and psychological work—"are really transforming the opportunity for our fields to play important roles in the NIH agenda."

Other transformations still make this time a key moment for psychological science, Nielsen added. Changes in open science, data sharing, and large-scale collaborations are exciting new directions, but they pose training challenges for both active scientists and future generations of researchers. Nielsen feels it's her division's job to foster these advances across NIA's many stakeholders, noting the potential for research networks, summer institutes, and similar mechanisms to advance this training.

Learn more about NIA's Division of Behavioral and Social Research at nia.nih.gov/research/dbsr. ●

— **Andy DeSoto**
APS Director of Government Relations

APS COVID-19 Resources

A collection of
psychological science
research and insights
from the APS
community.

**[psychologicalscience.org/
covid-19](https://psychologicalscience.org/covid-19)**



The Promise of Psychological Science



Every year at the APS convention since 1991, a highlight has been the poster sessions, where hundreds of undergraduate and graduate students studying psychological science (as well as scientists at all levels) present their research and engage in discussions with interested colleagues. With COVID-19 forcing the cancellation of APS 2020, these interactions have gone online in the form of the first APS Virtual Poster Showcase, open to registered attendees from June 1 through September 1. Registration is free.



In the following pages, you'll learn about the motivations and personal stories behind many of the best posters accepted to APS 2020, as selected by reviewers for the four categories of awards. Besides briefly describing the research in the winning posters, we asked the principal authors three simple questions about their work. Their responses, lightly edited for publication, follow. The summaries are drawn from the posters themselves, edited for brevity.



See this story online to view each of the award-winning posters (PDFs), the related research abstracts, and in some cases longer responses from the award winners. You can also interact with the full Virtual Poster Showcase, with more than 1,225 uploaded posters, and learn more about the categories and criteria, at psychologicalscience.org/posters.



Student Research Award

Offered through the APS Student Caucus (APSSC), the Student Research Award recognizes excellence in research by APS Student Affiliate Members, including undergraduate students, graduate students, and students transitioning between their undergraduate and graduate education, representing any field or area of psychology. A panel of graduate and undergraduate students selected the four winners for 2020, who also received a monetary award of \$300. Learn more about the Student Research Award, including past winners, at psychologicalscience.org/members/apssc/about/student-research-award.



Reinterpreting a Popular Measure: What Is the Balloon Analogue Risk Task Measuring?
Natasha Chaku and Lindsay Till Hoyt
(Fordham University)

The Balloon Analogue Risk Task (BART) is a computer-based measure of risk taking in which participants inflate a series of

balloons. Points are rewarded for each “pump.” However, at any point during each trial the balloon may explode, and participants lose all accumulated points. Chaku and Hoyt found that the BART may be a better measure of adaptive decision-making than risk taking.

What drew you to this research?

I’m interested in understanding the ecological validity of various tasks we use to measure real-world behavior. The Balloon Analogue Risk Task (BART) is often used as a valid proxy for risk taking, but using averages that collapse data across person and time may misrepresent inter- and intra-individual variability that contextualizes the cognitive processes related to risk taking.

What did the research reveal that you didn’t already know?

There are a variety of new methods available to evaluate performance on the BART that may be helpful when assessing individual differences in risk-taking behaviors. In particular, intra-individual measures of BART performance show promising predictive validity. As the BART continues to

be utilized in psychological research, we hope that these preliminary findings will instigate further research and discussion on the application and use of this popular measure.

What are your plans going forward?

I just graduated with my doctorate in applied developmental psychology from Fordham University, and plan to start a postdoctoral fellowship in developmental science at the University of Michigan this summer. I plan to continue studying individual differences in cognition and how we can best utilize task-based measures to explain real-world behavior, particularly in adolescence.



Examining the Factor Structure of Self-Blame Appraisals Among Adolescents Who Have Been Sexually Abused
Caitlin Rancher,
Akibito Kamata, Renee McDonald, Ernest N. Jouriles (Southern Methodist University), and Mindy Jackson (Dallas Children’s Advocacy Center)

Self-blame appraisal, the belief that one is responsible for or caused an event, predicts adolescent adjustment problems following sexual abuse. Most empirical work does not distinguish between abuse-specific self-blame and global self-blame and may overlook important differences relevant to outcomes and interventions following sexual abuse. Rancher and colleagues found that abuse-specific and global self-blame are correlated, but conceptually distinct.

What drew you to this research?

My research seeks to understand and intervene on children’s adjustment problems following violence exposure. In this study, we examined the factor structure of self-blame appraisals, beliefs that one is responsible or caused an event, among adolescents who have been sexually abused. I was drawn to this research as a myriad of empirical literature suggests self-blame appraisals are an important predictor of adjustment problems following sexual abuse; however, I was surprised to find the definition of self-blame varies widely. Many examine self-blame specific to the abuse itself (e.g., *I caused the abuse to happen*), whereas others examine more global self-blame appraisals (e.g., *I always cause bad things to happen*). We investigated the factor structure as a critical first



step to enhance scientific and clinical understanding of self-blame appraisals for sexual abuse.

What did the research reveal that you didn't already know?

This research revealed that self-blame specific to the sexual abuse and global self-blame are conceptually distinct. Despite the theorized distinction between these two types of appraisals, this had yet to be empirically tested among a large sample of adolescents who have been sexually abused. Broadly, this revealed to me the importance of critically evaluating measurement of established phenomenon. It also suggests further research and clinical work is needed to understand how these types of self-blame may differentially relate to adolescent functioning following sexual abuse.

What are your plans going forward?

I am preparing to defend my dissertation, an original data collection at a children's advocacy center, evaluating a brief parenting program among nonoffending caregivers. In the next few months, I will be moving to Charleston, South Carolina, to begin my clinical internship at the Medical University of South Carolina. Long term, I am looking forward to continuing a clinical research career with underserved, diverse youth who have experienced trauma or are at risk for future victimization.

What did the research reveal to you that you didn't already know?

In my research program, I leverage the dynamic attribute of beliefs in exploring sociocognitive strategies that can be used at the individual and at the collective level to reduce misinformation and empower the endorsement of facts. In this particular project, I found that emotionally arousing images can be used to increase people's belief in facts. Such strategies add to the tools policymakers and organizations dedicated to diminishing misinformation can use in their campaigns.

What are your plans going forward?

As I am finalizing my dissertation on this critical subject, I hope to continue expanding this research program, especially in more applied settings. My long-term goal is to bridge the gap between controlled lab experiments like this one and real-world interventions, an essential translation I believe has urgent potential to amplify psychological science for social good.



The Emotion-Induced Belief-Amplification Effect

Madalina Vlasceanu and Alin I. Coman
(Princeton University)

To explore the effect that images have on belief endorsement, Vlasceanu and Coman tested whether statements accompanied by emotionally arousing images become more

or less believable than the same statements when they are accompanied by neutral images or by no images. The researchers found that emotional images increased statement believability.

What drew you to this research?

I was drawn to this research area when I realized the extent of the consequences misinformation has for our planet, for our health, our interactions with each other, and all other areas of our lives. Since misinformation spread is increasing with the advances of technology, it seemed imperative to start thinking about and exploring ways of addressing this problem.



The Derring Effect: Deliberate Errors Enhance Learning

Sarah Shi Hui Wong and Stephen Wee Hun Lim
(National University of Singapore)

Errors have traditionally been viewed as aversive events or, at best, serendipitous accidents. Challenging

these views, Wong and Lim tested the counterintuitive learning benefits of deliberately responding incorrectly. The researchers found that guiding learners to deliberately err even when they knew the correct answers enhanced learning—a phenomenon they term the “derring effect.”

What drew you to this research?

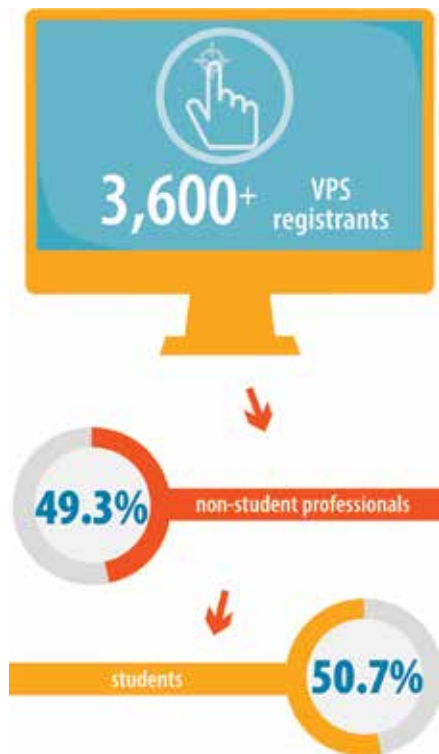
Once, I made a costly error on a high-stakes exam. While I was berating myself for it, I also realized that I would (hopefully) never make the same error again. Gratefully, that error did not ruin my transcript, but that single experience did probably fuse with many other similar instances in my life to illuminate a flash of insight: Why not practice making errors in safe learning environments, so that we truly succeed when it matters most? This sparked the counterintuitive idea of deliberate erring in low-stakes contexts to unleash the potential of errors in education. I have my statistics lecturer to thank for what has turned out to be an “aha!” moment!

What did the research reveal that you didn't already know?

By deliberately embracing our errors and wisely placing ourselves in the way of being wrong, we can overcome and rise stronger. As psychologists, we routinely acquaint with fascinating examples of errors in human cognition that may serve fundamentally adaptive purposes. We are all fallible. Yet, throughout history, we have constantly striven to deny our ordinary, imperfect, and universal humanity. Thus, it is empowering to know that deliberately committing and correcting errors—the very events that we so often seek to avoid—can in fact benefit us. This research can potentially transform the way in which we approach education in practice and policy.

What are your plans going forward?

In the immediate future, I will be preoccupied with the current pipeline of ongoing projects that extend my work on the derring effect. On the longer runway, I expect to further develop my purpose and identity as a scientist, pursuing questions and translating findings that will positively impact our societies. For instance, what are the ultimate goals of learning and education in and beyond the classroom, how can we effectively achieve those goals, and what would these achievements mean for humanity? Along the way, I look forward to encountering and partnering with many like-minded individuals who will embark on this lifelong journey of inquiry together.



RISE Award

Offered through the APS Student Caucus (APSSC), the RISE (Researching Injustice and Social Equality) Award seeks to cultivate psychological science research in fields related to socially and economically underrepresented populations, and to recognize outstanding student researchers from diverse racial, ethnic, geographic, and cultural backgrounds, as well as other underrepresented groups. It is open to current APS Student Affiliates, including undergraduate students, graduate students, and students transitioning between their undergraduate and graduate education. A panel of graduate and undergraduate students selected the 8 winners, who also received a monetary award of \$300. Learn more, and see past winners, at psychologicalscience.org/members/rise/research-award.



Oppressed but Privileged: Investigating White LGBTQ Students' Social and Racial Attitudes

Yujia Bai, Makaila J. Lozano, Anna R. Wruck and Emily J. Blevins
(University of Illinois at Urbana Champaign)

Systems of oppression are interlocking and synergistic. As a result,

experiences with one social identity are shaped by all other social identities—both privileged and marginalized. Bai and colleagues investigated how having a marginalized identity influences empathy toward others experiencing marginalization. The researchers found that White LGBTQ students were lower in social dominance and modern racism, and higher in their awareness of White privilege, than White heterosexual students.

What drew you to this research?

The ethnic backgrounds of the four of us presenters are quite diverse, and our past work in the lab involves what individuals think and feel about race-related topics. This is the origin of our interests. Anecdotally we had observed greater racial awareness among our LGBTQ friends and wanted to explore that empirically.



What did the research reveal that you didn't already know?

Past research discusses LGBTQ individuals as a whole but doesn't really touch on White LGBTQ college students in particular. Given college is this unique time when students are being exposed to a diversity of identities and ideas, we wanted to focus on that developmental period and really situate the study within the population that is most proximate to us. While our results aligned with what we expected (i.e., greater racial awareness and lower prejudicial attitudes among White LGBTQ students compared to White straight students), it helped to confirm that all identities intersect and inform one another—both privileged and marginalized.

What are your plans going forward?

I plan to pursue a PhD degree in psychology in the intersections of social psychology and developmental psychology, focusing on the origins of individuals' racial identities and moral cognition, and continue conducting research in the future. Anna and Makaila plan to specialize in clinical psychology in graduate school, and Emily is a PhD student in clinical psychology.



Body Image Disturbance and Sexual Orientation: An Updated Systematic Review and Meta-Analysis
Sophie Dahlenburg,
David H. Gleaves,
Amanda D. Hutchinson,
and
Daniel G. Coro
(University of South Australia)

Body image disturbance (BID) has been associated with depression, low self-esteem, and the development of eating disorders. Researchers are divided as to how BID affects individuals of differing genders and sexual orientations. Dahlenburg and colleagues found that lesbian women reported experiencing less BID than heterosexual women, but more than gay men, with heterosexual men reporting the least BID.

What drew you to this research?

Body image and eating disorders have been a research interest of mine since the third year of my undergraduate degree. I conducted my honors research on eating disorders and wanted to continue the area into my PhD. I originally wanted to focus around male body image in the context of exercise and steroid use, but I realized that research around lesbian women and

body image/eating disorders is drastically lacking compared to heterosexual women. I wanted to be an advocate for lesbian women and help to uncover the nuances associated with their body image. There's still a lot we don't know, and I made it my goal to contribute something to the literature. The inclusion of male comparisons in the meta-analysis was to stay in line with what the previous meta-analysis did, and also add more information to that part of the literature.

What did the research reveal to you that you didn't already know?

The differences between lesbian and heterosexual women weren't as large as I was first expecting, but looking at the current existing theories, those results came as little surprise. What really became clear is that issues around body image are not straightforward, and assessing body image is not a one-size-fits-all approach. There are many facets to body image (which I already knew), but I was quite surprised at the various ways of measuring it.

What are your plans going forward?

I have about 12 months left until I complete my PhD, and I would love to secure a postdoc in the same field as I'm currently working in. Continuing this research and looking at bisexual or transgender individuals would be, I think, an important contribution to the literature. I would love to also attend a few international conferences (when travel is allowed again!) to see first-hand what other researchers are doing, and learn as much as I can!



Contextualizing Intrusiveness in Parents of Toddlers: The Moderating Role of Race
Maire Claire Diemer,
Monica Sofia Treviño,
and Emily D. Gerstein
(University of Missouri-St. Louis)

Intrusive parenting—which promotes family enmeshment and parental control—has traditionally been understood as poor parenting, but recent research indicates that White, Western judgments of parenting cannot be universally applied to development. Diemer and colleagues found that intrusive parenting was associated with more behavior problems and worse emotion regulation skills in White toddlers but was not associated with children's behavior in African-American families.

What drew you to this research?

While working on my master’s thesis, I became surprised and interested in the literature regarding racial and ethnic background and parenting. The debate between whether differences reflect accurate, objective observations, biased protocols and scoring, or are the result of different cultural norms (and therefore might support equally positive developmental growth) fascinated me. I wanted to explore more about how race might moderate the impact of parenting on child development.

What did the research reveal that you didn’t already know?

This investigation showed that children from White families showed more behavior problems at age 3 when more intrusive parenting was observed at age 2. However, African-American children did not show this pattern, with behavior problems staying relatively consistent, even when there were high levels of intrusive parenting at age 2. This suggests that the cultural context of families makes a difference in how parenting is experienced and the child development outcomes it precedes.

What are your plans going forward?

I plan to continue my focus on early childhood development and the influence of culture and atypical development. A future project I am working on investigates the role of intrusive parenting in families of children with developmental delays. I am also curious to investigate further what role unconscious bias has to play in the way parenting is coded in family research.

both security and humanitarian information were relevant to their decision.

What drew you to this research?

My interest in refugee studies stems from a family migration story (Armenia to the U.S., early 20th century). When I came to the University of Oregon in 2015, I was fortunate to link up with a great group of people who care about humanitarian issues and specifically refugee assistance. My coauthors are a part of Decision Research, a nonprofit in Eugene, Oregon, that has been doing this kind of work for many years. They host a conference every summer where people come from all over the world to study humanitarian, altruism-driven topics and their relevant psychological mechanisms. It’s known as “Compassion Week.”

What did the research reveal that you didn’t already know?

While we had a hunch that people would display attitude-confirming behavior—and in particular, that participants who opposed a refugee resettlement policy (“rejecters”) would focus heavily on security-related information—we also thought we might be able to influence these decisions to some degree and even “convert” some people to the other side. We tried to do this by adding an introspection task to Study 2; the task asked participants to think first about their values and what they “should” be valuing when considering this policy proposal. We expected this might move some rejecters toward accepting the refugee resettlement policy, but it didn’t. We were bit surprised at how difficult it was to change people’s minds.

What are your plans going forward?

I have been focusing my attention on science communication. The website arithmeticofcompassion.org promotes the kind of humanitarian research featured here and offers practical insights into issues of empathy and apathy, how we respond (and don’t respond) to humanitarian crises, the psychological processes involved, and so on. Usefulscience.org and appliedsciencelive.com are two other platforms I am involved with that do a great job of highlighting important research from psychology and beyond.



**Information
Spotlighting
in Americans’
Decisions
Surrounding
Refugee
Resettlement
Policy**

Alexander Garinther
*(University of Oregon),
Marcus Mayorga,
Paul Slovic (Decision
Research), and Daniel
Västfjäll (Linköping
University, Sweden)*

Existing preferences related to issues such as refugee resettlement policies may influence individuals’ choices to consume content that either confirms or challenges their attitudes. Garinther and colleagues found that those who opposed resettlement policies were more likely to consider security-related information in their decision-making process. Those who supported refugee resettlement, on the other hand, indicated that

Featuring new psychological science research from around the world, the APS Virtual Poster Showcase is open until September 1. Registration is free. Register and sign in at psychologicalscience.org/posters.





The Critical Role of Trendsetters in Inspiring Behavior Change at Scale: Evidence from India’s Sanitation Campaign

Sakshi Ghai

(University of Cambridge, England), Cristina Bicchieri, Peter McNally, and Raj Patel (University of Pennsylvania)

The Swachh Bharat, or Clean India, Mission against open defecation is considered to be one of the largest behavior-change campaigns in the world. Ghai and colleagues found that trendsetters who helped facilitate this change exhibited high reflective autonomy, low risk aversion, high perceived self-efficacy, and commitment, allowing them to influence others at all levels of society.

What drew you to this research?

Growing up in semi-urban and small towns across India, I witnessed first-hand the social evils of open defecation. But it wasn’t until my master’s of behavioral and decision sciences at the University of Pennsylvania that I began to reflect on the role of social norms in understanding India’s persistent sanitation problem. The exposure to behavioral sciences provided me the right tools to start exploring some of the deeply entrenched social problems I had seen growing up.

What did the research reveal that you didn’t already know?

The team and I traveled across India and conducted qualitative interviews with key individuals. I was surprised by the fact that trendsetters emerged at all levels of social hierarchies. Our sample included top government leaders, business leaders, Bollywood celebrities, spiritual leaders, NGO heads, international development leaders [as well as] villagers and junior government officials—ordinary people working at the grassroots level. On a personal front, the brief exposure to the field was transformative. It changed the course of my PhD aspirations and instead of pursuing my original research plan, I decided to shift gears to study behavior change in non-WEIRD (beyond the Western, educated, industrialized, rich, and democratic) contexts.

What are your plans going forward?

I am finishing my first year of a PhD in psychology at the Body, Mind and Behaviour Lab at the University of Cambridge. I am very interested in studying how we can apply psychological insights to create enduring behavior change in resource-deprived communities. I am looking

forward to spending this summer interning at the World Bank’s Mind, Behavior, and Development Unit (eMBeD) Behavioral Science Team. Later in the year, I plan to work with Ashoka University’s Center for Social and Behavior Change in New Delhi, set up by a Bill & Melinda Gates Foundation grant. Both these opportunities will enable me to study how psychological interventions can improve life outcomes of those in developing countries.



How to Take Responsibilities—Whether to Resign or to Resolve

Min Hye Kang and Jinkyung Na *(Sogang University, South Korea)*

Research shows that individuals from Eastern cultural backgrounds tend to think more holistically, taking context and other external

factors into account when explaining a person’s behavior, while those from Western cultures tend to be more analytical, focusing on a person’s internal disposition. These differing perspectives may also influence preferences for people taking responsibility for institutional wrongdoing. Kang and Na found that while Asian-Americans were more likely to support an individual trying to resolve the institutional wrongdoing, European-Americans were more likely to support having that individual resign—but only when the individual admitted to doing wrong.

What drew you to this research?

Cultural psychology has long been my major research interest, most likely because I have lived in three different countries. Once I was reading a Korean online newspaper on a college official’s resignation and noticed a cultural difference between East Asian and European/American cultures in judging someone who has done wrong in a high position at an institution, and so I looked up other news articles with similar contexts. It appeared to me that East Asians criticize more when immediate resignation took place.

What did the research reveal that you didn’t already know?

I learned that there is no absolute standard or pathway in the responsibility judgment process because the effect of the perceiver’s cultural perspective varied with the actor’s attitude toward their own action. Study 1 aimed to demonstrate a cultural difference between preferred means of taking responsibility when someone’s faults are found

in an institution—particularly that those from an Eastern cultural background would expect a resolution while Western cultural background would demand a prompt resignation. The results supported the predictions, but then I became curious as to whether the difference could be minimized or eliminated under a particular condition. Study 2 examined an interaction effect of culture and the actor's admittance/denial of the charges. The results were that Western culture prefers resignation more when charges are admitted than when denied, but Eastern culture maintains the same judgment across the two conditions.

What are your plans going forward?

As for this specific research, a follow-up study is in development. I really wanted to test whether leading a person to think holistically can affect the view on immediate resignation to be not responsible enough. As for myself, I am preparing for doctoral program applications in hopes of continuing my research on culture and also other social psychological phenomena.

deprivation using data from a large-scale longitudinal study of previously institutionalized Romanian children. Most of the existing knowledge and literature on this topic were built on data from Western samples and to the best of my knowledge, no such study had taken place in Africa. We sampled our participants from Nigerian children currently living in institutions and foster homes to understand how they differ from a comparative nondeprived group on a battery of cognitive tasks.

What did the research reveal that you didn't already know?

Our findings (published in the *Journal of Child Psychology and Psychiatry*) contravened most parts of the existing knowledge. While severe adverse rearing, such as a child's institutionalization or placement in foster care, has been associated with deficits in almost all cognitive abilities, we actually found that parentally deprived children in Nigeria did not differ from nondeprived children in inhibition and set-shifting tasks. More importantly, the deprived children significantly performed better than the nondeprived children in the working memory task. Our research once more highlights the importance of studying the cultural differences in cognitive adaptation during and following periods of adversity, as that is the only way we can make a solid generalization about the consequences of adversity.

What are your plans going forward?

Presently, I am a first-year PhD student in the MRC Cognition and Brain Sciences Unit, University of Cambridge, where I am using psychometric techniques and longitudinal datasets to understand the long-term consequences of adversity on mental health and cognition. Upon completion of this program, I intend to return to Nigeria where I will continue my research on this understudied deprived population.



Working for the Future: Parentally Deprived Nigerian Children Have Enhanced Working Memory Ability
Tochukwu Ejiofor Nweze

(University of Nigeria; University of Cambridge, England), Mary Basil Nwoke, Juliet Ifeoma Nwufor, Richard Ikechukwu

Aniekwu (University of Nigeria), and Florian Lange (KU Leuven, Belgium)

Early parental deprivation such as that experienced by children who live in institutional homes or foster family homes has been associated with enduring impairment in cognitive abilities. Nweze and colleagues found, however, that deprived Nigerian children performed better than nondeprived children on measures of working memory, and similarly on other measures of executive function.

What drew you to this research?

I had taken a lecturing job at the University of Nigeria, Nsukka after the completion of my master's degree at the Institute of Psychiatry, Psychology and Neuroscience, King's College London. As part of my MSc project, I investigated inhibitory processing in children who experienced early





Latinx Dual-Language Learners in Early Head Start: Associations Between Social-Emotional Development and Socioeconomic Risk

Monica Sofia

Treviño, Kathryn E. Cherry, and Emily D. Gerstein (University of Missouri–St. Louis)

Socioemotional development (SED) in toddlerhood is strongly associated with later academic outcomes, but little is known about SED in young Latinx dual-language learners (DLLs), an understudied group in the U.S. that experiences disproportionately low academic achievement and high rates of poverty. Treviño and colleagues found that, for Latinx DLL toddlers, socioeconomic risk factors such as food and housing insecurity were associated with fewer socioemotional competencies and greater behavior problems, while having immigrant parents was associated with fewer socioemotional competencies but fewer behavior problems.

What drew you to this research?

I grew up in a rural area near the border of Mexico with a special education teacher as a mother. Thus, I became very familiar with the behavioral and emotional difficulties many children face early on in life and how it can impact the rest of their development. However, it wasn't until I got to university that I realized the extent of the disparities experienced in my community and how different developmental trajectories looked for children with better access to care.

What did the research reveal that you didn't already know?

Through my coursework, volunteer work, and research experiences, I learned how critical the first few years of life are and the role that various disadvantages can play. Dual-language learners (DLLs) were of particular interest to me due to their various intersecting identities. Being a DLL in the United States often comes with much cultural, social, and economic difficulty that can affect social, emotional, and cognitive trajectories. This research project aimed to focus on how socioeconomic risk impacts very early social emotional development (SED) in DLLs. I thought that the most interesting finding was that of the role of food and housing insecurity. Despite dramatic income-to-needs ratios and high maternal risk, the biggest predictor of SED in DLLs was food and housing insecurity. This is one of the more easily remediable determinants of children's outcomes.

What are your plans going forward?

I hope to continue to explore the social, emotional, and cognitive development of DLLs and other high-risk groups of children with the ultimate goal of informing both policy and interventions.



Psychological Science and Entrepreneurship Poster Award

Supported by the Ewing Marion Kauffman Foundation, the Psychological Science and Entrepreneurship Poster Award is intended to stimulate research in entrepreneurship, defined as the capacity and willingness to develop, organize, and manage a business venture, along with its risks, in the pursuit of opportunity and innovation. The award is open to APS members who are either current undergraduate or graduate students or early-career scholars (received their PhD in 2013 or more recently). The judges, APS Fellows Berrin Erdogan (Portland State University) and Kelly Shaver (College of Charleston), selected four winners for \$1,000 awards in two categories, student scientist and early-career scientist. Learn more about this award at psychologicalscience.org/erpa.



Using the Hexaco-100 to Measure Individual Entrepreneurial Orientation: Introducing the Hexaco-Ieo
Melanie Boudreaux
(Nicholls State University) and Matt Howard (University of South Alabama)

The Individual Entrepreneurial Orientation (IEO) is a three-dimensional conceptualization of personality traits that influence entrepreneurial outcomes, such as risk-taking, innovativeness, and proactiveness. Boudreaux and colleagues found that the set of HEXACO-100 personality inventory items may be used as a measure of IEO dimensions, suggesting that entrepreneurial orientation may be linked to aspects of emotionality, extraversion, openness, and conscientiousness.

What drew you to this research?

Both of my parents are entrepreneurs; my mom owns an etiquette and customer service training company, and my father owns an oilfield services company. So, understanding and learning more about entrepreneurial personality really enticed me to pursue research in this area. Also, my mentor, Dr. Matt Howard, is also interested in entrepreneurial personality research. Thus, working with him on this project turned out to be a great research opportunity.

What did the research reveal that you didn't already know?

This specific research truly excited me. We found support for the validity of the HEXACO-IEO scale, which measures individual entrepreneurial orientation using the HEXACO-100. Thus, we can take this new measure to reassess prior datasets that already exist and uncover novel relations of individual entrepreneurial orientation. This helps us unlock the doors to pursue further research on entrepreneurship and personality, and it allows psychologists to easily study entrepreneurship by reanalyzing their existing datasets that include the HEXACO-100.

What are your plans going forward?

I would like to focus on researching more on personality, entrepreneurship, and even social courage. I am an instructor at Nicholls State University where I teach human resource management courses, while working on my PhD at the University of South Alabama. Prior to this role, I was a human resource manager for over 8 years, so understanding more about employees and why they act the way they do, is interesting to me. I still participate in HR consulting, so

ultimately, I would like to use my research to help assist HR departments and companies to better manage their people to increase productivity.



Entrepreneurial Tools: Resources and the Psychological Benefits
Gloria Ferron-Urbe
and Luis Uribe (Utah Valley University)

Entrepreneurial school can bestow many advantages to alumni, including the fundamentals of accounting, marketing, and business management. Ferron-Urbe and Uribe found that graduates of a program in Mexico—the majority of whom went on to start a business and achieve middle to high income—viewed building the confidence necessary to market themselves and their products, and to bounce back from rejection, as the most valuable part of their education.

What drew you to this research?

As an entrepreneur myself, I wanted to learn more about what tools entrepreneurs need, as well as what makes an entrepreneur, and what fears and sacrifices they face. When our university allowed us to work on this research project abroad, we were all in. We were all grateful to have a hands-on opportunity from the beginning.

What did the research reveal that you didn't already know?

What we found interesting was that educational tools help build the confidence in entrepreneurs that leads them to higher success, and not necessarily a strong financial background or entrepreneurial parents.

What are your plans going forward?

This is an ongoing project for us. We wish to be able to conduct this kind of research in multiple countries to contrast similarities and differences about entrepreneurs. We plan to keep building upon our research and disseminate our information through various platforms.

Infographic numbers in this story are accurate as of June 22. See the latest at psychologicalscience.org/posters.





A Systematic Literature Review and Meta-Analysis of Entrepreneurial Personality: Integrating Psychology and Entrepreneurship
Matt Howard
(University of South Alabama) and Melanie Boudreaux (Nicholls State University)

Entrepreneurial personality (EP) has been studied using a range of constructs associated with prior life experiences, individual differences, and entrepreneurial outcomes, among other factors. Howard and Boudreaux found that seven strongly related dimensions are commonly included in measures of EP: innovativeness, risk-taking, achievement, locus of control, proactiveness, self-efficacy, and autonomy. Furthermore, EP was predicted by education and training, but not by gender, age, or family background.

What drew you to this research?

From being a psychology graduate student at the Pennsylvania State University to a business professor at the University of South Alabama, I have always been interested in personality and its various conceptualizations. So, I was quite intrigued when I discovered that multiple conceptualizations of entrepreneurial personality exist, and I was even more intrigued when I discovered that these conceptualizations notably differed from each other—some didn't even share any representative dimensions whatsoever!

What did the research reveal that you didn't already know?

Most conceptualizations of entrepreneurial personality include three or four dimensions. I knew that there were some differences among these conceptualizations, but I did not realize that there was enough heterogeneity to produce seven common dimensions: innovativeness, risk-taking, achievement, locus of control, proactiveness, self-efficacy, and autonomy. I correctly predicted that these personality dimensions each have notable relations with entrepreneurial outcomes (e.g. intention, status, attitude, performance). Some colleagues initially doubted that personality would have much of an effect on these outcomes, but we supported that entrepreneurial success seems to be—in part—influenced by the entrepreneur's personality.

What are your plans going forward?

I foresee an entire research stream based on our meta-analysis of entrepreneurial personality. Our next step will be to develop a measure that includes all seven dimensions, and then assess whether this broader conceptualization of entrepreneurial personality can predict relevant outcomes beyond prior conceptualizations. Also, I would love to teach a class on entrepreneurship and personality, which could include units on fostering or activating these personality traits in aspiring entrepreneurs. Too often we only focus on the knowledge required to be an entrepreneur, but students could also benefit from developing the “intangibles” that are often cited as characteristics of successful entrepreneurs.



Black Female Entrepreneurs Maintain Work-Life Boundaries and Balance
Amber S. Rouse and Alice F. Stuhlmacher
(DePaul University)

Individuals turn to entrepreneurship for many reasons and have different approaches to managing their boundaries between their work and family lives. Rouse

and Stuhlmacher found that black female entrepreneurs clustered into five distinct boundary management profiles. These profiles influenced reported family balance effectiveness and career satisfaction, but not family balance satisfaction and life satisfaction.

What drew you to this research?

I entered into graduate school with a desire to study and conduct research in the area of work and family. I have always been interested in understanding how work and family intersect. Once I began studying the topic, I noticed that very limited research exists that focused on the experiences of nontraditional workers (e.g., those who decide to pursue entrepreneurship) and ethnic minorities. So I decided to combine these two areas by focusing on how Black female entrepreneurs manage the boundaries between their work and family lives.

What did the research reveal that you didn't already know?

One of the key findings of my research revealed that although Black female entrepreneurs in this sample reported being generally satisfied with their work-family balance, Black

female entrepreneurs also cited significant barriers in obtaining necessary resources for their businesses including limited funding, training, and education on entrepreneurship. This suggests that more can and may need to be done to assist these women as they journey into entrepreneurship.

What are your plans going forward?

My plans are to continue pursuing research in this area to help broaden our understanding of the unique experiences of minority entrepreneurs. I would also like to offer training and consultation services to minority entrepreneurs to assist them in developing skills to effectively manage both their work and family lives.

NIDCR “Building Bridges” APS Travel Award

Offered jointly between APS and the National Institute of Dental and Craniofacial Research (NIDCR), the Building Bridges Award honors scientists who are conducting research at the intersection of psychological science and dental, oral, and craniofacial health. Learn more about the importance of psychological science in overcoming challenges in oral health at nidcr.nih.gov.

Replication and Extension of the Bi-Factor Structure of Repetitive Thinking

Ariana A. Castro, Howard Berenbaum (University of Illinois at Urbana-Champaign), and Juyoen Hur (Yonsei University, South Korea)

Repetitive thinking involves prolonged, recurrent thoughts, including rumination on past unpleasant events and reflective self-attentiveness. Castro and colleagues found that the Response Styles Questionnaire (RSQ) rumination scale may be used to measure reflection in a bi-factor model.

The Effect of Calling on Life Satisfaction Via Work-Family Enrichment: The Moderating Role of Family Identity

So Young Park, Myeon Jin Kim, and Young Woo Sohn (Yonsei University, South Korea)

Believing that you have a calling, a transcendent summons to pursue a certain line of work, can increase your sense of living a meaningful life. Individuals with high family identity, on the other hand, view their family roles as central to their fulfillment. Park and colleagues found that individuals with both a calling and a strong family identity experienced higher work-family enrichment than those with only one or the other.



See the Virtual Poster Showcase at psychologicalscience.org/posters.

The Efficacy of Executive Function Training for Reducing Childhood Anxiety

Nathaniel A. Shanok, Kelsey Meltzer, Colin Frank, Victoria Lugo, and Nancy A. Jones (Florida Atlantic University)

Societal anxiety levels in the U.S. have risen in recent years and have particularly intensified in youth demographics. Shanok and colleagues found that inhibitory control, which predicted self-reported anxiety and depression, may be improved through training.

The Robustness of Parameter Estimates in Nonnormal Latent Growth Curve Modeling

Lu Qin (Howard University) and Qianqian Pan (University of Hong Kong)

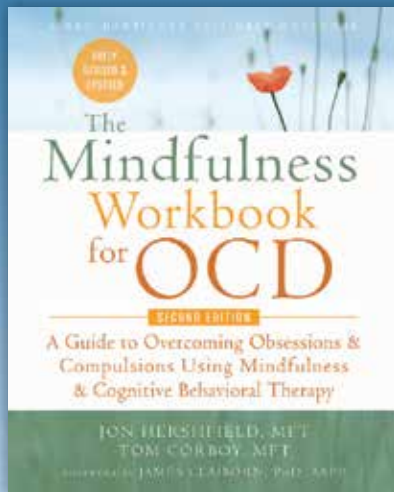
Nonnormal data is often due to the nonnormality in the measurement error, latent factors, or both. Qin and Pan found that semiparametric Bayesian estimates most accurately captured the variance between random intercept and random slope estimates.

Similarities and Differences Between Infants With and Without Craniofacial Anomalies in the Coordination of Gaze and Facial Expressions

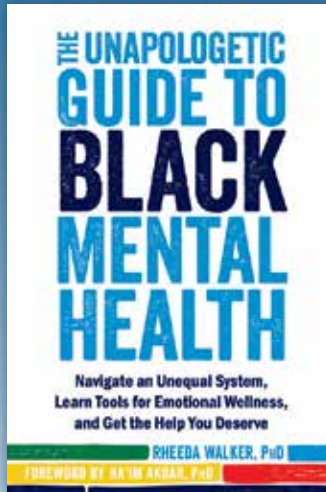
Yun Xie, Shuo Zhang (New York University), APS Fellow Harriet Oster (New York University; Hunter College CUNY)

Mother-infant interactions during the first year of life are predictive of infants' attachment security and later socioemotional development. Xie and colleagues found that infants with and without craniofacial anomalies showed similar emotional communicative abilities. ●

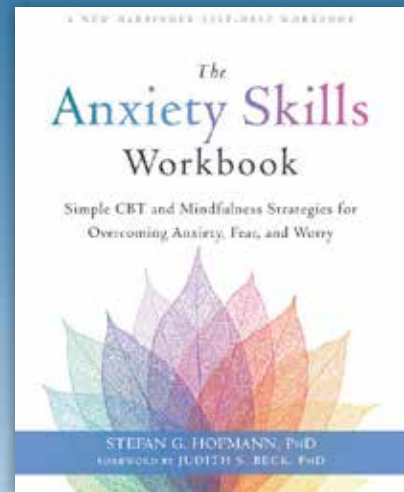
Essential Resources for Your Practice



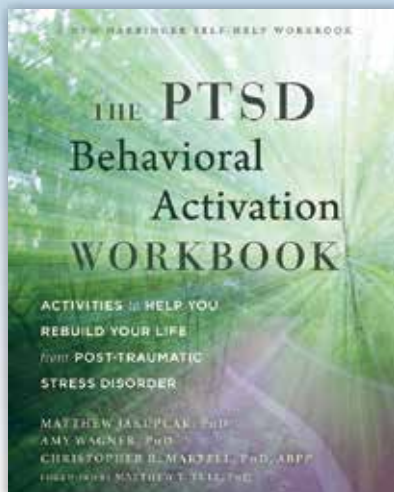
ISBN: 978-1684035632 | US \$22.95



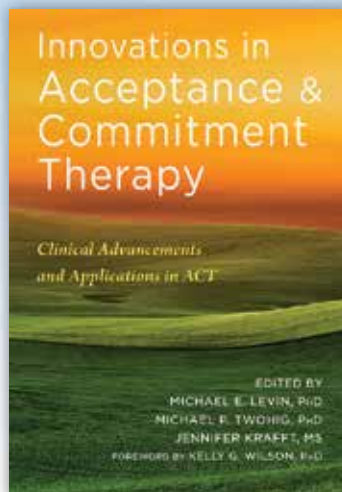
ISBN: 978-1684034147 | US \$16.95



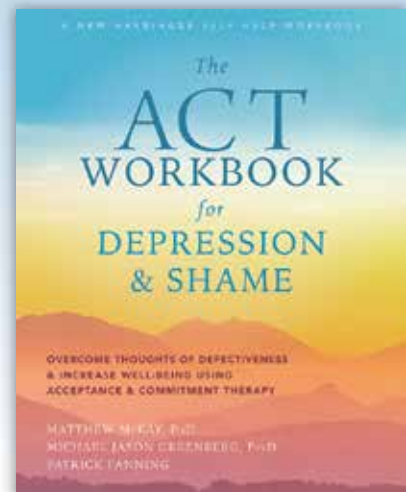
ISBN: 978-1684034529 | US \$24.95



ISBN: 978-1684033072 | US \$24.95



ISBN: 978-1684033102 | US \$69.95



ISBN: 978-1684035540 | US \$22.95

 newharbingerpublications

1-800-748-6273 | newharbinger.com

 **QUICK TIPS**
for THERAPISTS

Download a FREE e-book of our most popular tips: newharbinger.com/quicktips



Learn more about evidence-based continuing education and training with  PRAXIS praxiscet.com

NOW IS NOT THE TIME FOR PRECRASTINATION

Psychological science reminds us that the preference to get things done ASAP can have far-reaching consequences.

By APS Fellow David A. Rosenbaum

Bad times are said to bring out the best in people, and the worst. The adage refers to morality, but there is another way in which bad times bring out aspects of human nature that might be less obvious otherwise. The aspect to which I refer is "precrastination," a term my colleagues and I coined in 2014 to refer to the tendency to rush to get things done as quickly as possible, even at the expense of extra effort. Why bring the phenomenon to our attention now? I believe it is relevant for COVID-19.

To understand what precrastination is, consider the everyday task of bringing groceries into your kitchen. You could make several trips, carrying one or two bags per trip, or you could carry all the groceries at once. With the one-trip method, you would exert extra effort, but you would get the job done immediately and be able to move on to other things.

Are people willing to work hard to complete tasks as soon as possible? Indeed they are. In an article published in *Psychological Science* in 2014, Lanyun Gong, Cory Potts, and I reported that people preferred to pick up and carry a bucket that was near them rather than a bucket that was farther away when they could carry either bucket to a finish line. The instruction was simply to pick up whichever bucket seemed easier. Surprisingly, most participants preferred the bucket that had to be carried further. Based on interviews with the college students who served as subjects in these



"Precrastinating" by trying to get things done as quickly as possible can lead to more work in the long run, explains APS Fellow David A. Rosenbaum.

experiments, along with other findings, my co-authors and I concluded that picking up the near bucket gave people the feeling of getting closer to the goal more quickly. We termed this tendency pre-crastination, coining the word (and using the hyphen) to contrast it with procrastination.

Many studies have confirmed that precrastination is common, as summarized in a 2019 article in *Current Directions in Psychological Science*. Precrastination has been observed in a number of other experiments both with people and animals.

In a particularly dramatic human study, Lisa Fournier at Washington State University and colleagues asked people to walk down an alley to fetch two buckets in a line before them. Most people picked up the near bucket, carried it out to the far back, and then returned with both buckets. They did this rather than the more rational act of passing the near bucket, getting the far bucket, and then picking up the near bucket on the way back. When subjects had an extra memory load, they picked up the near bucket on the outward trip with even higher probability, consistent with the hypothesis that picking up the near bucket was motivated by the desire to reduce the memory load: Participants wanted to get rid of an item on the mental to-do list, no matter how trivial it was. Analogous results were obtained by Emma Patterson and Todd Kahan at Bates College, and by Dawn McBride and others in work done at Illinois State University.

In a striking animal study, Thomas Zentall and colleagues at the University of Kentucky showed that pigeons pecked a green light rather than a red light in anticipation of the green light signaling food delivery. The pigeons had been ➡

APS Fellow **David A. Rosenbaum** has worked at Bell Laboratories (1977–1981), Hampshire College (1981–1987), University of Massachusetts, Amherst (1987–1994), Pennsylvania State University (1994–2016), and University of California, Riverside (2016–present). He was editor of the *Journal of Experimental Psychology: Human Perception and Performance* (2000–2005), and received a Guggenheim Foundation Fellowship (2012).



David A. Rosenbaum
University of California, Riverside

trained to peck to the red light over a fixed number of trials in order to get a reward and then to peck the green light in the same number of trials to get the same reward. The identical sequence was given over and over again, but the pigeons jumped the gun. Had they waited and pecked the red light until it no longer preceded food, they would have missed the reward on just one trial. Instead, they missed the reward on many trials, exhibiting precastination. The same sort of tendency was also reported by Ed Wasserman at the University of Iowa, who went on to suggest that precastination reflects a fundamental behavioral tendency which promotes preparedness for come-what-may.

The preference to get things done ASAP can have far-reaching consequences. In the financial arena, the desire to get things done immediately is so strong that people are willing to forego financial rewards to complete tasks within short rather than long deadlines, as shown by a team led by Meng Zhu at Johns Hopkins Carey Business School—what they call the mere urgency effect. Outside the lab and in connection with finance, people pay bills immediately rather than collect interest by keeping that money in the bank. Keeping calendars is not anathema to these conscientious people, who pay bills right away to clear their minds of that responsibility.

Other examples of precastination abound. Untold numbers of emails are sent too soon, often with friendships and jobs lost in the process. Innumerable students get bad grades, and countless authors have submissions declined because they give themselves too little time to edit and re-edit their work—not because they wait until the last minute, but because the last minute they set for themselves is too early.

Prisons hold people who have been convicted hastily because of political or other pressure to get cases out of the way, and surgeries have been carried out at the behest of overly anxious patients, often with later consults showing the surgeries were unnecessary.

How can precastination lead to the deaths of millions of people? One horrific possibility is the *Dr. Strangelove* scenario: A trigger finger can unleash a war. Even if the war isn't nuclear, as in the movie, a hot temper can wreak havoc.

Another awful possibility is the one we are now facing: the COVID-19 crisis. The virus is killing us, literally and figuratively. We want this to be over. The pressure to get it behind us is intense. We want to travel, return to work, and socialize as we did before, including touching in all the ways that make us human. A vaccine will hopefully come along, but it can't come soon enough.

It is very hard to let a problem drag on, as the discovery of precastination documents. We in the field must share our knowledge with others, impressing on them that though we all want unpleasant things to end quickly, hastening such outcomes may not always be in our best interest.

Psychological science has a deep lesson for the entire world at this time: Now is not the time for precastination. ●

References and Further Reading

- DeMelo, J. (March 26, 2019). Precastination: When the early bird gets the shaft. *The New York Times*. <https://www.nytimes.com/2019/03/25/smarter-living/precastination-when-the-early-bird-gets-the-shaft.html>
- Patterson, E. E., & Kahan, T. A. (2020). Precastination and the cognitive-load-reduction (CLEAR) hypothesis. *Memory*, *28*, 107–111. <https://doi.org/10.1080/09658211.2019.1690001>
- Rayburn-Reeves, R. M., Molet, M., & Zentall, T. R. (2011). Simultaneous discrimination reversal learning in pigeons and humans: Anticipatory and perseverative errors. *Learning & Behavior*, *39*, 125–137. <https://doi.org/10.3758/s13420-010-0011-5>
- Richtel, M. (July 19, 2014). Sometimes, early birds are too early. *The New York Times*. <http://www.nytimes.com/2014/07/20/business/sometimes-early-birds-are-too-early.html?src=twr&r=0>
- Rosenbaum, D. A., Gong, L., & Potts, C. A. (2014). Precastination: Hastening subgoal completion at the expense of extra physical effort. *Psychological Science*, *25*, 1487–1496. <https://doi.org/10.1177/0956797614532657>
- Rosenbaum, D. A., Fournier, L. R., Levy-Tzedek, S., McBride, D. M., Rosenthal, R., Sauerberger, K., . . . Zentall, T. R. (2019). Sooner rather than later: Precastination rather than procrastination. *Current Directions in Psychological Science*, *28*, 229–233. <https://doi.org/10.1177/0963721419833652>
- VonderHaar, R. L., McBride, D. M., & Rosenbaum, D. A. (2019). Task order choices in cognitive and perceptual-motor tasks: The cognitive-load-reduction (CLEAR) hypothesis. *Attention, Perception & Psychophysics*, *81*, 2517–2525. <https://doi.org/10.3758/s13414-019-01754-z>
- Wasserman, E.A. (2018). Precastination: The fierce urgency of now. *Learning & Behavior*, *47*, 7–28. <https://doi.org/10.3758/s13420-018-0358-6>
- Wasserman, E. A., & Brzykcy, S. J. (2015). Precastination in the pigeon. *Psychonomic Bulletin & Review*, *22*, 1130–1134. <https://doi.org/10.3758/s13423-014-0758-3>
- Zhu, M., Yang, Y., & Hsee, C. K. (2018). The mere urgency effect. *Journal of Consumer Research*, *45*, 673–690. <https://doi.org/10.1093/jcr/ucy008>

PREDICTING BEHAVIOR BY SCANNING THE BRAIN: DOES TASK-FMRI REALLY RESONATE?

By Charles Blue, APS Staff Writer

As many a weekend warrior or professional athlete will attest, even a seemingly minor twist of the ankle or bump on the knee can send someone to the hospital for an MRI. In spite of their reputations for being noisy and at times claustrophobic, MRIs are medical marvels with an unparalleled ability to peer safely inside the human body to detect otherwise hidden maladies, like soft-tissue injuries or newly formed tumors.

Though the basic technology of MRI is more than a half-century old, these imaging tools continue to improve in sensitivity and resolution, breaking new ground in both fundamental research and therapeutic interventions.

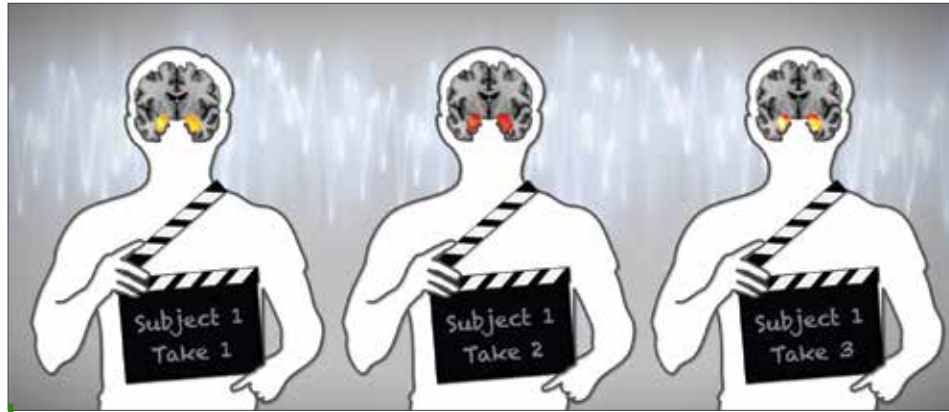
Perhaps one of the MRI's most intriguing applications is in mapping activity inside the human brain, in near real-time. As this application, known as functional MRI (fMRI), has grown over the past two decades, a number of studies have hinted at its potential to predict certain human behaviors and neurological responses to specific situations.

These tantalizing studies suggest that fMRI may eventually lead to innovative therapeutic interventions in areas ranging from mitigating depression, anxiety, and dementia to curtailing antisocial or even criminal behaviors.

But even as this technology has opened new windows into psychological science, age-old questions remain about the reliability of any predictive test when it comes to human health. Specifically, are the basic assumptions about fMRI measures of brain activity on solid, rigorous, and science-based ground?

Shedding New Light on fMRI

A 2013 special section published in *Perspectives on Psychological Science* explored how fMRI results have



Task-fMRI lacks reliability to predict behavior and fails to produce the same readings for a test subject, even when the tests were separated by only a short period of time. See this story online for a brief video describing the results of this study.

changed the way we think about human psychology and the brain. Some studies referenced in that issue argued against the idea that the human brain has a “fixed neural architecture,” suggesting that different brains would present different fMRI results in response to similar stimuli. Certain studies also examined the way fMRI contributes to cognitive theory, while still other studies highlighted fMRI's usefulness in specific applications, like direct measures of pain experience.

More recently, a team of researchers from Duke University's Laboratory of NeuroGenetics led by APS Fellow Ahmad Hariri shed new light on the predictive ability of fMRI. They used a combined meta-analysis of prior research and novel analyses of test-retest data to assess the reliability of many commonly used fMRI measures of brain activity.

Their conclusions, published in *Psychological Science*, offer a cautionary tone and advocate against reading too much into claims of fMRI's predictive abilities.

To understand what the researchers set out to study, it's best to start with a more thorough explanation of how MRI works and how it can be used to measure brain function.

Medical Imaging

In 1972, the Nobel Prize-winning technology of MRI was first applied to studying the soft tissues inside the human body. Though MRIs were a latecomer to noninvasive medical imaging, compared to CAT scans and other X-ray technologies, they kicked off a revolution in healthcare.

The technique itself is an elegant blend of physics, engineering, information processing, and medicine.

At its most basic level, MRI works by coaxing positively charged protons, the nuclei of hydrogen atoms found in water molecules, to align the orientations of their “spin” with powerful magnetic fields.

Powerful radio pulses then briefly flip the orientations of some of the protons with respect to the magnetic fields. When the protons “relax,” or ➔

return to their original orientation, they emit a tiny bit of their pent-up energy in the form of radio waves, which can be detected and their point of origin localized, thanks to sensitive radio detectors and sophisticated computer programming. Depending on the differences in water concentration and how quickly the protons re-emit their energy, it's possible to determine the type of tissue they came from—tendons, organs, cartilage, and even the white and grey matter of the brain.

Nearly three decades after MRI was first used in medicine, researchers began exploring how this imaging technique could be used to study not just the structure of the brain, but how the brain actually functioned in response to stimuli, hence the term fMRI.

This innovative application is possible because more active groups of neurons in the brain recruit more blood flow and use more oxygen, derived from oxygen-bearing hemoglobin, than their surrounding neurons and tissues. Since hemoglobin has different magnetic properties, depending on whether it is in its oxygenated or deoxygenated state, MRI scanners can show which regions of the brain are more active and responding more strongly to specific situations or stimuli.

(See this article on psychologicalscience.org/observer for a brief video demonstration of fMRI technology.)

Taking fMRI to Task

When researchers study the brain using fMRI while an individual is exposed to a “condition of interest,” such as viewing objects or completing a math problem, they are able to map brain activity associated with specific cognitive functions. This so-called task-fMRI has been used to study how the “typical” human brain functions by averaging changes in brain activation across members of a group.

For example, there is a noticeable increase in activity in the brain's amygdala when people view images of faces showing strong or hostile emotions in comparison with neutral faces. The

consistency of the results across cohorts led some researchers, including Hariri, to consider the possibility that task-fMRI may reveal a connection between brain activity and risks for disorders like depression and anxiety. If the typical healthy brain responds to task stimuli one way, then perhaps a brain that responds to the same task more vigorously than is typical, or more lethargically, might signal risk for mental disorder.

The thinking was that, since the amygdala is more active when people feel threatened, it should be possible to correlate clinical phenomena like anxiety and depression to differences in the magnitude of amygdala activation between people in the lab.

In this way, task-fMRI could be transformed from a tool for understanding how the average brain works to a tool for studying how brains differ between people. This information could one day inform who may be at greater risk for anxiety and depression, or who might respond most favorably to certain antianxiety medications and antidepressants.

At least, that was the theory. The new research, however, suggests that this leap from study to therapy is still a long way off.

The Limitations of Task-fMRI

For their research, Hariri and his colleagues used a combination of a meta-analysis of prior research and new analyses of test/retest data to assess the reliability of many commonly used task-fMRI measures of brain activity.

Their results found that, on average, 56 prior test-retest studies did not produce the same readings for each individual from the first to the second test. This was true even when the tests were separated by only a short period of time. The researchers found the same lack of reliability in two new test-retest studies using data from state-of-the-art MRI machines.

“If a measure gives a different value every time it is administered, it can hardly be used to make predictions about a person,” observed Hariri.

The results strongly indicate that, at least currently, task-fMRI cannot accurately predict outcomes, such as whether or not a person may develop depression, or whether they will respond favorably to certain antidepressants.

“This is important,” noted Hariri, “because more and more such studies are being reported, often accompanied by sensationalistic headlines. Also, many large-scale studies, including the National Institutes of Health Adolescent Brain Cognitive Development (ABCD) and the UK Biobank studies, have adopted unreliable task-fMRI measures in an effort to better understand differences in brain activity that can help predict the future health of individuals.”

The Duke team's findings, which are derived from the largest and most comprehensive set of analyses to date, suggest not only that psychological scientists need to exercise caution in evaluating the broad applicability of task-fMRI studies, but that researchers also need to step back and develop a more rigorous foundation for advancing task-fMRI measures of any brain-behavior correlations.

“We should further note that our findings do not question the validity of task-fMRI measures to reveal important aspects of how the average human brain functions. In fact, task-fMRI measures do a great job at measuring average brain function,” Hariri explained. “Rather, our findings more specifically question the application of these same measures to reveal how the brains of different people function differently.”

Further research, particularly in the age of individualized medicine and precision neuroscience, may lead to clinically important results, the researchers note, so long as we accept current limitations while striving for more meaningful outcomes. ●

See this story online for the reference list.

SALIVA AS A BIOSPECIMEN: THEN AND NOW IN THE ERA OF COVID-19

By Douglas Granger and Katrina Hamilton

In early May, the U.S. Food and Drug Administration granted emergency use authorization to an at-home coronavirus test. This test relies on little more than spitting into a cup and sending it to a lab at Rutgers University, and results are received within 24 hours. This breakthrough is one of a growing list of saliva-based tests that have emerged since the COVID-19 pandemic unleashed a furious race for tests, treatments, and a vaccine.

Behind the recent developments, however, lies a decades-long arc in which salivary bioscience has become increasingly useful in diverse areas, including behavioral science fields like behavioral economics and cognitive science. The pandemic has accelerated this integration and will likely lead to a new set of practices and protocols for how saliva is classified, collected, and handled.

A Conceptual Pivot

Saliva's role in behavioral science has its roots in the 1990s, when psychological science experienced a noteworthy turning point, becoming more integrated, transdisciplinary, and biopsychosocial. This change can be attributed, at least in part, to the efforts of investigators like Norman B. Anderson (Anderson, 1997), the first director of the NIH Office of Behavioral and Social Sciences Research (OBSSR), which established funding initiatives aimed at encouraging cooperation between behavioral and biological scientists. Meanwhile, new interdisciplinary programs and departments such as health psychology



Saliva sampling has led to a wealth of findings that merge the biological and psychological sciences, but new practices and procedures will be required for this biospecimen to be collected safely in the time of COVID-19.

and biobehavioral health were emerging on university campuses; more biology-oriented faculty were hired in psychology departments; funding increased for psychology graduate students to cross-train in biological science; and researchers increasingly focused on translating observations from basic science into models of human health and development. These themes continue to define modern psychological science today.

Progress in the behavioral sciences following this conceptual pivot has been largely facilitated by technical advances enabling the measurement of biological parameters in saliva and oral fluids (Granger & Taylor, 2020). In the time since, and increasingly so in the last decade, the integration of salivary bioscience tactics into behavioral science has contributed to the generation of thousands of empirical articles.

Several particular advantages of saliva as a research biospecimen, characterized and discussed elsewhere (Granger et al., 2012), make this possible, including the ease of sample collection and portability. For instance, samples can be collected in the context of people's everyday social worlds (i.e., while at play, work, or home); repeated samplings can be obtained from the same individual with low participant burden; and samples can be self-collected in the field and returned by post.

As salivary bioscience matured as a field, the behavioral sciences began to integrate individual and intra-individual differences in biological processes into conceptual models of human health, behavior, and development. Eventually, working theories were revised to account for the accumulation of novel ob-

Douglas Granger is a Chancellor's Professor and director of the Institute for Interdisciplinary Salivary Bioscience at the University of California, Irvine (Dagrange@uci.edu; iisbr.uci.edu). His research involves the measurement and application of biomarkers and analytes in saliva toward advancing understanding of how biosocial links moderate the effects of adversity and stress on human health and development. He is also the founder and chief scientific and strategy advisor of Salimetrics and Salivabio, which specialize in salivary bioscience methods and analytical services.

Katrina Hamilton is a postdoctoral scholar at UC Irvine's Institute for Interdisciplinary Salivary Bioscience Research (krhamilt@uci.edu). Her work primarily focuses on how stress affects biopsychosocial status in both healthy and chronically ill individuals and identifying noninvasive interventions to reduce these effects. →

servations (e.g., Boyce & Ellis, 2005; Del Giudice et al., 2011; McEwen, 2000).

What psychological scientists may not yet appreciate, however, is that while this work was underway, salivary bioscience was progressing at an even faster pace. Public and private resources were channeled to explore the potential of saliva and oral fluid as the “diagnostic fluid of the future” (e.g., Malamud & Tabak, 1993). The focus was on characterizing the diversity of biomarkers present in oral fluids, discovering clinical applications and utilities, and advancing technologies to enable multiple biomarker determinations from single samples and quick turn-around results at the point of care. Consequentially, salivary bioscience can now be applied to studying a wide range of biological markers, including those for mediators of inflammation, antibodies to infectious disease, cardiometabolic and endocrine concerns, therapeutic drugs, drugs of abuse, enzymes, and environmental chemicals, as well as human (and microbial) genetic polymorphisms and epigenetic markers (Granger & Taylor, 2020).

The broad array of biological systems that can be incorporated into conceptual models using saliva creates new potential for advancing our understanding of how biobehavioral, psychological, and social factors interact to influence human development, behavior, and underlying diseases.

Prior to COVID-19, the most apparent contributions of salivary bioscience to psychological science research were twofold: It afforded the opportunity to study biobehavioral processes related to the psychobiology of the stress response, and it helped to determine the effects of individual differences in biological reactivity and in regulating responses to adversity or challenges on risk and resilience trajectories (e.g., Blair et al., 2011; Stroud et al., 2009). The results of this research fill the pages of top journals and underscore the importance of social context as a moderator of the expression of biology-behavior relationships (e.g., Booth, Carver, & Granger, 2004).



The new “normal” of salivary bioscience is expected to require new practices and protocols to protect against the transmission of COVID-19 during sample collection and analysis.

Salivary Bioscience Post-COVID-19

Enter the disruptor—the COVID-19 pandemic. Prior to 2020, another advantage of saliva as a biospecimen was safety. The US Centers for Disease Control (CDC) did not consider saliva as a class II biohazard unless it was visibly contaminated with blood. This meant it could be tested and collected without the use of universal precautions such as lab coats, gloves, and eye protection in the field (US Department of Health and Human Services, 2000). At the time of writing, however, it is understood that transmission of COVID-19 occurs through human contact with nasal secretions, and respiratory droplets (aerosols) from breath and saliva.

For now, the majority of academic research not related to COVID-19 has been indefinitely suspended. But when the world begins to resume normal activities again, the COVID-19 pandemic will remain a major disruption to the research enterprise. Certainly, there will be a new “normal” for salivary bioscience in particular, requiring a new set of best practices for the collection, handling, transport, and assay of saliva samples. The CDC has already specified some of this (see [cdc.gov/coronavirus/2019-nCoV/lab/index.html](https://www.cdc.gov/coronavirus/2019-nCoV/lab/index.html)).

Here are some of the new practices and protocols we might expect.

One of the first changes likely to impact saliva research is its reclassification as a category “B” biospecimen, reflecting the fact that saliva is a viable source of peer-to-peer and community transmission of COVID-19. To mitigate the risk of infection, protections may need to include exclusion criteria using a combination of self-reported symptoms, body temperature, COVID-19 exposure history, recent travel history, and, perhaps in the future, COVID-19 vaccination history. Guidelines for collecting specimens while maintaining appropriate degrees of social distancing will also be needed. Creating standardized training for field researchers will be a critical step.

Once samples are collected, protocols for labelling and shipping samples from collection sites to field stations or analytical laboratories will need to reflect the designation of saliva samples as a potential source of COVID-19 transmission. It seems reasonable to assume that policies may restrict the transport of samples between countries. This is especially likely when samples originate from COVID-19 “hot spots.”

When saliva samples arrive at analytical research laboratories, they will need to be handled under more restrictive operating procedures. In addition to

universal precautions and disinfecting work surfaces, all laboratory operations with saliva will need to take place within biosafety cabinets where the chance of aerosol-based transmission is mitigated. Further, it is possible that coronaviruses can withstand multiple freeze thaw cycles (e.g., Casanova et al., 2010). Accordingly, saliva samples collected after the fall of 2019 that are housed in biorepositories or sample archives should be identified as potential sources of COVID-19. A worthwhile next step will be to encourage laboratories that specialize in research involving salivary testing to harmonize their standard operating procedures.

The risk of peer-to-peer and community transmission of COVID-19 through contact with saliva compromises several advantages of saliva as a biospecimen. Principal investigators responsible for overseeing research programs that involve saliva specimens will need to implement new training programs and standard operating procedures. These protocols should be developed in close consultation with local institutions' environmental/occupational health and safety officers to ensure that field researchers (project coordinators, data collectors, students) and laboratory technicians collect, handle, and assay samples safely.

Even after the COVID-19 pandemic subsides, it is likely that these changes will be the new normal. As a field, we will need to adapt with the goal of maximizing safety and minimizing risk while continuing efforts to advance our knowledge of influential interactions among biological, behavioral, psychological, and social factors.

Despite these added risks, salivary bioscience has never been so valuable to the psychological research enterprise. Exposure to persistent uncertainty associated with the pandemic will, for some more than others, influence the expression of biology-behavior relationships; and salivary bioscience methods will enable the programmatic investigation of the pandemic's consequences for

human development and underlying health disparities. The post-COVID-19 era will renew interest in saliva sampling as a means of determining the presence of pathogen-specific antibodies, providing information on the type and temporality of infection, and supporting epidemiological surveillance (e.g., Randad et al., 2020). ●

References

- Anderson, N. B. (1997). Integrating psychological and social sciences research at the National Institutes of Health, USA. *Social Science & Medicine*, *43*, 1069–1071. [https://doi.org/10.1016/s0277-9536\(96\)00304-8](https://doi.org/10.1016/s0277-9536(96)00304-8)
- Blair, C., Granger, D. A., Willoughby, M., Mills-Koonce, R., Cox, M., Greenberg, M. T., ... & FLP Investigators. (2011). Salivary cortisol mediates effects of poverty and parenting on executive functions in early childhood. *Child development*, *82*(6), 1970–1984. <https://doi.org/10.1111/j.1467-8624.2011.01643.x>
- Salivary cortisol mediates effects of poverty and parenting on executive functions in early childhood. *Child Development*, *82*, 1970–1984. <https://doi.org/10.1111/j.1467-8624.2011.01643.x>
- Booth, A., Carver, K., & Granger, D. A. (2004). Biosocial perspectives on the family. *Journal of Marriage and Family*, *62*, 1018–1034. <https://doi.org/10.1111/j.1741-3737.2000.01018.x>
- Boyce, W. T., & Ellis, B. J. (2005). Biological sensitivity to context: I. An evolutionary–developmental theory of the origins and functions of stress reactivity. *Development and Psychopathology*, *17*, 271–301. <https://doi.org/10.1017/S0954579405050145>
- Casanova, L. M., Jeon, S., Rutala, W. A., Weber, D. J., & Sobsey, M. D. (2010). Effects of air temperature and relative humidity on coronavirus survival on surfaces. *Applied and Environmental Microbiology*, *76*, 2712–2717. <https://doi.org/10.1128/AEM.02291-09>
- Del Giudice, M., Ellis, B. J., & Shirtcliff, E. A. (2011). The Adaptive Calibration Model of stress responsivity. *Neuroscience and Biopsychological Reviews*, *35*, 1562–1592. <https://doi.org/10.1016/j.neubiorev.2010.11.007>
- Granger, D. A., Fortunato, C. K., Beltzer, E. K., Virag, M., Bright, M. A., & Out, D. (2012). Focus on methodology: Salivary bioscience and research on adolescence: An integrated perspective. *Journal of Adolescence*, *35*, 1081–1095. <https://doi.org/10.1016/j.adolescence.2012.01.005>
- Granger, D. A., & Taylor, M. K. (2020). Foundations of interdisciplinary salivary bioscience: An introduction. In D. A. Granger & M. K. Taylor (Eds.), *Salivary Bioscience* (pp. 3–9). Springer International Publishing. https://doi.org/10.1007/978-3-030-35784-9_1
- Malamud, D. & Tabak, L. (1993). Saliva as a diagnostic fluid. *Annals of the New York Academy of Science*, *694*(1). New York Academic of Science, New York, NY.
- McEwen, B. (2000). Allostasis and allostatic load implications for neuropsychopharmacology. *Neuropsychopharmacology*, *22*(2), 108–124. [https://doi.org/10.1016/S0893-133X\(99\)00129-3](https://doi.org/10.1016/S0893-133X(99)00129-3)
- Randad, P.R., Hayford, K., Baldwin, R., Avolio, L., Pisanic, N., Moss, W. J., Granger, D.A., & Heaney, C. D. (2020). The utility of antibodies in saliva to measure pathogen exposure and infections. In D. A. Granger & M. K. Taylor, (Eds.), *Salivary Bioscience* (pp. 287–320). New York, NY: Springer-Nature. <https://doi.org/10.1007/978-3-030-35784-9>
- Stroud, L. R., Foster, E., Papandonatos, G. D., Handeager, K., & Granger, D. A. (2009). Stress response and the adolescent transition: Performance versus peer rejection stress. *Development and Psychopathology*, *21*(1), 47–68. <https://doi.org/10.1017/S0954579409000042>
- U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research. (2000). *Oral health in America: A report of the Surgeon General*. Retrieved from <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>

APS honors Members with the field's most prestigious awards and recognitions. This is a critical part of supporting scientific advances in our field. **Please consider the diverse and international nature of our field in nominating colleagues. Nominations of members of underrepresented groups in psychological science are encouraged.**

2022 APS William James Fellow Award

Honoring APS Members for their lifetime of significant intellectual contributions to the basic science of psychology.

Nomination Deadline: October 15, 2020

2022 APS James McKeen Cattell Fellow Award

Honoring APS Members for their lifetime of significant intellectual achievements in applied psychological research and their impact on a critical problem in society at large.

Nomination Deadline: October 15, 2020

2022 APS Mentor Award

Recognizing APS Members who have significantly fostered the careers of others, honoring those who masterfully help students and others find their own voices and discover their own research and career goals.

Nomination Deadline: October 15, 2020

Recognizing Excellence

Call For Nominations

2021 APS Janet Taylor Spence Award

For Transformative Early-Career Contributions

Recognizing transformative early-career contributions to psychological science. Award recipients are APS Members who reflect the best of the many new and cutting-edge ideas from our most creative and promising investigators.

Nomination Deadline: September 15, 2020

APS Fellows

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.

Nomination Deadline: October 15, 2020

APS Rising Stars

The Rising Star designation recognizes outstanding APS Members in the earliest stages of their post-PhD research careers whose innovative work has already advanced the field and signals great potential for their continued contributions.

Nomination Deadline: September 30, 2020

To submit a nomination or for more information, including past recipients and nomination materials, please visit **www.psychologicalscience.org/awards**

www.psychologicalscience.org/awards

Call for Applications

APS Teaching Fund Small Grants Program

APS invites applications for nonrenewable grants up to \$5,000 to launch new projects broadly addressing the categories below:

- **Scholarship of Teaching and Learning (SoTL):** Grants in this category support high quality, potentially publishable scholarship directed at the teaching and learning of psychological science.
- **Meetings and Conferences:** Grants in this category support efforts that facilitate communication among teachers of psychological science who share common challenges and who would benefit from sharing ideas and resources.
- **Technology and Websites:** Grants in this category support projects leveraging technological resources to enhance the teaching and learning of psychological science, and to increase the reach and efficient dissemination of related resources.
- **Antiracist Curricula:** Grants in this category support projects that aim to eliminate racial bias in psychological science curricula and incorporate principles of racial justice into the teaching of psychological science content.

NEXT APPLICATION DEADLINE: OCTOBER 1, 2020

For details, go to: www.psychologicalscience.org/smallgrants
Questions? Contact teachfund@psychologicalscience.org

LISTEN TO YOUR GUT: WHY THE GUT-BRAIN CONNECTION MATTERS, AND HOW IT CAN IMPROVE YOUR LIFE

By *Pietra Bruni*



Pietra Bruni
Vanderbilt University

Serotonin has gained a widespread reputation as the neurotransmitter responsible for controlling happiness, well-being, and mood. Although serotonin's actual functioning involves much more complex processes, most people would answer "in the brain" if asked to identify where 90% of the serotonin in their body resides. Surprisingly, this is not the case. Researchers estimate that more than 90% of the serotonin in the human body is produced in the digestive tract, where it influences and affects a variety of our bodily processes (Fung et al., 2019).

While awareness of this little known fact can be helpful to most individuals looking to boost their well-being, there is one population that might particularly benefit from

further delineating the gut-brain connection: the exhausted, overworked graduate student population. Research studies and university surveys have consistently found that graduate students have higher rates of depression and anxiety, as well as poorer nutrition and sleep hygiene, than the general population. Additionally, the uncertainty and stress caused by COVID-19 brings its own set of additional difficulties. Living through a global pandemic is a universally difficult experience, but the challenges it brings graduate students in terms of pauses in data collection, research funding, clinical work, and isolation from peers puts this population in a uniquely challenging situation. By understanding the importance of gut health, psychological scientists can gain further insight into the burgeoning field of gut-brain axis research, in addition to learning more effective ways to manage their health and well-being during times of stress.

The Second Brain

The gut microbiota is often referred to as the "second brain," and the role it plays in influencing brain functioning and behavior is a current hot topic in scientific research. Investigators know that the gut and brain are continually communicating, and although they haven't fully clarified this process, they have identified numerous indirect pathways. The one thing we do know for sure is that the gastrointestinal system is responsible for much more than just breaking down that pepperoni pizza with extra cheese from lunch.

Known in the scientific community as the enteric nervous system, our second brain consists of more than 100 million neurons located in the walls of our intestines' alimentary canal (which, in total, stretches to measure over nine meters). In his 1998 book *The Second Brain*, Michael Gershon described how these multitudes of neurons allow us to "feel" our intestinal functioning. Beyond just informing us about what that pepperoni pizza is doing, this somatic information can be helpful in decision-making, psychosocial functioning, and regulating our affective states. A recent study even found differences in brain activity based on the microbiota of 40 women (Tillisch et al., 2017). Specifically, they found that women with different levels of two strains of bacteria (*prevotella* and *bacteroids*) demonstrated differences in hippocampal activity, as well as activity in regions of the brain related to emotional, attentional, and sensory processing, in response to negative mood-inducing images. The more we investigate this gut-brain connection, the more far-reaching the influence of gut microbiota.

Sensitive to Emotion

When we speak about our feelings, what language do we typically use?

How many of us have ever used the phrase "heartwarming" to describe a ➔

Pietra Bruni is a clinical psychology PhD student at Vanderbilt University. Her research primarily focuses on social-emotional expertise (SEE) and its association with related constructs, such as interoception, nonverbal behavior, and emotional granularity. She can be reached at pietra.t.bruni@vanderbilt.edu and on Twitter/Instagram at [@pietra_bruni](https://www.instagram.com/pietra_bruni).

tender moment, or admitted to having “cold feet” before making an important decision? When we’re nervous and claim to have “butterflies in the stomach,” it’s generally understood that there are aren’t actual insects flapping around in our intestines. Yet, we continue to use these somatically centered phrases to explain how we’re feeling. Our understanding of emotion is closely tied to the bodily metaphors that we use to describe and communicate our internal experiences.

Previous research on the gut-brain axis has identified a strong connection between our affective feeling states and the numerous neurotransmitters that reside in our gut microbiota (Lerner, Neidhöfer & Matthias, 2017; Chahwan et al., 2019). In some cases, treatment-resistant depression is managed by a surgical procedure that mechanically stimulates the vagus nerve, one of the body’s most potent modulators of parasympathetic control (Careno & Frazer, 2017). The vagus nerve stretches from the brain down to the digestive tract, and, given that it sends information in *both* directions, it should come as no

surprise that it is proving itself to be a primary player in improving the health and well-being of those experiencing severe emotional distress.

Promoting Well-Being in Times of Stress

As humans, we perceive feelings from our bodies that relate to our state of well-being, energy and stress levels, and mood and disposition. And while all humans experience stress at different points in their everyday life, it has been found that graduate students often experience a relatively consistent level of stress that is greater than that of the general population. With the information we now have on the gut-brain connection, there are several ways we can target this relationship to help improve the well-being and emotional health of students experiencing strain in their busy graduate school careers.

Interoception, defined by neuroscientist Bud Craig (2004) as “subjective awareness of inner feelings,” is the sense of the body’s physiological condition. Pain, temperature, heart rate, arousal, and digestion are all visceral sensations that can be detected through interoception. Focusing more on this lesser-known “sixth sense” to gain interoceptive awareness can help regulate internal processes, as well as improve the detection of bodily changes that may indicate increased muscle tension and stress. Practicing meditation and mindfulness on a daily basis can help facilitate this process, as both emphasize “noticing” and help individuals become more aware of how their body feels during different affective experiences.

In addition to promoting a greater sense of internal awareness, small adjustments in diet can also help foster a more diverse and healthy gut flora. The microbiota consists of numerous microorganisms and bacteria that reside in our digestive tract and influence our metabolic health. Probiotics are microorganisms that can aid digestion and help promote gut health, providing support for our second brain. Certain fermented foods, like kimchi and yogurt, as well as drinks like kombucha, can be simple and delicious ways to deliver healthy support for this connection. As we continue to spend more time in our homes due to COVID-19, it is important to pay particular attention to the foods we’re eating and ensure that our diet is providing the energy and support we need. The supply chain of fermented foods does not seem to have been disrupted, and these items can still be readily purchased from nearly all local grocery stores at this time.

Lastly, merely listening to your stomach is an important skill to practice. The term “gut feeling” has been referenced in the development of numerous theoretical perspectives in decision-making and emotion science (i.e., *somatic marker hypothesis*) for a reason. As previously noted, the gut-brain connection involves various neurotransmitters that influence our feelings and emotions. High comorbidity between anxiety disorders and irritable bowel syndrome supports the idea that when something is wrong, it often physically manifests in our stomach. Think of it as a digestive alarm system, letting us know when we might be overworked, upset, or feeling a little too stressed out. By paying attention to these internal cues, we can practice greater inner awareness and self-care—one cup of yogurt at a time. ●

References

- Carreno, F. R., & Frazer, A. (2017). Vagal nerve stimulation for treatment-resistant depression. *Neurotherapeutics*, *14*(3), 716-727.
- Chahwan, B., Kwan, S., Isik, A., van Hemert, S., Burke, C., & Roberts, L. (2019). Gut feelings: A randomised, triple-blind, placebo-controlled trial of probiotics for depressive symptoms. *Journal of Affective Disorders*, *253*, 317-326.

See this story online for for the full reference list.



Student Notebook serves as a forum in which APS Student Caucus members communicate their ideas, suggestions, and experiences. Read other Student Notebook columns and learn about the benefits of Student Membership at psychologicalscience.org/members/apssc.

REQUEST FOR PROPOSALS

Advanced Training in Mathematical and Computational Modeling for Psychological Science

Sponsored by the William K. and Katherine W. Estes Fund



Initial Proposal Deadline
September 1, 2020

Full Proposal Deadline
December 1, 2020

The William K. and Katherine W. Estes Fund invites proposals to fund advanced training opportunities in mathematical and computational modeling for psychological science in summer schools or focused workshops.

Potential proposers are encouraged to contact members of the Estes Fund Committee during the initial proposal preparation process.

The Association for Psychological Science and the Psychonomic Society are committed to scientific merit, which entails the inclusion of scientists of all genders, races, sexual orientations, countries of origin, geographical locations, and disciplinary expertise.

ESTES FUND COMMITTEE

Alice Healy (Chair), *University of Colorado Boulder*, alice.healy@colorado.edu

Elizabeth L. Bjork, *University of California, Los Angeles*, elbjork@psych.ucla.edu

David Rosenbaum, *University of California, Riverside*, david.rosenbaum@ucr.edu

For more information on the Estes Fund visit
WWW.PSYCHOLOGICALSCIENCE.ORG/ESTES-FUND



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. Visit www.psychologicalscience.org/jobs for additional job postings and to sign up for job listings by email.

observerads@psychologicalscience.org • +1.202.293.9300

MASSACHUSETTS

Cambridge Health Alliance

Cambridge, MA

Chief of Psychology

The Cambridge Health Alliance (CHA) Department of Psychiatry seeks to recruit an experienced clinical psychologist with outstanding academic, clinical, administrative, and leadership skills to serve as Chief of Psychology. Our system includes three campuses as well as an established network of primary and specialty practices in Cambridge, Somerville and Boston's metro-north region. We proudly serve the ethnically and socio-economically diverse patient population within our communities.

- Oversee training directors of our practica, APA-accredited internship, and postdoctoral programs with nearly thirty psychology doctoral students.
- As part of an appointing Department at Harvard Medical School, participate in recruiting, credentialing, and supervising over 40 full and part time psychology positions.
- Appointment to a faculty position up to the rank of Associate Professor, as determined by the criteria of Harvard Medical School, is anticipated.

The CHA Department of Psychiatry hosts ACGME accredited training programs in adult and child psychiatry, psychosomatic medicine, and geriatric psychiatry, as well as training in graduate level social work and psychiatric nursing. A two-year fellowship in psychotherapy is open to trainees of all disciplines.

CHA values scholarship, teamwork, commitment to patients and trainees, and mutual respect across clinical specialties and interests. The Psychiatry Department highly values all evidence based psychotherapies and maintains a strong commitment to psychodynamic principles, social determinants of health, with a focus on the health of our very diverse communities. As an Accountable Care Organization, CHA continues to expand and enhance our Primary Care–Mental Health Integration throughout our network.

Qualified candidates will demonstrate skill and experience in teaching, clinical practice and administration. Success in research activity is highly desirable. Please submit CV's through our secure website at CHAproviders.org, or by email to Melissa Kelley at ProviderRecruitment@challiance.org. The Department of Provider Recruitment may be reached by phone at (617) 665-3555 or by fax (617) 665-3553.

CHA is an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic protected by law.

ANNOUNCEMENTS

Send items to apsobserver@psychologicalscience.org

GRANTS

NIH Research Opportunities Related to COVID-19

In response to the rapidly evolving situation surrounding COVID-19, institutes within the U.S. National Institutes of Health (NIH) have issued notices of special interest (NOSIs) designed to allow researchers to apply their existing NIH research grants to COVID-19 research. These NOSIs offer competitive revision and administrative supplement opportunities that differ in scope and research area depending on the issuing institute; they allow researchers across all fields, including psychological science, to contribute their expertise and research projects to the growing body of COVID-19 research.

To view a compilation of these opportunities and additional information of potential interest to psychological scientists, visit the NIH's Office of Behavioral and Social Science Research at obssr.od.nih.gov/research-support/funding-announcements.

NIMH BRAINS Funding Opportunity for Early-Career Scientists

The National Institute of Mental Health (NIMH) invites psychological scientists and others to apply to its Biobehavioral Research Awards for Innovative New Scientists (BRAINS) program. This opportunity aims to fund early-career scientists who are committed to advancing the mission areas of NIMH, focusing on scientists committed to filling research gaps in the current NIMH Strategic Plan.

BRAINS is a unique R01 research project grant specially targeted at early-career scientists with creative, unusual ideas. Through this program, NIMH seeks to assist individuals in “launching an innovative clinical, translational, basic or services research program that holds the potential to profoundly transform the understanding, diagnosis, treatment, or prevention of mental disorders.” Successful researchers will show a long-term commitment to a career in research on the causes, diagnosis, and treatment and prevention of mental illness.

Due dates for this program are June 20, 2021 and June 20, 2022. Letters of intent are due 30 days in advance.

The full funding announcement for the Biobehavioral Research Awards for Innovative New Scientists (NIMH BRAINS) can be found at grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-525.html

NIH Encourages Studying the Social Contagion of Substance Abuse

The National Institute on Drug Abuse (NIDA) invites grant applications proposing to study the social contagion of behavior and substance abuse. Proposed research should apply social network theory—the study of how people, organizations, and groups interact in a network. Applications are open through

January 8, 2023.

Social contagion, as defined by NIH, is the “spread of affect or behavior from person to person and among larger groups.” NIDA recognizes “social network theory can also be applied to chronic behavioral conditions, including substance use disorders, as social factors and their interactions with age and sex are important determinants of substance use.”

Models that examine how substance abuse and peer use/misuse develop in peer groups should make use of big data sets and data science to form computational models required for social network analysis.

Learn more about NIDA's Notice of Special Interest: Modeling Social Contagion of Substance Use Epidemics (NOT-DA-20-009) at grants.nih.gov/grants/guide/notice-files/NOT-DA-20-009.html

NSF Funding to Support Transition From New Research Discoveries to Innovation

The National Science Foundation (NSF) offers researchers the opportunity to transition their research from discoveries to the marketplace through the Partnerships for Innovation Program (PFI).

The solicitation supports efforts on two tracks. The Technology Translation track provides the opportunity to turn NSF-funded research into technological innovations with promising social impact. The Research Partnerships track has similar goals but supports larger, complex, multifaceted technology development projects that require the involvement of more than one researcher or institution. This track requires the creation of a partnership between academic researchers and a third-party organization (e.g. industry, a federal laboratory, a public or nonprofit technology organization).

Deadline: January 13, 2021

Learn more about the PFI program at bit.ly/3ac7JDw

MEETINGS

All meetings are subject to change and/or cancellation due to the COVID-19 pandemic. Please check the appropriate websites for the latest information.

APS Virtual Poster Showcase

June 1–September 1

For details and updates, visit psychologicalscience.org/posters

4th International Convention of Psychological Science

Postponed
Brussels, Belgium
ICPS2021.org

Research! America 2020 National Health Research Forum

September 10, 2020
Washington, DC

researchamerica.org/2020-national-health-research-forum



icps2021

INTERNATIONAL CONVENTION OF
PSYCHOLOGICAL SCIENCE

BRUSSELS
BELGIUM

aps
ASSOCIATION FOR
PSYCHOLOGICAL SCIENCE

WE ARE PRESSING PAUSE ON ICPS 2021

ICPS 2021 has been postponed to ensure the health and well-being of the global APS community. New meeting dates will be announced in autumn 2020.

For the latest information, please visit
www.ICPS2021.org



Janet Mann
Georgetown University

You've studied dolphins' behavior and development for more than 30 years now. What first drew you to studying this species?

I started out interested in animal behavior broadly but focused on primates (including humans) to start. My perspective was always grounded in ecology and evolution. During my undergraduate years at Brown University, I spent nearly a year conducting savanna baboon research in Kenya with Jeanne Altmann. Although my PhD research at the University of Michigan was on human infants, when my advisor Barbara Smuts asked me to help her start a research project on bottlenose dolphins in Australia in 1988, I jumped at the chance.

What has been your most unexpected or surprising discovery involving oceanic dolphins?

One discovery that surprised me was vertical transmission of tool use. Shark Bay (Western Australia) dolphins have become famous for using basket-shaped marine sponges as tools. The sponge protects the rostrum (beak) while the dolphin forages in the substrate for fish. In 1989, I was conducting a

DECADES OF DOLPHINS

Janet Mann, a professor of psychology and biology at Georgetown University, dives deep into the social lives of these clever marine mammals.

focal follow on the first “sponger” that had been discovered. Her 2-year-old daughter Demi was foraging at some distance, and we noticed that she had a small sponge on her rostrum. Now, 32 years later, Demi is still sponging, and her daughters and grandoffspring are spongers too! This strong vertical transmission of tool use in a minority of the population (about 4%) is fascinating. They spend more time using their tools than any other non-human animal—and I would argue this behavior is quite clever.

What can this understanding teach us about the human mind?

Human and dolphin societies have features characteristic of high relational and structural social complexity, including extreme fission-fusion dynamics, which means that associations or groups change composition frequently. Theorists suggest that the cognitive challenges of deciding whom to associate with based on the history, context, and individual characteristics, and higher order subgroup membership such as allies, families, and cliques drive elaborate social cognition.

The specific dynamics of human and dolphin societies differ, but there are similar challenges and tensions in forming, maintaining, and dissolving social bonds at multiple levels.

What are you researching now?

With a 36-year long-term and longitudinal dataset, there is much to be mined and discovered.

With Professor Shweta Bansal, we have been modeling disease dynamics in relation to contact behavior in the Shark Bay population and our new study in the Potomac River and Chesapeake Bay (pcdolphinsproject.org). The latter population suffered a serious morbillivirus outbreak in 2013-2015, which killed thousands of dolphins along the eastern seaboard of the U.S. We have a range of questions about why dolphins are coming into the Potomac River. In the 1800s, there are some reports of bottlenose dolphins as far inland as Washington, D.C., and Alexandria, Va.

My graduate student Taylor Evans is examining social and ecological phenotypes among individuals in the Shark Bay population. Some of these phenotypes show remarkable stability for over 30 years. We hope to understand how and why individual phenotypes are so well differentiated, how they change during development, and what impacts phenotypes have on network structure and individual fitness. These are fundamental questions on what drives individual differences.

Similarly, my current NSF grant focuses on non-genetic inheritance from the mother and how that influences offspring phenotype. To do this, one needs to account for genetic variation. With Dr. Celine Frere at The University of the Sunshine Coast, we are examining these genotype-phenotype interactions.

Do you have other favorite findings about dolphins to share?

I am always excited about what is coming next, so stay tuned. ●

Back Page showcases particularly interesting work by a wide variety of psychological scientists. Know of a good candidate for a future profile? Contact the *Observer* at apsobserver@psychologicalscience.org.

See this article online for photos and a video about Mann's work with dolphins, as well as a longer version of this interview at psychologicalscience.org/observer/mann.

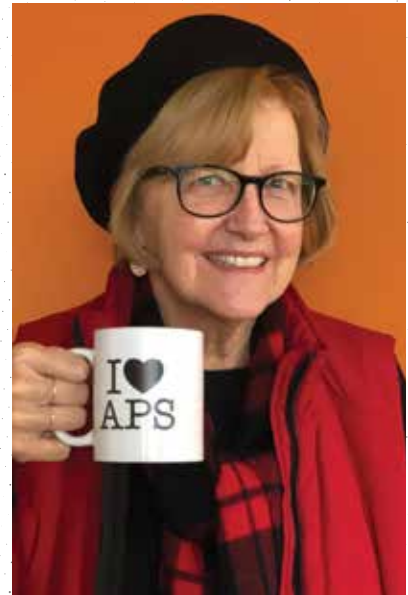
Change Service Requested

Time-Sensitive Material

Thank you, Sarah!

We thank you for your 30 years of promoting psychological science and serving the APS community, and we wish you the very best for a long and happy retirement.

**The APS Board
of Directors**



Sarah Brookhart, the second executive director in APS's 32-year history, will retire at the end of August. The APS Board of Directors is reviewing candidates for the new executive director.