

PSYCHOLOGICAL SCIENCE  
IN THE ERA OF INFECTIOUS  
DISEASE

THE SURPRISING SOCIAL  
UPSIDES OF CONSTANT  
CONNECTIVITY

REMEMBERING APS PAST  
PRESIDENT GORDON BOWER  
(1932–2020)

# Observer

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Why it's as  
much about  
psychology  
(and ballot  
design)  
as security

## MAKING VOTES COUNT

Plus: How an  
act as simple  
as redesigning  
municipal forms  
can make  
government  
more equitable

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ASSOCIATION FOR  
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# Observer

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Association for Psychological Science  
+1 202.293.9300; Fax: +1 202.293.9350  
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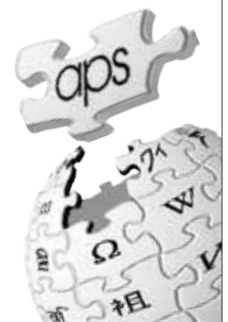
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“Child marriage is really a complex intersection of sociocultural layers... There is a huge component of foundational literacy and socioemotional skills. These are the beliefs, attitudes, or behaviors that allow everyone—children, youth, adults—to manage themselves and to manage relationships with others, to make responsible decisions. These skills have been tied to academic outcomes, and also with long-term life outcomes. ”

—Ananya Tiwari, *Careers Up Close*, Page 52

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This free series focuses on networking, peer review, online research, and more. Register for upcoming sessions, and view recordings and summaries of any you missed.



## Schooling Is Critical for Cognitive Health Throughout Life

Education provides little protection against the onset of cognitive declines but can boost cognitive skills. (August 10)



## Your In-Laws' History of Drinking Problems Could Lead to Alcohol Issues of Your Own

A new study finds marriage to a spouse who grew up exposed to parental alcohol misuse increases a person's likelihood of developing a drinking problem. (August 20)



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# PSYCHOLOGICAL SCIENCE IN THE ERA OF INFECTIOUS DISEASE

By Shinobu Kitayama  
 APS President

Over the last several months, we have witnessed an unprecedented spread of the novel coronavirus disease (COVID-19). Some fear that its magnitude could eventually be comparable to that of the 1918 flu pandemic, which killed more than 50 million people worldwide. As the virus's onslaught unfolded, I began to feel that psychological scientists must join forces in the fight against the pandemic. In particular, I wondered whether massive variation in countries' vulnerability to the virus might shed light on the core mechanisms underlying its transmission. This thought may not be too far-fetched. Even though this infectious disease is caused by a virus (a bit of genetic material in a spiky lipid shell), its behavior is nearly entirely contingent on human behavior (Quammen, 2012). Thus, as a field, psychological science may have a lot to offer. Relevant regulatory agencies, including the Centers for Disease Control and Prevention in the United States, must heed psychological science insights when formulating their policies and regulations.

In this column, I want to address three issues that strike me as particularly important as we face the challenge of managing the current and future pandemics. I argue that the collective-level dynamics of (a) risk assessment, (b) selfish versus prosocial motivations, and (c) interpersonal relationships

powerfully influence the spread of infectious diseases, including COVID-19. I draw heavily on my first-hand experiences in the United States, where I live. However, I hope my discussion carries relevance for readers elsewhere. I conclude with a plea for basic research anchored in the urgent practical issues of society.

## Pluralistic Ignorance: Why Are We Often Complacent?

Any cursory observation would suggest that people's behavior during the pandemic depends very much on their ability and willingness to recognize COVID-19 as a threat. Once people perceive this threat as urgent, they will be alarmed. They may try to cope with the threat. For example, they may sacrifice some conveniences and wear face masks or socially isolate themselves. The problem, however, is that there is nothing concrete about the threat of infectious disease. The threat is often invisible until it is too late, when many people have already been infected and hospitalized. If people do not perceive the virus as a threat, they may perceive warnings as hearsay. If you take it seriously, you may be accused of being an alarmist. Indeed, whenever there is alarm, there also exists a strong motivation to discount or dismiss it. When this dismissal occurs, it leads to complacency. One important lesson from the current pandemic is that people are very prone to such complacency.

The apparent calm of others in one's community may reinforce this complacency. By February, many New York City residents already knew about the spread of COVID-19 in Asia and Europe. They had been informed of earlier infections in the area. The first death in the city occurred in the first week of March. Nevertheless, most residents failed to act, seemingly feeling safe and protected. With the benefit of hindsight, this calmness seems like complacency, which indeed eventually haunted many of them. How can such complacency come about?

One plausible answer is provided by social psychologists Dale Miller ➔




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APS President **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](mailto:skitayama@psychologicalscience.org).

A collective failure to calibrate each other's anxiety (pluralistic ignorance) leads to a collective failure to act properly.

and Deborah Prentice, who analyzed a collective dynamic called pluralistic ignorance (Miller & Prentice, 1994). Sometimes, we end up believing that everyone else feels safe not because they actually feel that way but because they don't show any signs of discomfort or anxiety. In the context of the current pandemic, everyone may well have suspected a real threat. However, a vast majority refrained from acting proactively to prevent the threat precisely because they witnessed others' inaction and judged that the situation was fully manageable, if not completely safe. The irony is, that error in judgment (i.e., the perceived safety of the situation) was based precisely on the inaction of other people, who were guided by the same judgment. Thus, a collective failure to calibrate each other's anxiety (pluralistic ignorance) leads to a collective failure to act properly.

### Listen Online!



In September, Shinobu Kitayama, Wendy Wood (University of Southern California), Robert Roy Britt ([Livescience.com](http://Livescience.com)), and APS's Charles Blue held a virtual panel discussion to further discuss COVID-19 and psychological science. Access the recording with this article at [psychologicalscience.org/observer](http://psychologicalscience.org/observer).

In all likelihood, the people who gathered at Florida bars or Southern California beaches in recent months, or the riders who blasted their Harley-Davidsons all the way to Sturgis, South Dakota, during the second week of August, were complacent. Their complacency, however, was not simply due to a failure to understand the reality of the pandemic. To the contrary, their perception of that reality may have been systematically distorted by a little bit of innocuous pretension or even civility—a desire not to be seen as alarmist or as weak or feeble. The resulting distortion of reality may have made it seem completely rational not to worry much about COVID-19, which unfortunately led to the virus's spread in various communities.

## The Tragedy of the Commons: Self-Protection Versus the Protection of a Community

No matter how prone individuals might be to complacency, they will eventually recognize a real threat if people around them start to fall prey to the disease and begin to die. When the threat is duly recognized, however, another collective dynamic enters and makes it hard to organize preventive actions. We are all social animals, meaning that we all live in a community. Each of us is an individual animal that must survive and, better yet, flourish. At the same time, we must also protect our community. Without doing so, we may eventually fail to survive and flourish as individuals. Nevertheless, personal interest is often far more immediate, direct, and concrete than the collective good. Thus, there arises a potential conflict between the two. This conflict may be elucidated no more clearly than in the decisions we must make in times of collective difficulty, including the current pandemic.

For example, consider the practice of wearing a mask in public. At the individual level, it can be an annoyance. This adverse reaction to mask-wearing can be rather strong in contemporary mainstream American culture. According to Masaki Yuki and colleagues, the mouth is a “window to the soul” for Americans (Yuki et al., 2007). The mouth is instrumental for communication, including emotional expression, in American society. A “big smile” signifies a superb soul behind it. In this society, then, a request to cover up the mouth could threaten the core of one's identity. In line with this reasoning, in the United States over the last few months, the simple, practical decision to wear a face mask during the pandemic has been moralized and portrayed as a matter of individual freedom. Moreover, many Americans have persistently refused to cover up their mouths in public, to the detriment of the public welfare. This has occurred even though the use of face masks is demonstrably effective in containing the spread of COVID-19 (Lyu & Wehby, 2020).

It appears as though many Americans have maximized their psychological welfare by not covering their mouths. This behavior, however, has come at a grave cost for the collective. Each individual is protected as long as many others in the community wear masks. If a majority choose not to wear a mask, then you may not be protected even if you wear a mask. Unfortunately, again and again, many Americans prioritized their personal convenience or preference while ignoring the collective consequences of doing so.

This discussion illustrates a conflict between personal interest and the public good. This conflict has been studied under the rubric of the tragedy of the commons (Hardin, 1968), which refers to a collapse of the public good (e.g., a virus-free environment) when every individual in the community acts by narrowly focusing on their own personal interest (e.g., not wearing a mask or avoiding vaccination). What can we do to promote the collective good when there are competing individual-level goals, desires, and needs? This essay is not the place for an extensive discussion of the matter. However, there are some clear candidates.



They may include building trust in both the government and science, promoting transparency in the dissemination of relevant information, and developing strong social norms for prosocial preventive actions (Habersaat et al., 2020; Van Bavel et al., 2020). We must analyze the devastating failure of the United States and discuss the pandemic in these terms, which leads me to my last point.

## Culture and Social Relations: A Key to Understanding the Vulnerability of Different Nations

In a penetrating article published in the *New York Times* in August, David Leonhardt attributed the U.S. failure to contain COVID-19 to two major factors. One is the lack of adequate federal leadership, consistent with my analysis above. Notably, as the other culprit, he highlighted American individualism. Leonhardt draws our attention to the seemingly selfish behaviors of many Americans, including the refusal to wear masks. The ideology of individualism may give an unalloyed endorsement of self-interest (Miller, 1999). Unlike more communal, interdependent worldviews, this ideology may therefore be more likely to promote and legitimize self-interested behavior (Betsch et al., 2017). In fact, it is fully ingrained deep into the mind and the brain of Americans (Kitayama & Park, 2014). Further, the tendency to prioritize self-interest over social norms may be exacerbated because of the looseness with which Americans apply social norms in many mundane social situations (Gelfand et al., 2011). Also, the version of individualism prominent in the United States appears to be undergirded by strong values of toughness and self-sufficiency (San Martin et al., 2018). Those aspects of individualism might have bolstered the collective complacency during the pandemic, but I suspect there is an additional reason individualism could


impede efforts to contain COVID-19. Let me explain.

Many infectious diseases, including COVID-19, transmit through social contact. It follows that their spread should depend on the nature of social networks. If social networks are relatively open, the risk of transmission should increase, whereas if they are relatively closed, the risk may be contained. One prominent aspect of individualism lies in the liberation of individuals from socially ascribed relationships, such as social roles and kinship. People in individualistic countries tend to be socially open for reasons that are fundamentally ideological or philosophical. Each person is thought to be independent, even in the domain of social relations. They are therefore encouraged to choose their acquaintances, friends, and spouses freely. This ideology, an interpersonal extension of the Enlightenment idea of the social contract (Rousseau, 1762), has been ingrained into the matrix of social relations in the United States. If socialized in this cultural milieu, people naturally become socially open, seeking new relations beneficial to the self.

I am grateful to many American friends and colleagues who initially welcomed me as a new foreign student some decades ago. I am now so happy to interact with many American students, who constantly challenge me as their intellectual equal for open intellectual discussions. Social networks in the United States are very open. I love this aspect of the culture. Ironically, however, this very positive attribute of individualism could be a liability during the pandemic. Social openness may have contributed to the spread of COVID-19.

Is there any evidence for this analysis? My research team recently adopted a measure of the social openness of a community (the degree to which people freely choose partners of social interaction), called relational mobility (Salvador et al., 2020). This measure is available for 39 countries across the globe (Thomson et al., 2018). We found that this index significantly predicted the speed of the spread of COVID-19 during the first 30 days of country-wise outbreaks. In our estimation, if the United States had been much less open—say, as open as Japan, one of the least open of the 39 countries tested—U.S. deaths at the end of the 30-day period would have been 8.2% (281) of the actual number reported (3,417).

## Postscript

The 21st century may be the era of infectious disease (Quammen, 2012). Humans may face increasingly frequent assaults from infectious viruses of nonhuman animal origin. This increase is inevitable, given expanding 

What can we do to promote the collective good when there are competing individual-level goals, desires, and needs? [Candidates] may include building trust in both the government and science, promoting transparency in the dissemination of relevant information, and developing strong social norms for prosocial preventive actions.

global human mobility, combined with more frequent contact with nonhuman animals resulting from a population explosion and industrialization.

Challenging and worrisome as this prospect might be, it also presents great opportunities for psychological scientists to explore ways to preempt human misery and possibly enhance human welfare. By identifying principles of cognitive, emotional, and motivational processes in collectives, whether nations or local communities, in this time of tremendous uncertainty and urgency, we may hope to offer empirically based, practical recommendations for the fight against infectious diseases (Habersaat et al., 2020; Van Bavel et al., 2020). In turn, this work may inform basic theories of our field. As Kurt Lewin noted decades ago, “there is nothing as practical as a good theory” (1943, p. 118). I hope this column can contribute in some small ways to this dialectic of applied and basic research. ●

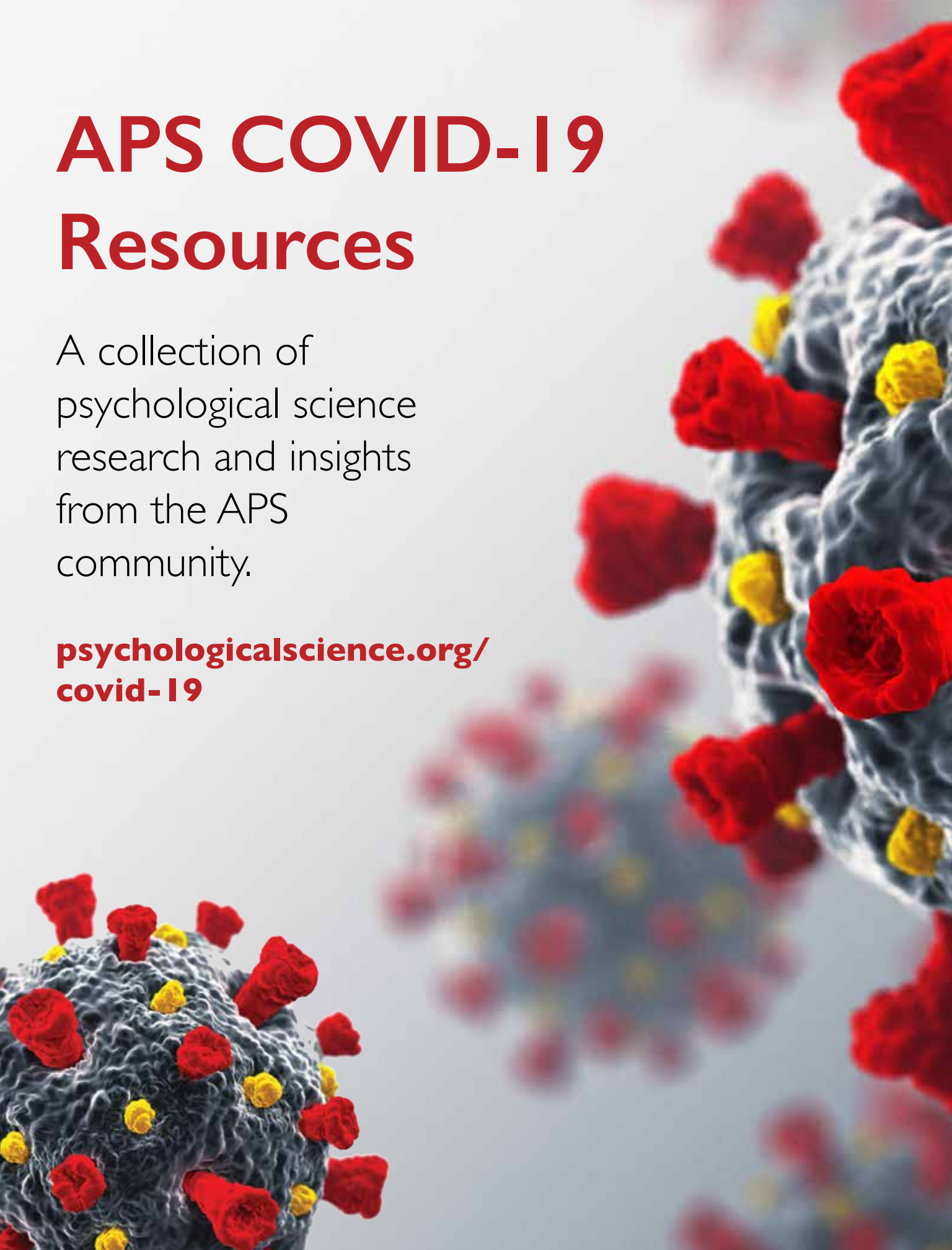
## References

- Betsch, C., Böhm, R., Korn, L., & Holtmann, C. (2017). On the benefits of explaining herd immunity in vaccine advocacy. *Nature Human Behaviour, 1*(3), 0056. <https://doi.org/10.1038/s41562-017-0056>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Ferrer, M., Fischlmayr, I. C., ... Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science, 332*(6033), 1100–1104. <https://doi.org/10.1126/science.1197754>
- Habersaat, K. B., Betsch, C., Danchin, M., Sunstein, C. R., Böhm, R., Falk, A., Brewer, N. T., Omer, S. B., Scherzer, M., Sah, S., Fischer, E. F., Scheel, A. E., Fancourt, D., Kitayama, S., Dubé, E., Leask, J., Dutta, M., MacDonald, N. E., Temkina, A., ... Butler, R. (2020). Ten considerations for effectively managing the COVID-19 transition. *Nature Human Behaviour, 4*(7), 677–687. <https://doi.org/10.1038/s41562-020-0906-x>
- Hardin, G. (1968). The tragedy of the commons. *Science, 162*(3859), 1243–1248.
- Kitayama, S., & Park, J. (2014). Error-related brain activity reveals self-centric motivation: Culture matters. *Journal of Experimental Psychology: General, 143*(1), 62–70. <https://doi.org/10.1037/a0031696>
- Leonhardt, D. (2020, August 6). The unique U.S. failure to control the virus. *The New York Times*. Retrieved from [nytimes.com/2020/08/06/us/coronavirus-us.html](https://www.nytimes.com/2020/08/06/us/coronavirus-us.html)
- Lewin, K. (1943). Psychology and the process of group living. *The Journal of Social Psychology, 17*, 113–131.
- Lyu, W., & Wehby, G. L. (2020). Community use of face masks and COVID-19: Evidence from a natural experiment of state mandates in the US. *Health Affairs, 39*(8), 1419–1425. <https://doi.org/10.1377/hlthaff.2020.00818>
- Miller, D. T. (1999). The norm of self-interest. *American Psychologist, 54*(12), 1053–1060.
- Miller, D. T., & Prentice, D. A. (1994). Collective errors and errors about the collective. *Personality & Social Psychology Bulletin, 20*(5), 541–550.
- Quammen, D. (2012). *Spillover: Animal infections and the next human pandemic*. W. W. Norton & Company.
- Rousseau, J.-J. (1762). Du contrat social; ou principes du droit politique [*On the social contract; or, principles of political rights*].
- Salvador, C., Berg, M., Yu, Q., San Martin, A., & Kitayama, S. (2020). Relational mobility predicts the increased speed of the spread of COVID-19: A 39-country study. *Psychological Science*.
- San Martin, A., Sinaceur, M., Madi, A., Tompson, S., Maddux, W. W., & Kitayama, S. (2018). Self-assertive interdependence in Arab culture. *Nature Human Behaviour, 2*(11), 830–837. Advance online publication. <https://doi.org/10.1177/0956797620958118>
- Thomson, R., Yuki, M., Talhelm, T., Schug, J., Kito, M., Ayanian, A. H., Becker, J. C., Becker, M., Chiu, C., Choi, H.-S., Ferreira, C. M., Fülöp, M., Gul, P., Houghton-Illera, A. M., Joasoo, M., Jong, J., Kavanagh, C. M., Khutkyy, D., Manzi, C., ... Visserman, M. L. (2018). Relational mobility predicts social behaviors in 39 countries and is tied to historical farming and threat. *Proceedings of the National Academy of Sciences, 115*(29), 7521–7526. <https://doi.org/10.1073/pnas.1713191115>
- Van Bavel, J. J., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., Crockett, M. J., Crum, A. J., Douglas, K. M., Druckman, J. N., Drury, J., Dube, O., Ellemers, N., Finkel, E. J., Fowler, J. H., Gelfand, M., Han, S., Haslam, S. A., Jetten, J., ... Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour, 4*(7), 460–468. <https://doi.org/10.1038/s41562-020-0884-z>
- Yuki, M., Maddux, W. W., & Masuda, T. (2007). Are the windows to the soul the same in the East and West? Cultural differences in using the eyes and mouth as cues to recognize emotions in Japan and the United States. *Journal of Experimental Social Psychology, 43*(2), 303–311. <https://doi.org/10.1016/j.jesp.2006.02.004>

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**Joseph P. Allen**, University of Virginia, **Karen L. Bierman**, Pennsylvania State University, *The Wall Street Journal*, August 10, 2020: Coronavirus Turmoil Raises Depression Risks in Young Adults.

**Sheldon Cohen**, Carnegie Mellon University, **Bert Uchino**, University of Utah, *The Wall Street Journal*, July 20, 2020: Isolating the Elderly Is Bad for Their Health.

**David Dunning**, University of Michigan, **Nicholas Epley**, University of Chicago, *Scientific American*, August 4, 2020: Misdiagnosing Our Cyberhealth.

**Carol Dweck**, Stanford University, **Patricia Smiley**, Pomona College, *The New York Times*, August 13, 2020: Are You Overpraising Your Child?

**Jennifer L. Eberhardt**, Stanford University, *Medium*, August 5, 2020: Talking About Racial Bias With the Author of ‘Biased.’

**Susan Gelman**, University of Michigan, *Scientific American*, August 6, 2020: Were French People Born to Speak French?

**Robert Gifford**, University of Victoria, Canada, *The Atlantic*, August 31, 2020: All That Performative Environmentalism Adds Up.

**Steven Hayes**, University of Nevada, Reno, *Forbes*, July 20, 2020: How to Accept the Things You Cannot Change, Like the Pandemic.

**Eric Igou**, University of Limerick, Ireland, *The New Yorker*, August 20, 2020: What Does Boredom Do to Us—and for Us?

**Shigehiro Oishi**, Columbia University, *Scientific American*, August 18, 2020: In Defense of the Psychologically Rich Life.

**Elizabeth Levy Paluck**, Princeton University, *Science Magazine*, August 14, 2020: Can Playing Together Help Us Live Together?

**Stephanie Preston**, University of Michigan, *The Washington Post*, August 19, 2020: Time to Ditch ‘Toxic Positivity,’ Experts Say: ‘It’s Okay Not to Be Okay.’

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### WHY WE GROW NUMB TO STAGGERING STATISTICS—AND WHAT WE CAN DO ABOUT IT

The human brain has evolved to respond to change, says **Elke Weber**, allowing us to adapt quickly to extreme circumstances and dulling our response to risk over time. Weber’s research suggests that reframing the toll extracted by COVID-19 in more concrete terms—illustrating the loss of more than 150,000 Americans as constituting the entire population of Dayton, Ohio, or Syracuse, New York, for example—could help us remain more sensitive to the persistent danger posed by the virus.

NPR | JULY 28

**Henry L. Roediger, III**, **James Wertsch**, Washington University in St. Louis, *Scientific American*, August 13, 2020: The 1918 Flu Faded in Our Collective Memory: We Might ‘Forget’ the Coronavirus, Too.

**Mark Schaller**, University of British Columbia, Canada, NPR, August 29, 2020: Why Scapegoating Is a Typical Human Response to a Pandemic.

**Rebecca Shiner**, Colgate University, **Angelina Sutin**, Florida State University College of Medicine, BBC, July 28, 2020: How Lockdown May Have Changed Your Personality.

**Paul Slovic**, Decision Research, *The Washington Post*, August 22, 2020: How Our Brains Numb Us to COVID-19’s Risks—and What We Can Do About It.

**Leah H. Somerville**, Harvard University, *Science Magazine*, August 5, 2020: How to Be an Ethical Scientist.

**Ervin Staub**, University of Massachusetts, Amherst, NBC, July 19, 2020: The Holocaust Survivor Hoping to Change American Police Culture.

**Elliot Tucker-Drob**, The University of Texas at Austin, *US News & World Report*, August 12, 2020: Education Benefits the Brain Over a Lifetime.

## Selected responses to previous coverage

### A New Force for Behavioral Science in Aging Research

(July/August 2020)

The field is extraordinarily fortunate to have Lis Nielsen leading behavioral science at NIA.

—APS Fellow **Laura Carstensen**, professor of psychology and public policy, Stanford University

This is a terrific feature story introducing a national leader who avidly promotes psychological science every day, in everything she does. And she's a fun person, too!

—APS Fellow **Terrie Moffitt**, professor of psychology and neuroscience, Duke University

### The Open-Access Model of Journal Publishing

Presidential Column, by *Shinobu Kitayama* (September 2020)

This is a more complex issue than many first think—though Prof. Kitayama in this thoughtful piece alludes to many aspects that he does not have space to directly address. For example, most colleges and universities are not the home of a high-percentage of highly active publishing faculty. Of course, their faculties and students benefit from access to high quality and recent research; as do the employees of many for-profit technical firms. Currently these institutions help pay for the publication process by their subscription fees to the big private publishers and to APA, APS, Psychonomics, etc. In an open-access environment that will cease (and I doubt it will be made up for by their paying article processing charges). They will, to use a somewhat

pejorative term, be “free riders.” And the scientists (via hard-to-get grants) and administrations at the “research” institutions will likely have to pick up the monetary slack. OA is often construed to be a fair and democratic practice, but it is not clear to me that the concept of “fairness” has been carefully analyzed. There are a number of second- and third-order consequences of OA, not the least of which is the effect on organizations like APS and Psychonomics. For the most part they operate as a public good but will, I fear, be hard pressed to “break even” in an OA environment. That will have consequences.

—APS Fellow **Don Foss**, professor of developmental, cognitive, and behavioral neuroscience, University of Houston

As an author, I am glad that open access increases the chance of being published, and as a reader I am glad to have quick access to many publications without having to pay a fee. Based on this experience for a number of years, I would like to express some thoughts about the issues raised here by Professor Kitayama.

- 1) Printed journals should soon be completely replaced by online-only versions. The required amount of paper and postal delivery is a waste of resources in this time of sustainability.
- 2) Printed journals are limited in size, thus they have to base their rejection of papers on more than just lack of quality, novelty, and methodological soundness. Arbitrary rejections are therefore unavoidable in print prestige journals (Park, Sohn, & Kim, 2020).
- 3) The subscription model of financing a journal is outdated because of the present publication

pressure in academic institutions. This leads to an enormous amount of published articles in a very large number of printed and online journals. Thus, scientists are forced to read and store very selectively from many different journals, so it doesn't make sense to subscribe to journals and receive full issues (apart from very specialized journals). Accessing these articles can be prohibitively expensive both for individual researchers and academic libraries.

None of these problems hold for online journals. Thus, the solution is simple: Stop publishing journals in print, and publish continuously online instead of in issues. In view of the extremely high publication fares for authors charged by some open-access journals, a hybrid journal form could be considered: Charge the readers of the articles (and perhaps the university libraries) a modest contribution to the costs of each downloaded article, and charge the author a reasonable fee. This will diminish the difference between subscription and open-access journals.

—**Peter Prudon**, clinical psychology correspondence course instructor for NHA Distance Learning

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### Recent highlights from APS journals

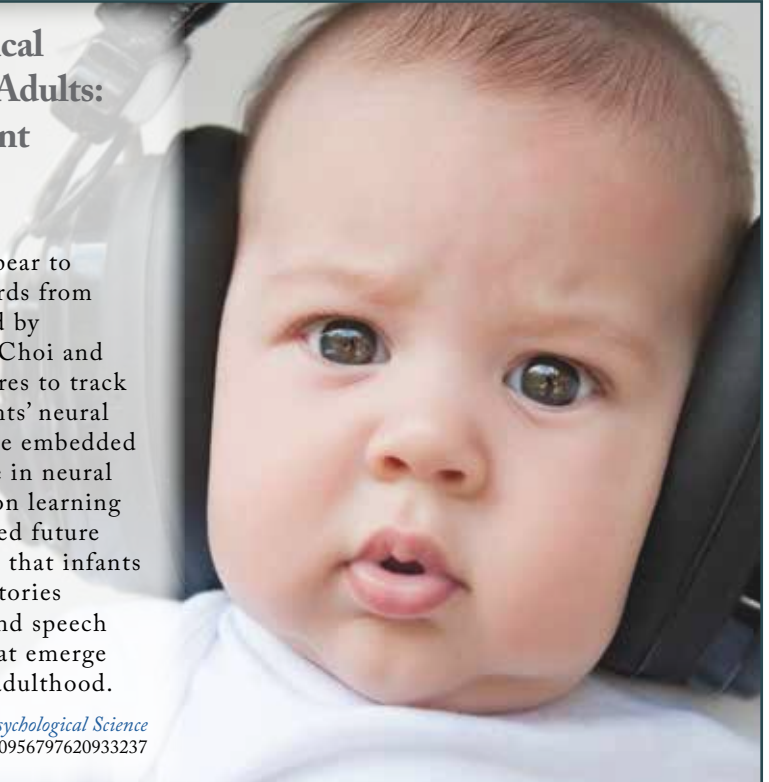
#### Preverbal Infants Discover Statistical Word Patterns at Similar Rates as Adults: Evidence From Neural Entrainment

*Dawoon Choi, Laura J. Batterink, Alexis K. Black, Ken A. Paller, and Janet F. Werker*

**P**reverbal children (under 6 months) appear to already have the ability to segment words from continuous speech, a process facilitated by learning the statistical patterns of language. Choi and colleagues used electroencephalogram measures to track the ability of infants to segment words. Infants' neural processing increasingly synchronized with the embedded words over the learning period. This increase in neural synchronization to words during segmentation learning was comparable to that of adults and predicted future word discrimination. These findings indicate that infants and adults may follow similar learning trajectories when tracking probabilities among speech, and speech segmentation may use neural mechanisms that emerge early in life and are maintained throughout adulthood.

*Psychological Science*

<https://journals.sagepub.com/doi/full/10.1177/0956797620933237>



#### PSYCHOLOGICAL SCIENCE The Effect of Repetition on Truth Judgments Across Development

*Lisa K. Fazio and Carrie L. Sherry*

**C**hildren and adults are both more likely to think a statement is true when they hear it repeatedly than when they have heard it only once. Fazio and Sherry showed that 5-year-old children were more likely to judge false statements (e.g., a calf is a baby horse) as true if they had heard it only once before than if they heard false statements for the first time. These findings suggest that this illusory-truth effect is implicitly learned at a young age and does not require intentional reflection. Thus, repeating false information can hamper individuals' ability to distinguish truth from falsehood and facilitate the spread of misinformation.

<https://journals.sagepub.com/doi/full/10.1177/0956797620939534>

#### Bittersweet: The Neuroscience of Ambivalent Affect

*Anthony G. Vaccaro, Jonas T. Kaplan, and Antonio Damasio*

**D**o ambivalent affective states, such as bittersweetness, correspond to a rapid vacillation between positive and negative states or to a simultaneously positive and negative state? Vaccaro and colleagues hypothesize that ambivalent affect involves both mechanisms. A rapid vacillating univalent affect is dependent on the brainstem nuclei, an area that allows for a rapid switch between emotions while inhibiting behavioral responses to conflicting emotions. As vacillating occurs, further processing of the "emotional moment" at the level of the insular cortex can allow the experience of one simultaneously positive and negative feeling.

<https://journals.sagepub.com/doi/full/10.1177/1745691620927708>

#### Moral Choice When Harming Is Unavoidable

*Jonathan Z. Berman and Daniella Kupor*

**B**erman and Kupor distinguish between harm avoidance (desire to avoid causing any harm) and harm aversion (desire to minimize the negative impact caused by one's actions). Across six studies, they show that participants prefer to completely avoid committing a harmful act when they have the opportunity to do so. However, when participants must choose between less harm for less benefit and more harm for more benefit, they become increasingly willing to commit harm for greater benefits. Thus, the benefits individuals refuse to accept when harm is avoidable can become desirable when some harm is bound to occur.

<https://journals.sagepub.com/doi/full/10.1177/0956797620948821>

## PERSPECTIVES ON PSYCHOLOGICAL SCIENCE

### The Future of Women in Psychological Science

June Gruber, Jane Mendle,  
Kristen A. Lindquist, et al.

Gruber and colleagues analyze 10 topics relevant for women's professional prospects in psychological science: career advancement; financial compensation; service assignment and practices; lifestyle roles and work–family conflict; gender biases; prevalence and perceptions of positions of power; intersectionality; harassment and incivility; agency, self-esteem, and self-promotion; and lack of belonging. The authors discuss empirical evidence for each of these issues and clarify gender gaps and positive change. They hope that a better understanding of these issues will spark conversation and help to mitigate remaining gender differences in psychological science.

<https://journals.sagepub.com/doi/full/10.1177/1745691620952789>

### Recovering the Relational Starting Point of Compassion Training: A Foundation for Sustainable and Inclusive Care

Paul Condon and John Makransky

Condon and Makransky integrate theories and findings from social, developmental, and health psychology with elements from contemplative traditions (e.g., Buddhism) to create a solution for barriers to compassion (e.g., aversion to suffering or feeling alone in suffering). This solution, centered on relationality (i.e., the sense that one is encompassed in the loving care and compassion of others), might improve the cultivation of compassion through meditative training. The authors propose that emphasizing relationality and the importance of extending care and compassion to others may promote compassion. They contrast this approach to modern conceptions of meditation as an autonomous self-help practice, which they explain might exacerbate barriers to compassion.

<https://journals.sagepub.com/doi/full/10.1177/1745691620922200>

## CLINICAL PSYCHOLOGICAL SCIENCE

### The Role of Attentional Control in Cognitive Deficits Associated With Chronic Pain

Hazel K. Godfrey, Amy T. Walsh,  
Ronald Fischer, and Gina M. Grimshaw

Chronic pain has been associated with cognitive deficits that in turn have been attributed to reduced attentional control involving everyday tasks, because patients either focus on the pain experience or divert their attention to pain-relevant threats in the environment. However, this new research suggests that attentional control might not be impaired in patients with chronic pain. In two tasks measuring attentional control, participants with chronic pain reported more difficulty than participants without chronic pain, but they did not actually differ in behavioral measures of attentional control (e.g., distraction).

<https://journals.sagepub.com/doi/full/10.1177/2167702620925744>

## CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE

### Learning to Write Words

Rebecca Treiman

Focusing on the English writing system, Treiman discusses how young children learn about the visual appearance of writing and spelling, and how learners of alphabetic writing systems begin to use letters to represent the sounds they hear in words. She also discusses how older children acquire knowledge beyond simple sound-letter mappings and learn about the subtler patterns of the complex English writing system. Her review shows how children use what they know, including the names of letters, the spelling of their own names, and similarities among sounds, to learn new things. She concludes that implicit learning plays an important role in spelling development, but explicit teaching is also important.

<https://journals.sagepub.com/doi/full/10.1177/0963721420951585>

## The Situation of Situation Research: Knowns and Unknowns

John F. Rauthmann and  
Ryne A. Sherman

Rauthmann and Sherman discuss theoretical and empirical studies that assessed psychological situations (sets of circumstances). These studies attempted to define what situations are; how they can be characterized, taxonomized, and measured; how they relate to person variables; and how people navigate them. The authors summarize the answers these studies provided and the questions that future research needs to address, such as situation characteristics across the lifespan and cross-cultural aspects of situation experience.

<https://journals.sagepub.com/doi/full/110.1177/0963721420925546>

## ADVANCES IN METHODS AND PRACTICES IN PSYCHOLOGICAL SCIENCE

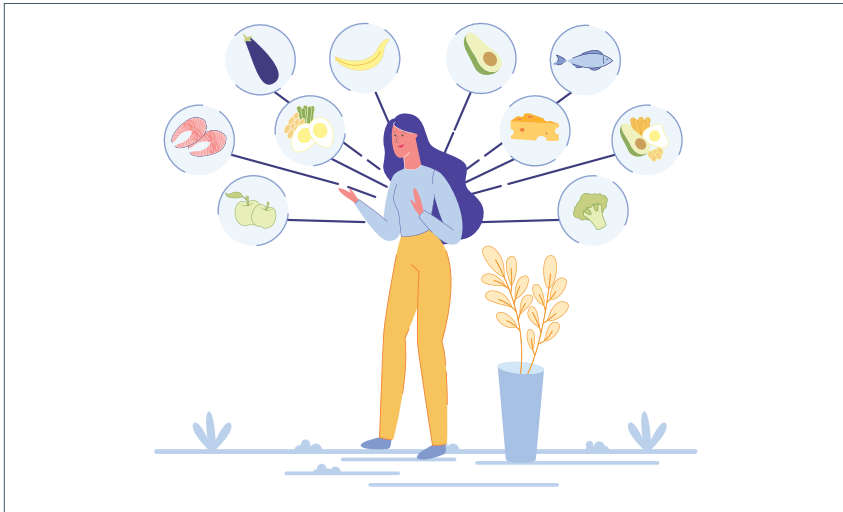
### Why Bayesian “Evidence for $H_1$ ” in One Condition and Bayesian “Evidence for $H_0$ ” in Another Condition Does Not Mean Good-Enough Bayesian Evidence for a Difference Between the Conditions

Bence Palfi and Zoltan Dienes

Palfi and Dienes illustrate how the application of Bayes factors, like null hypothesis testing, can create inferential errors about differences between groups. This happens if the researchers compare simple effects in the groups instead of comparing the groups directly (i.e., if they do not test the interactions). The authors provide an example of these problems and the R script of the analyses. They also provide an app that can be used to calculate the Bayes factor for each group separately and for the interaction between groups, helping researchers develop intuitions about potential inferential mistakes.

<https://journals.sagepub.com/doi/full/10.1177/2515245920913019>

# HEALTHIER EATING IS POSSIBLE EVEN DURING A PANDEMIC, IF YOU SIMPLY TALK TO YOURSELF



As the COVID-19 pandemic drags on and people continue to spend more time at home, closer to the refrigerator, maintaining a healthy diet can become a significant challenge.

Research published in the journal *Clinical Psychological Science*, however, offers a relatively simple technique to resist temptations and make better food choices: Talk to yourself in non-first-person pronouns.

The study, “Distanced Self-Talk Enhances Goal Pursuit to Eat Healthier,” finds that a technique known as “distanced self-talk,” which refers to an internal dialog using either one’s name or non-first-person pronouns such as “you, he, or she,” is an effective strategy for making healthier food choices.

“Reflecting on a person’s decisions using their own name might enhance their ability to follow through with

their goals, which can often be undermined by strong situational lures, such as tempting foods,” said lead author Celine Furman (University of Minnesota).

Furman and two researchers from the University of Michigan, APS Fellow **Ethan Kross** and **Ashley Gearhardt**, found that psychological distance facilitates self-control by shifting people’s focus away from the highly arousing features of a stimulus, like the sight of chips or the smell of baked goods.

Participants in the study, who were all young adults, initially disclosed whether they were currently dieting or trying to lose weight. They were then randomly assigned to watch a 2-minute video of either health-related commercials that emphasized eating healthy and exercising (health video) or home improvement commercials (control video).

After watching the video, the participants chose between healthy and unhealthy food items on a computer

screen. For each pair of foods, participants were instructed to use either first-person self-talk (“What do I want?”) or distanced self-talk (“[Name], what do you want?”).

Among participants on a diet, the researchers found, those who viewed the health video chose fewer unhealthy foods when they used distanced self-talk than when they used first-person self-talk.

Among nondieters, distanced self-talk led to healthier food choices regardless of the video viewed.

“Since people are regularly confronted with cheap and accessible tasty foods, self-control strategies that are easy to implement when encountering these foods are more likely to be effective for improving dietary choices,” said Kross.

The researchers noted that even minor changes in eating can make a difference in people’s lives, so using distanced self-talk to turn away from unhealthy behaviors could lead to appreciable improvements in health.

“We do know that even reducing caloric intake by a couple hundred calories a day can be important for preventing unhealthy weight gain and promoting weight loss,” said Gearhardt. “We need to do additional studies in the future about the impact of distanced self-talk on actual caloric intake, but even small improvements can lead to big public health gains over time.” ●

## References

Furman, C.R., Kross, E., Gearhardt, A.N. (2020). Distanced self-talk enhances goal pursuit to eat healthier. *Clinical Psychological Science*. 8(2): 366–373. <https://doi.org/10.1177/2167702619896366>

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



# APS MICROGRANTS FUND INNOVATIVE TEACHING PROJECTS

The APS Teaching Fund Committee has selected 25 projects for funding through its Microgrants for Online Learning program, launched in June in response to the COVID-19 pandemic. The program, which is meant to facilitate the rapid development and dissemination of best practices for teaching psychological science online, was designed to provide grants of up to \$1,000 to support projects in four general categories, including webinars and virtual meetings, support for individual classes, scholarship of teaching and learning, and antiracist curricula.

Here's a closer look at three.

## Promoting community in an asynchronous online course using written versus spoken modes of interaction

Citing research on the importance of engagement and active learning, **Mona Ibrahim**, a psychology professor in Moorhead, Minnesota, Concordia College, will compare the effectiveness of two options for asynchronous online courses: allowing students to participate in class discussions via written responses or short video responses.

Ibrahim will use a quasi-experimental between-groups research strategy to compare the two formats in an undergraduate educational psychology course taught online this fall. The grant funds she was awarded will be used to support dissemination of the research findings resulting from this project, potentially via a presentation of the research at an upcoming conference.

## Livestreaming from head-mounted cameras to facilitate blended lab team collaboration as part of a brain and behavior course

When students are learning remotely, how can they get the experience of being in a lab and interacting with its equipment? And how can instructors encourage their real, collaborative participation in classroom discussions?

Alison Young Reusser and **Paul Young**, of the Department of Psychology and Criminal Justice at Houghton College, intend to achieve these goals in a core lab-based brain and behavior course that will be delivered in a blended format. Of the course's 13 weekly labs, roughly half will involve hands-on physiological measurement experiences (e.g., an EEG sleep lab, an EMG facial expression and emotion lab). Students will form blended teams of four, with two of them remote in a given week and two of them physically present, streaming the lab experience with GoPro cameras. Teams will collaborate to produce cloud-based lab reports, create and share video summaries, and evaluate each other.

## A novel conference format for promoting academic activism in pedagogy

The Graduate Center at the City University of New York (CUNY) will host the 11th annual Pedagogy Day Conference on October 16 to support graduate students and other faculty in

their pedagogical development. This year's theme, Academic Activism in Pedagogy, will focus on developing anti-racism curricula. Conference organizers **Jill Grose-Fifer**, an associate professor in the psychology departments of John Jay College and The Graduate Center, CUNY, working with doctoral students Nawal Muradwij (John Jay College) and Tashiya Hunter (CUNY), will use a novel online flipped-classroom model format where participants listen to short videos in advance, allowing the Zoom synchronous workshops to be focused and highly interactive.

"We aim to arm participants with the necessary skills for dismantling institutional oppression within their teaching practices, particularly in online learning environments," the researchers wrote. Besides a keynote address, there will be workshops led by interdisciplinary speakers, arts performances addressing activism, and a host of therapeutic practices to improve mindfulness and increase racial awareness.●

APS will continue to report on these grants and the project results in the months ahead. Learn more about the APS Teaching Fund and other teaching resources from APS at [psychologicalscience.org/members/teaching](https://psychologicalscience.org/members/teaching).

# ONLINE RESEARCH: FROM FUNDING TO DATA COLLECTION

**B**e creative and keep methodology in mind: two key takeaways from the APS webinar *Online Research: Tools and Techniques*. Robert Ariel (Virginia Wesleyan University) and **Joshua VanArsdall** (Elmhurst University) and shared their experiences and tips for conducting research online, and Elise Rice, a program officer at the National Institutes of Health (NIH), discussed how online research may impact funding options.

## Taking Experiments From the Lab to Online

Ariel is a cognitive scientist whose research focuses on metacognition, self-regulation of learning, and the application of cognitive psychology to education. He outlined challenges researchers may encounter while trying to adapt experiments to online settings, such as needing to use specialized software that participants cannot not access on their own computers. For such challenges, he recommended the readily available solution of a videoconferencing platform like Zoom, which can allow subjects to see and interact with the researcher's computer. For researchers who wish to collect data in larger batches, Ariel recommended programming tasks using free tools that require minimal coding knowledge, or avoiding the need for servers by developing online experiments. He gave a tutorial about how to use jsPsych, a library of commonly used tasks already coded and ready to be used in experiments, and Cognition.run, an online experiment platform that uses the jsPsych architecture to host experiments and store data online.

## Using Data Available Online

VanArsdall, who studies the processes at the intersection of cognitive psychology, social cognition, and memory, has mastered the use of existing online data to answer research questions. Content analysis (quantitative analysis) helps him identify the frequency of hashtags or the occurrence of different words, for example, and thematic analysis (qualitative analysis) helps him parse data publicly available on social media platforms. VanArsdall also underscored the importance of rethinking research questions to explore how they can be answered by publicly available data, and thoroughly defining the phenomenon that will be measured. He shared the example of a colleague who studies parenting and collects data from “mom blogs”—an approach that provides access to a lot of data that is often subjective. “You’re only seeing what people are presenting to you,” VanArsdall said. “Keep context in mind.”

More tips on using online data:

- Keep in mind methodological and ethical considerations. Most online data was not initially intended to be used in research and may not fully represent the individuals behind them.
- Do not make causal inferences, as you would in a laboratory experiment. You can correlate variables, but you cannot manipulate variables when analyzing data already available.
- Be careful not to misrepresent data, and always seek Institutional Review Board (IRB) approval—even for publicly available data.

## Applying for Funding for Online Research

Rice studied social psychology and now serves as a program officer for the Behavioral and Social Sciences Research Program at the NIH's National Institute of Dental and Craniofacial Research. She discussed funding considerations for online research, whether for primary data collection (i.e., experiments) or secondary data analysis (i.e., data publicly available). The foremost step toward getting funding? Connect with a program officer, just as you would for in-person research funding.

For primary data collection, consider whether your topic and methods are within the scope of the funding opportunity and whether your methods and rationale are scientifically sound. For secondary data analysis, the funding mechanisms may differ but the principles are similar: You still must ensure that “your proposed analyses and inferences are scientifically sound,” said Rice. Moreover, instead of focusing on the online aspect of your research, focus on the soundness of your methods and the importance of your research questions. ●

View a recording of this webinar, including a discussion about the ethical concerns of online research, at [psychologicalscience.org/webinars](https://psychologicalscience.org/webinars).

# PEER REVIEW: A PRACTICE THAT SUSTAINS SCIENCE

Peer review is the process by which outside experts in a particular subject area assess an article's scientific rigor and validity to determine whether it meets the journal's standards for publication, according to Amy Drew, the APS director of publications. In the APS webinar *The Basics of Peer Review*, Drew was joined by Becca White, the APS peer-review manager, alongside APS Fellow **Robert L. Goldstone** (Indiana University), editor in chief of *Current Directions in Psychological Science*, and APS Fellow **Erin B. Tone** (Georgia State University), associate editor for *Clinical Psychological Science*, to share experiences involving the process of peer review and tips for engaging in meaningful peer review.



## Context Is Key

Drew and White explained the peer-review process and what happens “behind the scenes.”

At APS, after an author submits a manuscript, the editor in chief determines whether or not it should be considered for possible publication and, if so, assigns the article to a senior editor, who assigns and coordinates with an appropriate action editor to determine whether the manuscript should be sent out for review. If so, the action editor seeks the advice of reviewers who are experts in the field or can otherwise contribute to improving the manuscript quality. These individuals send their reviews to the action editor, who then makes the decision to accept the manuscript, reject it, or ask the authors to revise it, taking into account the reviewers' and editors' comments before resubmitting it.

A written review usually follows a certain structure that helps editors ultimately answer the question: Should

this particular article be published in this particular journal? Generally, the reviewers:

1. Summarize the manuscript;
2. Identify positive aspects of the manuscript;
3. Identify negative aspects of the manuscript, plus offer critiques and suggestions; and
4. Recommend a decision (for some journals).

While writing a review, “context is key,” Drew explained. That is, reviewers should evaluate whether an article is appropriate for a certain journal, based on factors such as its submission guidelines and, for some journals, reviewer guidelines or additional information in the invitations sent to potential reviewers.

In offering additional advice to peer reviewers, Tone suggested starting young and reviewing as often as you can, to benefit not only the field but also reviewers themselves. Also

ensure that your recommendations and reviews are aligned—if your review mentions only positive aspects and then recommends a rejection, it is not helpful for the authors. “Be kind but helpful,” she said.

In their final remarks, the four speakers underscored the importance of peer review for the advancement of science. A good reviewer must have high standards, the speakers agreed, but should also appreciate others' opinions and consider the constraints imposed by experimental design and resource availability. ●

*See the full article with reference list at [psychologicalscience.org](https://psychologicalscience.org).*

View a recording of the Basics of Peer Review webinar and the full list of past and upcoming APS webinars at [psychologicalscience.org/webinars](https://psychologicalscience.org/webinars).

# AUTOMATION FUELS ANTI-IMMIGRATION FEARS. IS IT TIME TO RETHINK HOW WE TALK ABOUT IT?



Automation began to reshape the American workforce in the late 1800s, quickly and irreversibly both galvanizing industrial productivity and spurring job losses. One downstream effect that remains salient to this day is increased competition in labor markets, straining relations between many native-born workers and immigrants, who are often perceived as increasing competition for jobs. In the coming years, further technological advances such as artificial intelligence threaten to exacerbate these tensions by replacing millions more jobs.

Yet despite automation's outsized role in business and society, little empirical work has examined its influence on social and intergroup relations. In new research published in *Psychological Science*, Monica Gamez-Djokic and Adam Waytz, both of Northwestern University's Kellogg School of Management, aim to close this gap by examining the relationship between concerns about automation and attitudes toward immigrants. They hypothesize that automation

may be associated with anti-immigrant sentiment through two potential routes. "First, automation may increase perceptions of realistic threat toward immigrants arising from competition for economic resources," they write. "Second, automation may increase perceptions of symbolic threat toward immigrants arising from changes to group values, identity, and status."

Gamez-Djokic and Waytz tested their hypothesis across 12 studies.

Seven studies used archival data from 1986 to 2017 across the United States and Europe to establish that people who perceived automation as having a more harmful impact on workers also tended to have more negative attitudes toward immigrants. This relationship persisted across the time span even after adjusting for political ideology and perceptions of other employment-related threats (e.g., unions, inflation, companies sending jobs overseas).

Four studies used correlational and experimental methods to investigate

how automation influences perceptions of group threat toward immigrants and support for restrictive immigration policies. The first two studies assessed 265 participants' perceptions of immigrants using both realistic-threat subscales (e.g., "Immigrants should be eligible for the same health care benefits received by Americans who cannot pay for their health care") and symbolic-threat subscales (e.g., "The values and beliefs of immigrants regarding moral and religious issues are not compatible with the beliefs and values of most Americans").

In a final study, Gamez-Djokic and Waytz asked participants to consider a scenario involving a company seeking layoffs so it can cut costs under one of two conditions: either by restructuring and downsizing certain departments, or by adopting new technology that will automate many tasks currently done by human workers. Those in the automation condition decided to lay off a greater percentage of immigrants than did participants in the restructuring condition.

Across their research, Gamez-Djokic and Waytz found that people who perceive automation as a greater threat to employment also tend to hold negative perceptions about immigrants. They also linked automation concerns to support for restrictive immigration policies and, in the context of layoffs, an increase in discrimination against immigrants. These relationships, the authors wrote, underscore the importance of understanding these responses in the context of shaping future technology policy. ●

*See the full article with reference list at [psychologicalscience.org](https://psychologicalscience.org).*

# LIVING IN DEPRIVED NEIGHBORHOODS MAY HINDER REWARD ANTICIPATION, MODERATING MENTAL HEALTH



Children from disadvantaged backgrounds are often at heightened risk of psychiatric disorders such as depression, anxiety, and attention-deficit/hyperactivity disorder (ADHD)—conditions caused in part by differences in reward-motivated behavior. Neuroimaging data from a study in *Psychological Science* suggest that reduced access to rewards in economically impoverished environments may contribute to the increased prevalence of these disorders by influencing brain development in areas associated with reward anticipation.

“These data reveal a candidate mechanism driving elevated risk for psychopathology in children from socioeconomically disadvantaged neighborhoods,” write researchers Teagan S. Mullins, Ethan M. Campbell, and **Jeremy Hogeveen** (University of New Mexico). “Specifying the mechanisms driving this relationship is a critical topic for facilitating evidence-based intervention.”

Mullins and colleagues compared how socioeconomic status influences

reward-motivated behavior by leveraging existing data from 6,396 children in the United States who participated in the Adolescent Brain Cognitive Development study. As part of that study, the children were presented with the opportunity to win or lose anywhere between 20 cents and \$5 per trial by reacting to stimuli under a time limit while undergoing functional MRI.

The children’s parents also completed a child-behavior checklist designed to assess symptoms of both internalizing (e.g., depression, anxiety, and psychosomatic issues) and externalizing (e.g., ADHD, aggression, and rule breaking) developmental psychopathology. Additionally, parents submitted demographic information, including their family’s zip code, which allowed the researchers to determine their neighborhood’s socioeconomic status using data from the U.S. Census.

Through comparing those data, the researchers found that children from lower-socioeconomic-status neighborhoods exhibited reduced activity

in areas of the brain associated with reward anticipation (the dorsal and ventral striatum and the pallidum) and that these factors also correlated with increased parent-reported symptoms of psychopathology.

“Impaired reward-motivated behavior and attention problems can have devastating consequences as children progress through adolescence and adulthood (e.g., criminality, substance misuse),” Mullins and colleagues explain. “This suggests that interventions to reduce [mental health issues] in children from deprived neighborhoods would do well to focus on shaping the environment to set up the child for success, rather than providing, for example, verbal instruction to change goal-directed behavior.”

Future longitudinal study of these factors could further clarify their temporal relationship, the researchers write. It is possible, for example, that living in a low-socioeconomic-status neighborhood influences the neurological development of reward-anticipation mechanisms in the brain, which in turn contributes to an increase in mental health issues. Alternatively, it may be that specific conditions associated with economic deprivation encourage internalizing and externalizing behaviors in children, which then influence brain development. ●

## References

- Mullins, T. S., Campbell, E. M., & Hogeveen, J. (2020). Neighborhood deprivation shapes motivational-neurocircuit recruitment in children. *Psychological Science*, 31(7), 881–889. <https://doi.org/10.1177/0956797620929299>

# TACKETT NAMED EDITOR OF *CLINICAL PSYCHOLOGICAL SCIENCE*



**Jennifer Tackett**  
Northwestern University

APS Fellow **Jennifer Tackett** has been selected as the new editor of *Clinical Psychological Science*, to begin her tenure on January 1, 2021. Tackett is a professor and director of clinical psychology at Northwestern University. As head of the Personality Across Development lab, she leads a team of researchers investigating how the personalities of children and adolescents relate to behaviors such as decision making, psychopathologies, and academic outcomes.

Tackett has a wealth of editorial experience, having previously served as a special associate editor for *Perspectives*

on *Psychological Science* editing Registered Replication Reports and as one of the first associate editors of APS's newest journal, *Advances in Methods and Practices in Psychological Science*. She has also been an associate editor for the *Journal of Abnormal Psychology*, the *Journal of Personality*, the *Journal of Psychopathology and Behavioral Assessment*, the *Journal of Research in Personality*, the *Journal of Personality Disorders*, and *Assessment*.

Look for an interview with Tackett about her plans for *Clinical Psychological Science* in an upcoming issue of the *Observer*. ●

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## JAMES S. JACKSON (1944–2020)



APS James McKen Cattell Fellow **James S. Jackson**, a pioneering social psychologist known for his research on race and ethnicity, racism, and health and aging among African Americans, died on September 1, 2020. His nearly 50-year career at the University of Michigan included serving as director of the Institute for Social Research from 2005 to 2015, and being named the Daniel Katz Distinguished University Professor of Psychology in 1995. He is survived by his wife, APS Fellow **Toni C. Antonucci**, also a distinguished University of Michigan psychological scientist and a recipient of the 2020 APS Mentor Award, and their daughters Ariana and Kendra.

A native of Detroit, Jackson's inter-

est in psychology took when he was an undergraduate at Michigan State University. He earned a master's degree from the University of Toledo and his doctorate from Wayne State University, where he and others disrupted the presidential address at the convention of the American Psychological Association to demand more support for Black psychology students.

"There must've been about 17 of us from across the country," Jackson said in a 2014 conversation with APS Founding Executive Director Alan Kraut. "We all put on our dashikis and marched up there, and took over the microphone. We didn't do this thing lightly. We all thought we were going to jail. But George Miller and George Albee, particularly Albee, and a social psychologist from Harvard, Herb Kelman, decided they would handle this in a very different way. They told us, 'Well, some of your points are well taken. Let's have a meeting tomorrow morning and talk about it, and see what we can do.'"

That meeting led to the establishment of an office of the Black Student Psychological Association, with Jackson as its first president.

In 1971, Jackson achieved another first, becoming the first full-time African American faculty member at the University of Michigan. One of many

achievements in his subsequent years there was the establishment, in 1976, of the Program for Research on Black Americans and its groundbreaking National Survey of Black Americans, considered the most extensive social, mental, and physical health survey of the U.S. Black population. In his 2014 conversation with Kraut, Jackson outlined two distinct aspects of the survey that contributed to its accuracy and influence in the years that followed: establishing WASP (the Wide Area Screening Procedure) to ascertain the exact locations of African Americans; and making it nonracially comparative, to better answer questions for which the comparisons are internal to Black respondents.

In 2014, former U.S. President Barack Obama appointed Jackson to the National Science Board. Over a period of many years, he was elected to the National Academy of Medicine, the National Academy of Sciences, and the American Academy of Arts and Sciences and served in advisory capacities, including the National Advisory Council on Minority Health and Health Disparities. In 2017, he was awarded the University of Michigan's Inaugural Distinguished Diversity Scholar Career Award.

Look for Jackson's remembrance in a future issue of the *Observer*. ●

### QUOTE OF NOTE

*"It came to me in a dream as to how we might be able to do [the National Survey of Black Americans]. Screening was the problem. For example, if you're screening an average of 60 household blocks, the traditional way of screening was to knock on every single door until you found the sample person that you were interested in — in this case, African Americans. So, that's a lot of doors to knock on when, say, there might be only one African American in that 60-household block. But I woke up one night, in the middle of the night and said, 'We'll ask White people where the Black people are!'"*

—**James S. Jackson** in an interview with Alan Kraut, December 2014 *Observer*

## IT DOESN'T TAKE A SCIENTIST TO SEE THROUGH IMPLAUSIBLE RESEARCH

Can people who have not been trained in psychological science predict whether new studies will obtain the same results as existing social-science research? They can, especially if the research hypothesis seems dubious, according to a new study in *Advances in Methods and Practices in Psychological Science*.

New studies by independent labs have failed to replicate many key findings from the social-science literature. Some of those failures have been attributed to questionable individual research practices and others to problems affecting the whole field, such as publication bias (when the decision to publish a study depends on the result obtained) and the “publish or perish” culture that is prevalent in academia. More recently, another factor has been associated with poor replicability: implausible research hypotheses.

“If the a priori implausibility of the research hypothesis is indicative of replication success, then replication outcomes can be reliably predicted from a brief description of the hypothesis at hand,” write Suzanne Hoogeveen, Alexandra Sarafoglou, and

APS Fellow **Eric-Jan Wagenmakers** (University of Amsterdam). Previous studies showed that individuals with a PhD in the social sciences can predict replication findings with above-chance accuracy. The authors set out to learn whether laypeople (those without a PhD in psychology or a professional background in the social sciences) could do so as well.

To address this question, Hoogeveen and colleagues used the online platform Amazon Mechanical Turk, social media platforms such as Facebook, and their university’s pool of online participants (first-year psychology students) to recruit 257 participants. The researchers showed participants descriptions of 27 studies that had been included in two large-scale collaborative replication projects: the Social Sciences Replication Project (Camerer et al., 2018) and the Many Labs 2 project (Klein et al., 2018). Of the 27 studies, 14 had been successfully replicated and 13 had not. Each description included the study’s hypothesis, how it was tested, and the key finding. A description-plus-evidence condition also included the Bayes factor, which indicates the strength of the evidence for the hypothesis, and a verbal interpretation of it (e.g., “moderate evidence”). After reading each description, participants indicated whether they believed the study would be replicated successfully.

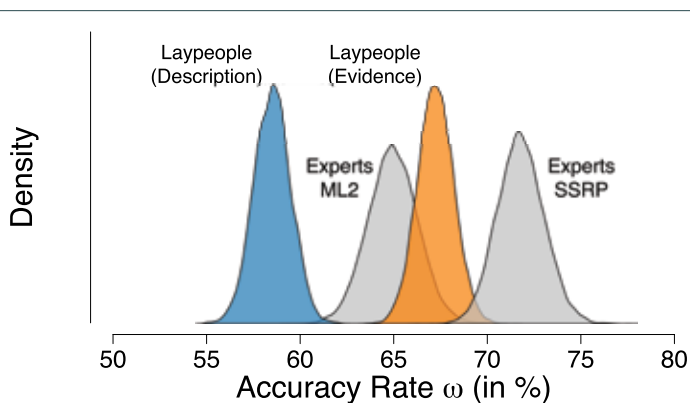
Participants were accurate 59% of the time when predicting replication on the basis of the description alone. In the description-plus-evidence condition, their predictive accuracy went up to 67%.

These findings suggest that “the intuitive plausibility of scientific effects may be indicative of their replicability,” write Hoogeveen and colleagues. However, “laypeople’s predictions should not be equated with the truth.” A signal-detection analysis suggested that one reason these predictions were not even more accurate was that participants tended to be optimistic about outcomes, including study replicability. However, that analysis also showed that participants’ above-chance accuracy was not due to any response bias but reflected their ability to discriminate between different types of information.

Taken together, the “results provide empirical support for the suggestion that intuitive (i.e., unsurprising) effects are more replicable than highly surprising ones, as replicable studies were in fact deemed more replicable than nonreplicable studies by a naive group of laypeople,” add the authors.

Hoogeveen and colleagues suggest that laypeople’s predictions could contribute to replication research—for example, by helping researchers to identify which observed effects are the least likely to replicate and should be further tested. They conclude that “the scientific culture of striving for newsworthy, extreme, and sexy findings is indeed problematic, as counterintuitive findings are the least likely to be replicated successfully.”

See the full article with reference list at [psychologicalscience.org](https://psychologicalscience.org).



Comparison of the accuracy of laypeople and experts in the Many Labs 2 project and in the Social Sciences Replication Project in predicting replication success. Laypeople’s accuracy rates are above chance (50%).



# CHILDREN WILL WAIT TO IMPRESS OTHERS—ANOTHER TWIST ON THE CLASSIC MARSHMALLOW TEST



If you asked people to name a famous psychology study, the “marshmallow test” would probably come out near the top of the list. In this task, young children are told they can immediately get a small reward (one marshmallow) or wait to get a bigger reward (two marshmallows). Researchers have shown that the ability to wait is associated with a range of positive life outcomes, including higher SAT scores more than a decade later.

A new study published in the journal *Psychological Science* expands on this earlier research and shows that young children will wait nearly twice as long for a reward if they are told their teacher will find out how long they wait.

“The classic marshmallow test has shaped the way researchers think about the development of self-control,

which is an important skill,” said Gail Heyman (University of California San Diego), lead author on the study. and “Our new research suggests that in addition to measuring self-control, the task may also be measuring another important skill: awareness of what other people value. In fact, one reason for the predictive power of delay-of-gratification tasks may be that the children who wait longer care more about what people around them value, or are better at figuring it out.”

For their study, Heyman and her colleagues from UC San Diego and Zhejiang Sci-Tech University conducted two experiments with a total of 273 3- to 4-year-old children in China.

The researchers told the children that they could earn a small reward immediately or wait for a bigger one.

Children were assigned to one of three conditions: a “teacher” condition, in which they were told that their teacher would find out how long they wait; a “peer” condition, in which they were told that a classmate would find out how long they wait; or a “standard” condition that had no special instructions.

Children waited longer in the teacher and peer conditions than in the standard condition, and they waited about twice as long in the teacher condition as compared to the peer condition.

The researchers interpreted the results to mean that when children decide how long to wait, they make a cost-benefit analysis that takes into account the possibility of getting a social reward in the form of a boost to their reputation. These findings suggest that the desire to impress others is strong and can motivate human behavior starting at a very young age.

“The children waited longer in the teacher and peer conditions even though no one directly told them that it’s good to wait longer,” said Heyman. “We believe that children are good at making these kinds of inferences because they are constantly on the lookout for cues about what people around them value. This may take the form of carefully listening to the evaluative comments that parents and teachers make, or noticing what kinds of people and topics are getting attention in the media.” ●

*See the full article with reference list at [psychologicalscience.org](https://psychologicalscience.org).*

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# NATIONAL ACADEMIES RELEASES REPORT ON HOW BEHAVIORAL SCIENCE CAN REDUCE NATIONAL FOOD WASTE

Psychological science key in offering solutions and actionable next steps.

The National Academies of Science, Engineering, and Medicine released a consensus study report in August detailing strategies for reducing food waste at the consumer level. The report was written by a committee of experts who reviewed pertinent research to deliver a holistic, systems-oriented strategy to combat food waste.

Between 30% and 40% of edible food is estimated to be wasted annually in the United States, according to the USDA. While the economic effects of food waste are clear, there are also significant, less apparent environmental impacts. Not only does the cultivation of food that is eventually thrown away unnecessarily waste water and other resources involved in its production, but when wasted food is added to a landfill, it releases methane gas that further accelerates global warming. Additionally, the COVID-19

pandemic is expected to worsen food waste due to supply-chain disruptions and closures in a time of widespread food insecurity.

The report is based upon the Motivation-Opportunity-Ability framework of consumer behavior, which indicates that “consumers are most likely to act in a particular way when they not only are motivated to do so but also have the ability and opportunity to act on that motivation.” The committee investigated not only how to motivate consumers to adopt desirable behaviors, but also how to provide consumers with the opportunity to perform those behaviors.

The report identifies three pathways for reducing consumer food waste within this framework:

- Change the U.S. food environment to discourage waste by consumers. This can be accomplished by changing food marketing, certification, labeling, and regulation processes.
- Strengthen consumers’ motivation, opportunity, and ability to reduce food waste. This pathway mainly emphasizes re-educating the public on why food waste is undesirable and how individuals can combat it.
- Leverage and apply research findings and technology to support consumers in food waste reduction. This could involve providing less-wasteful food packaging and developing apps that would assist consumers in monitoring their own food waste.

While the report offers many promising insights into how consumer food

waste can be reduced, there is still more to be done. Eliminating food waste through the identified pathways will require massive cooperation and coordination between government, industry, organizations, food providers, the media, and even social media influencers. Additionally, the complex behaviors that drive food waste are not yet completely understood.

Reducing consumer food waste will require collaboration from experts across all fields of science and technology. Recognizing that consumer behavior is at the root of the problem, psychological scientists should expect to have a seat at the table in developing future solutions.

More APS coverage of National Academies reports and opportunities: [psychologicalscience.org/tag/national-academy-of-sciences](https://psychologicalscience.org/tag/national-academy-of-sciences).

Read the entire report, “A National Strategy to Reduce Food Waste at the Consumer Level,” at [nap.edu/catalog/25876/a-national-strategy-to-reduce-food-waste-at-the-consumer-level](https://nap.edu/catalog/25876/a-national-strategy-to-reduce-food-waste-at-the-consumer-level).

Read a summary of the report at [nap.edu/resource/25876/Food%20Waste.pdf](https://nap.edu/resource/25876/Food%20Waste.pdf). ●

See the full article with reference list at [psychologicalscience.org](https://psychologicalscience.org).

— Will Bausch

APS Government Relations Intern

*The National Academies releases consensus study reports to disseminate findings and recommendations generated from a comprehensive review of information by a committee of experts. All consensus study reports undergo an intense independent peer-review process. The committee for this study consisted of a range of experts in the behavioral and social sciences, including APS Fellows Richard Nisbett, known for his work on social cognition and culture, and Robert Cialdini, who provided insight into the psychological science of persuasion, compliance, and negotiation.*

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

# MAKING VOTES COUNT

**WHY IT'S AS MUCH ABOUT PSYCHOLOGY  
(AND BALLOT DESIGN) AS SECURITY**

By Philip Kortum and Michael D. Byrne



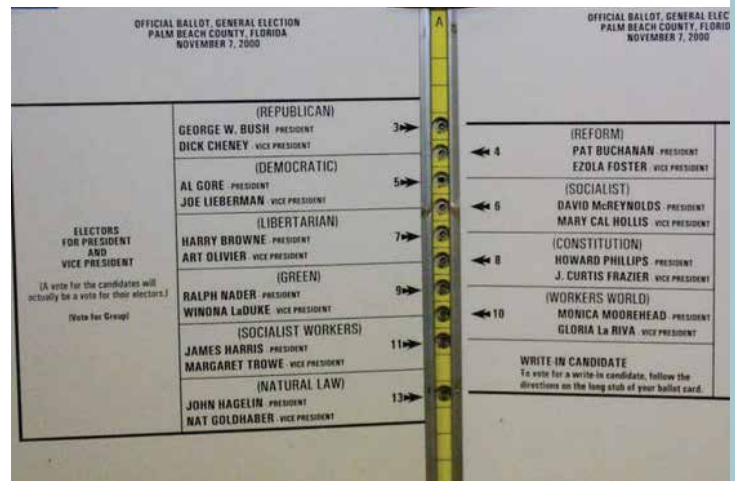
In the highly unusual U.S. election year of 2020 in particular, maintaining secure voting systems, whether electronic or paper-based, in person or by mail, is crucial to ensuring that the democratic process works as it should (Brennan Center for Justice, 2016). Ever since the 2016 presidential election in the United States, when allegations of Russian interference dominated the news, the focus of many voters (and most election experts) has been on the security of our voting systems.

However, despite all the concerns that have been raised, there has not been a single documented instance of a security violation altering the outcome of an election in the United States. On the other hand, there have been numerous well-documented instances in which user-interface issues associated with ballots likely caused the outcome of an election to be changed. It does not matter how secure the voting system is if what is recorded on the ballots themselves fails to accurately represent the will of the voters.

As the following examples show, design deficiencies in ballots can prevent voters from understanding, seeing, using, and processing information correctly, which can lead directly to voting failures. These failures, in turn, can alter the outcome of elections anywhere in the world, subverting the will of the voters in the process. This is an area in which applied psychologists and human factors engineers can apply their skills to make a real difference in ensuring that ballots accurately capture voter intent.

## Ballot Design and Voter Expectations

The quintessential example of a ballot whose interface altered an election is the Palm Beach County, Florida, butterfly ballot used in the 2000 presidential race. Al Gore's name appeared second on the left side of the ballot, and many voters simply counted down to the second hole on the punch card to cast their vote. Their logic was reasonable, but it caused them to vote for the Reform Party candidate, Pat Buchanan, rather than Gore (Sinclair et al., 2000).



The butterfly ballot used for the 2000 presidential race in Palm Beach County, Florida, confused many voters, leading to George W. Bush winning Florida and Al Gore's loss of the presidency. Because Gore's name appeared second on the left side of the ballot, many voters simply counted down to the second hole on the punch card to cast their vote. This caused them to vote for the Reform Party candidate, Pat Buchanan, rather than Gore.

Ironically, this ballot layout was designed to *assist* voters, not to confuse them. Ordinarily, in accordance with Florida state election law, all of the candidates would have been listed on the left side of the ballot. However, the county clerk, worried that the large number of candidates would shrink the type size—a particular problem for older voters—opted to use larger type, which necessitated using both sides of the ballot.

Unfortunately for the voters, this was not what they were used to. Not only did candidates' names typically appear only on the left-hand side of the ballot, the arrows and holes on the ballot often did not quite line up on punch-card machines. That problem was made worse for some voters because of their viewing angle, which differed depending on their height. Thus, many voters learned a simple strategy over the years: Count down the number of holes. Gore was the second candidate from the top; therefore, many who wished to vote for him punched the second hole down. Voters, like everyone else, rely on procedures they already know—sometimes to their detriment.

In the end, George W. Bush won Florida with a margin of victory smaller than the number of miscast

APS Fellow **Philip Kortum** is an associate professor in the Department of Psychological Sciences at Rice University in Houston, Texas. His research is focused on the development and refinement of measures of usability and trust and on creating highly usable systems in the global health, mobile, and voting-system domains. Contact him at [pkortum@rice.edu](mailto:pkortum@rice.edu).

APS Fellow **Michael Byrne** is a professor in the departments of Psychological Sciences and Computer Science at Rice University. His research is focused on the usability of voting systems and on computational and mathematical models of human cognition and performance. Reach him at [byrne@rice.edu](mailto:byrne@rice.edu).

Together, the authors received the Human Factors and Ergonomics Society's Jack A. Kraft Innovator Award in 2020 for their significant efforts to extend the application of human-factors principles and methods into the realm of voting.



**Related Podcast: Days of Future Past: Concerns for the Group’s Future Prompt Longing for Its Past (and Ways to Reclaim It)**

In a recent article in *Current Directions in Psychological Science*, APS Fellow Michael Wohl, a researcher at Carleton University, explores how collective angst can influence collective nostalgia. As the United States has its next election, this research provides intriguing insights into how political rhetoric tends to capitalize on the relation between these emotions by promising to “bring back the good old days.”

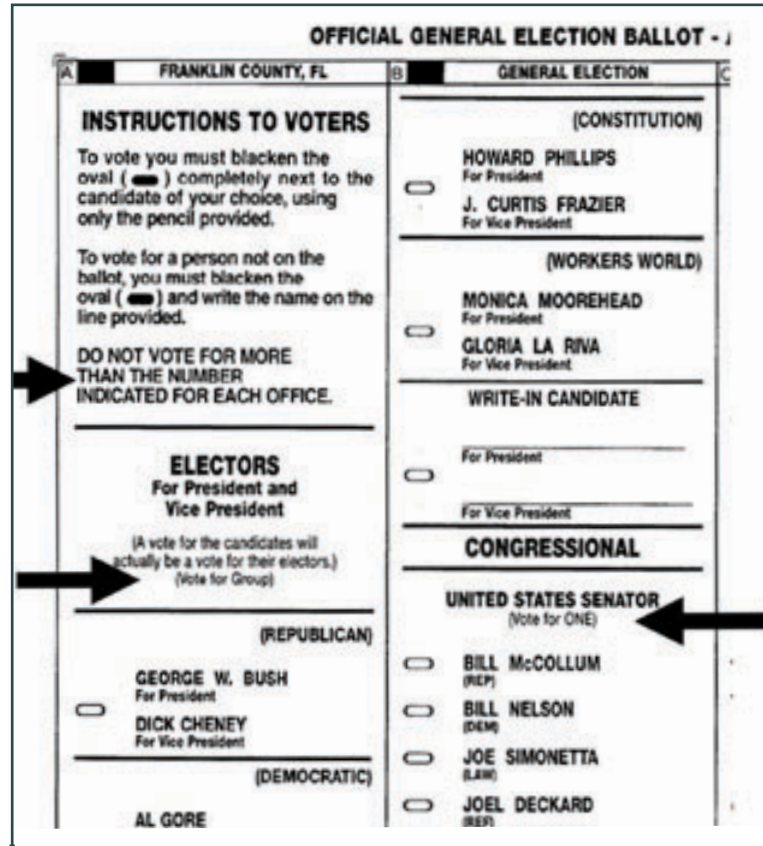
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votes, leading to Al Gore’s loss of the presidency (Wand et al., 2001).

Perhaps this ballot just needed better instructions to help the voters know what to expect and determine what to do (though even that probably would not have overcome the poor design). Sadly, it is often poorly written instructions that *cause* voters to make errors. An excellent demonstration of this is the 2000 presidential ballot used in Franklin County, Florida. In this ballot, the presidential race instructed voters to “vote for group,” while the congressional race instructed voters to “vote for one.” Confusion about those labels caused more than 100,000 voters to overvote, meaning that they cast votes for more than one set of presidential candidates (Keating, 2001). The problem was almost certainly exacerbated by the fact that the presidential race was spread out over two columns, prompting some voters to cast votes in both. Regardless of the underlying reason, this overvoting meant that their votes were not counted at all.

The instruction-deficiency problem is widespread; an analysis by Laskowski and Redish (2006) showed that nearly all of the ballots they examined across the 50 states did not conform to the best practices that have been developed for written instructions.

Because these examples are not particularly recent, it would be tempting to believe that voting officials across the country have taken systematic steps to eliminate (or at least mitigate) the kinds of problems we have shown here. Unfortunately, such problems persist. As late as 2018, Florida’s Broward County suffered another debacle that demonstrated the need to consider human behaviors in the integrity of our voting processes.



Poorly written instructions can also cause voters to make errors. In the 2000 presidential ballot used in Franklin County, Florida, the presidential race instructed voters to “vote for group,” while the congressional race instructed voters to “vote for one.” Confusion about those labels caused more than 100,000 voters to cast votes for more than one set of presidential candidates, nullifying their votes.

This example comes from the race for U.S. Senate between Republican Rick Scott and Democrat Bill Nelson. The statewide margin of victory for Scott (after multiple recounts) was 10,033 votes (about 0.1% of roughly 8.2 million votes cast). Broward County is a strongly Democratic county; Nelson won it 69% to 31%. However, almost 31,000 voters failed to cast a vote in this race. Why? See the Broward County ballot on the next page, with the often-missed races highlighted.

Many voters, some of whom probably felt pressure to vote quickly because of long lines at the polls (turnout in Broward County was over 60%), likely started at the top left of the ballot, determined the first column was instructions, and moved to the second column, thereby missing the Senate race and the House race below it. (In many parts of Broward County, there was no House race because the Democrat was unopposed.) It is unlikely that these were intentional abstentions; fewer than 6,000 voters failed to cast a vote in the governor’s race, and abstention rates almost always

increase as one goes further down the ballot.

So why did these errors occur? The reason is likely a combination of people's tendency to group visual items and their expectations of ballots. The left column got grouped as a single cluster, the top part of that cluster was determined to be instructions, and because people expect clusters to be uniform, many voters assumed the entire column was instructions—and skipped it. Unfortunately for Nelson, if his 69% countywide margin applied to those 31,000 lost votes, he would have won by roughly 10,000 votes, rather than losing by 10,000.

### Human Behavior and Voting by Mail

With the 2020 presidential election taking place amid the ongoing COVID-19 crisis, there are real concerns that we will see many more examples of ballot errors, as voting administrators across the country rush to implement voting methods that protect voters and poll workers alike.

Voting by mail (sometimes called “mail-in voting”) is a key method that election officials have turned to in order to minimize person-to-person contact at physical polling locations. A record 75% of Americans can vote by mail this year, according to a recent article in the *New York Times* (Love, Stevens, & Gamio, 2020). The advantage of voting by mail is that it is a well-understood method. Five states use voting by mail for all of their voters, 29 additional states allow vote by mail for any reason, and all the remaining states employ at least some form of voting by mail for absentee voters or people who may have difficulties getting to the polls, such as the elderly and those with disabilities. The availability and execution of voting by mail in the 2020 election is being litigated all over the country as states move to expand or restrict it, so the vote-by-mail landscape is changing daily (Corse & Kendall, 2020). The U.S. Postal Service has warned states that it may not be able to deliver ballots on time, adding to uncertainty about the ability of voters to utilize voting by mail (Brennan Center for Justice, 2020).

Unfortunately, there is a large partisan split over the widespread implementation of voting by mail. Many Republicans believe it will unfairly advantage Democrats by raising Democratic voter participation, although the available evidence does not support this assertion (Bergman & Yates, 2011; Hassell, 2017; Thompson et al., 2020). Some have also alleged that fraud in voting by mail is a bigger risk, but the data from states that have employed voting by mail do not support these concerns (Kamarck & Stenglein, 2020; Weiser & Ekeh, 2020). In fact, only 491 cases of fraud involving voting by mail have been identified over 12 years, despite hundreds of millions of votes cast by mail (News21, 2012). Therefore, availability (or lack thereof) for voting by mail is a *political*, not a psychological problem.

That said, as with the other psychologically induced failures we have described, failures due to human behaviors in executing voting by mail could have a ➡

Ballot Style 36	Seq:056	
Official General Election Ballot November 6, 2018 Broward County, Florida	Boleta Oficial De La Elección General 6 De Noviembre Del 2018 Condado de Broward, Florida	Ofisiyal Jeneral Eleksyon Bilten 6 Novann 2018 Konte Broward, Florida
<p><b>Ballot Instructions:</b></p> <ul style="list-style-type: none"> <li>To vote, fill in the oval completely next to your choice. Use only the marking device provided or a black pen.</li> <li>If you make a mistake, ask for a new ballot. Do not cross out or your vote may not count.</li> <li>To vote for a write-in candidate, fill in the oval and print the name clearly on the blank line provided for the write-in candidate.</li> </ul> <p><b>Instrucciones Para La Boleta:</b></p> <ul style="list-style-type: none"> <li>Para votar, llene completamente el óvalo junto a su selección. Use sólo un lápiz de punta negra o una pluma de tinta negra para marcar la boleta.</li> <li>Si se equivocó, pida una nueva boleta. Si some algo o hace marcas, es posible que su voto no se cuente.</li> <li>Para votar por un candidato cuyo nombre no está impreso en la boleta, llene el óvalo y escriba el nombre del candidato en la línea en blanco provista para un candidato agregado.</li> </ul> <p><b>Entimasyon Sou Bilten Vot:</b></p> <ul style="list-style-type: none"> <li>Pou vote, byen kòde tout andan oval ki akòde respons ou chwazi a. Sètenn sèvi ak yon plim nwa oubyen ak yon kreyon pou ekri sou bilten vot la.</li> <li>Si w fè yon erè, mande yo ba w yon lòt bòlèt vot. Si w ekri oubyen fè nouvo mak, li ap posib pou vot ou pa valè anvi.</li> <li>Pou vote pou yon kandida ki pa gen non l' ekripe sou bilten vot la, kòde li oval la epi ekri non kandida a sou li vid la rezève pou ekri non yon kandida.</li> </ul>	<p><b>Governor and Lieutenant Governor</b> Gobernador y Teniente Gobernador Gouvènè Ak Lyetnan Gouvènè Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Ron DeSantis Jeanette Nuñez REP</li> <li><input type="radio"/> Andrew Gillum Chris King DEM</li> <li><input type="radio"/> Darcy G. Richardson Nancy Argersiano REF</li> <li><input type="radio"/> Kyle "YIC" Gibson Ellen Wilds NPA</li> <li><input type="radio"/> Ryan Christopher Foley John Tutton Jr NPA</li> <li><input type="radio"/> Bryce Stanley Ryan Howard Mulvaney NPA</li> <li><input type="radio"/> Write-in/Escribir/A lèin</li> </ul> <p><b>Attorney General</b> Fiscal General Pwasonnè Jeneral Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Ashley Moody REP</li> <li><input type="radio"/> Sean Chavaz DEM</li> <li><input type="radio"/> Jeffrey Marc Sidoni NPA</li> </ul> <p><b>Chief Financial Officer</b> Controlador Estatal Chif Ofisyè Finans Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Jimmy Patronis REP</li> <li><input type="radio"/> Jeremy Ring DEM</li> <li><input type="radio"/> Write-in/Escribir/A lèin</li> </ul> <p><b>Commissioner of Agriculture</b> Comisionado De Agricultura Komisyone Agrifil Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Matt Caldwell REP</li> <li><input type="radio"/> Nicole "Nikki" Fried DEM</li> </ul> <p><b>Justice of the Supreme Court</b> Magistrado en el Tribunal Supremo Jistis Nan Lakou Siprèm</p> <ul style="list-style-type: none"> <li><input type="radio"/> Alan Lawson of the Supreme Court DEM</li> <li><input type="radio"/> Write-in/Escribir/A lèin</li> </ul>	<p><b>Fourth District Court of Appeal</b> Tribunal De Apelaciones Del Cuarto Distrito Katriyem Distrik Lakou Dapeli</p> <p>Shall Judge Burton C. Conner of the Fourth District Court of Appeal be retained in office?</p> <p>(Deben retenerse en su cargo el Juez Burton C. Conner del Tribunal del Cuarto Distrito de Apelaciones?)</p> <p>Èske se pou jè Burton C. Conner nan katriyem distrik lakou dapeli rete nan pòs li a?</p> <p><input type="radio"/> Yes/GWI</p> <p><input type="radio"/> No/No/Non</p> <p>Shall Judge Jeffrey T. Kurtz of the Fourth District Court of Appeal be retained in office?</p> <p>(Deben retenerse en su cargo el Juez Jeffrey T. Kurtz del Tribunal del Cuarto Distrito de Apelaciones?)</p> <p>Èske se pou jè Jeffrey T. Kurtz nan katriyem distrik lakou dapeli rete nan pòs li a?</p> <p><input type="radio"/> Yes/GWI</p> <p><input type="radio"/> No/No/Non</p> <p>Shall Judge Carole Y. Taylor of the Fourth District Court of Appeal be retained in office?</p> <p>(Deben retenerse en su cargo el Juez Carole Y. Taylor del Tribunal del Cuarto Distrito de Apelaciones?)</p> <p>Èske se pou jè Carole Y. Taylor nan katriyem distrik lakou dapeli rete nan pòs li a?</p> <p><input type="radio"/> Yes/GWI</p> <p><input type="radio"/> No/No/Non</p> <p>Circuit Judge, 17th Judicial Circuit, Group 38 Juez De Circuito, Circuito 17MA, Grupo 38 Ji Jitranan nan 17èm Sikil Group 38 Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Jason Allen-Rosner</li> <li><input type="radio"/> Dianita Camille Moon</li> </ul> <p>Circuit Judge, 17th Judicial Circuit, Group 46 Juez De Circuito, Circuito 17MA, Grupo 46 Ji Jitranan nan 17èm Sikil Group 46 Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> H. James Curry</li> <li><input type="radio"/> Maria Monkashon-Weekes</li> </ul>
<p><b>United States Senator</b> Senador De Los Estados Unidos Senado Estadon Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Rick Scott REP</li> <li><input type="radio"/> Bill Nelson DEM</li> <li><input type="radio"/> Write-in/Escribir/A lèin</li> </ul> <p><b>Representative in Congress District 20</b> Representante En El Congreso Distrito 20 Reprezantan Nan Kongrè Distri 20 Vote for One/Vote por Uno/Vote pou Youn</p> <ul style="list-style-type: none"> <li><input type="radio"/> Alton L. Hastings DEM</li> <li><input type="radio"/> Write-in/Escribir/A lèin</li> </ul>	<p><b>1 OF 5</b>    Vote Both Sides of Page / Vote Por Los Dos Lados de la Pagina / Vote Sou Toude Do Bilten Pa La    <small>Tipran seq:056/056</small></p>	

This 2018 ballot from strongly Democratic Broward County, Florida, shows how Republican Rick Scott may have narrowly won the U.S. Senate election. Almost 31,000 voters failed to cast a vote for the highlighted races, likely feeling rushed by long lines at the polls and determining the first column consisted entirely of instructions.

## Further Research on Factors Affecting Political Participation

Psychological research around the world has explored how variables involving ballots, voter and candidate attributes, and much more can affect political choices and voting outcomes. Learn more about these studies, including links to the original research, by viewing this article at [psychologicalscience.org](http://psychologicalscience.org).

### Position Effects in Choice From Simultaneous Displays: A Conundrum Solved

Voters prefer candidates whose names are listed first on ballots, and restaurant patrons favor items at the beginning and end of menus. But people are more likely to choose options from the middle in multiple-choice tests and grocery store displays. What accounts for this inconsistency? In this 2015 article from *Perspectives on Psychological Science*, APS Fellow Maya Bar-Hillel (Hebrew University of Jerusalem, Israel) outlined a classification system for simultaneous choice that categorizes decisions based on three variables: whether the choice is interactive, whether sequential item processing is required, and whether the interaction—if there is interaction—is cooperative or competitive.

### If They Were to Vote, They Would Vote for Us

Highly committed voters tend to overestimate support for their party among nonvoters, according to the findings of this study of Dutch voters (*Psychological Science*, 2011). Voters, candidates, and the political leaders who win may also claim greater popular affirmation for their positions than might really exist, according to Namkje Koudenburg, Tom Postmes, and Ernestine H. Gordijn (University of Groningen, Netherlands). By enlarging the imaginary “in-group,” citizens “can use low turnout to strengthen their biases,” said Koudenburg.

### If They Say “Yes,” We Say “No”:

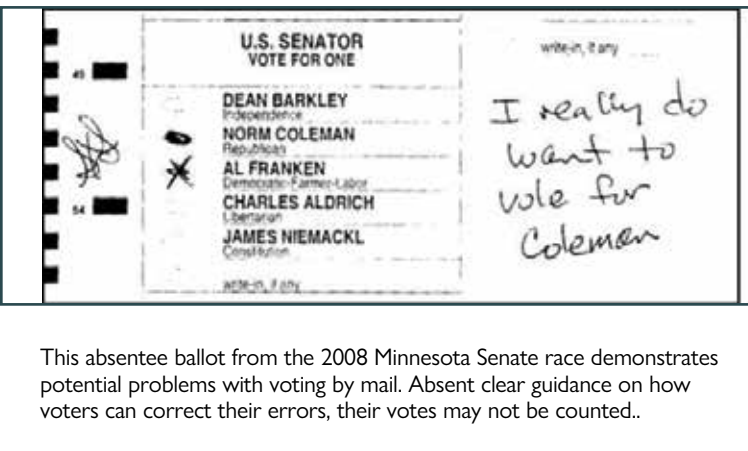
#### Partisan Cues Increase Polarization Over National Symbols

The views expressed by political party leaders can change how individual voters feel about an issue, according to findings from this longitudinal study of voters in New Zealand (*Psychological Science*, 2018). During the 2015–2016 New Zealand flag referendums, leaders of the National Party championed changing the flag—a move strongly contested by the Labour Party. Nicole Satherley, Danny Osborne, Chris G. Sibley (University of Auckland), and Kumar Yogeeswaran (University of Canterbury) measured attitudes toward changing the flag using data from both 2013, before the change was proposed, and 2016, at the height of the debate. Registered voters who supported the National Party were more likely to shift from opposing to wanting the flag change, whereas Labour Party supporters were more likely to shift from wanting to opposing the change.

### More from the *Psychological Science* archives:

- Competence Judgments Based on Facial Appearance Are Better Predictors of American Elections Than of Korean Elections (2015)
- Participating in Politics Resembles Physical Activity: General Action Patterns in International Archives, United States Archives, and Experiments (2010)
- Beauty at the Ballot Box: Disease Threats Predict Preferences for Physically Attractive Leaders (2013)
- Fatal Attraction: The Effects of Mortality Salience on Evaluations of Charismatic, Task-Oriented, and Relationship-Oriented Leaders (2004)





This absentee ballot from the 2008 Minnesota Senate race demonstrates potential problems with voting by mail. Absent clear guidance on how voters can correct their errors, their votes may not be counted..

large impact in the November elections.

The first of these failures could stem from cognitive failures in voters' mental models of how voting by mail works. Although rules vary by state, voters must typically make an early request for a ballot well before the election. It is likely that many voters who might want to vote by mail may miss the deadline for requesting a ballot because it does not conform to their mental model of how to vote.

The second problem we may see is a failure of memory. Voters may understand how voting by mail works, request their ballot, and even take the time to fill it out, but then forget to mail it in time for it to be counted in the election. In the recent 2020 Wisconsin election, only 77% of voters who requested mail-in ballots returned them to voting officials before the deadline (Associated Press, 2020). While a 77% return rate may sound impressive, in this case it meant that more than a quarter-million voters went to the trouble of requesting a ballot but failed to actually vote. This number is significantly higher than the margins of victory in many Wisconsin races.

Even when a voter gets a ballot, there is a chance for an error in marking it. At a regular polling station, this is complicated enough: The voter has to alert a poll worker, spoil their ballot, get a new one, and redo the entire ballot. This can be somewhat onerous if the ballot is long, but at least the appropriate procedure is clear.

Now consider voting by mail. There is no obvious correction procedure; in fact, jurisdictions differ in how corrections can be handled. Depending on the state, a voter might have to request a new ballot, if there is time. Some states allow corrections, but they have to follow a certain set of rules. The absentee ballot shown above is from the 2008 Minnesota Senate race between Norm Coleman and Al Franken. Both parties flagged this ballot for further review, with Coleman's camp claiming the intent of the voter was clear (even though Franken was also selected) and Franken's camp claiming the ballot was invalid because the voter had identified themselves with their initials (which is prohibited

by Minnesota voting rules). As the number of vote-by-mail ballots increases, these kinds of marking errors will become more common, and voters will need guidance on what to do if they make mistakes.

The last type of error involves voters' failure to follow the instructions for submitting their completed ballot (Wright, 1981; 1998). Even diligent voters who have requested their mail-in ballot, have filled it out, and are ready to mail it back within the required time frame may make this kind of error. To make mail-in ballots more secure, many municipalities require voters to sign the back of the envelope before mailing it, so that their signature can be compared to the signature on file. Many voters fail to sign the envelope (despite repeated instructions to do so) because they have filled out their ballot and believe they are done (a form of postcompletion error, Byrne & Bovair, 1997). For example, in the 2012 California general election, 17% of the returned vote-by-mail ballots were rejected because they lacked a signature (Day, 2014).

Nationwide, data from the Election Assistance Commission suggests that nearly one million mail-in ballots were rejected in the 2016 presidential election because the ballot was late, the voter did not sign the envelope, or the signature was rejected by voting officials (Salame, 2020). Ballot rejections due to these kinds of human errors are especially troubling because the voters believe they have completed all the steps and successfully cast their ballots, when in fact they have not.

## Leveraging Psychological Science

Whether voting failures stem from in-person or mail-in ballots, one of the biggest obstacles to fixing these problems through enforceable, uniform changes to ballots or voting processes is the absence of a central authority that controls ballot designs or election conduct. Contrary to what many people may think, the federal government does not administer or even regulate elections; that responsibility is constitutionally reserved to the states. Most states, in turn, delegate ballot design and creation to the thousands of county clerks who administer elections on the ground (Niemi & Herrnson, 2003).

To help mitigate the kinds of interface issues we have seen, applied psychologists would need to engage with thousands of county clerks across the United States in every election, examining tens of thousands of ballots. This suggests the need for more global strategies and easy-to-use tools to assist county clerks if we are to have widespread impact in this area.

What efforts might psychological scientists lead? We might support the development of tools that county clerks could use to examine ballots well before Election Day to ensure they conform to the best science regarding known limitations in human perception and cognition. We might perform research into ways to help voters avoid these kinds of errors when they fill out their ballots →

and review them. Unfortunately, we are not there yet, and poor designs that fail to account for limitations in human perception and cognition may continue to leave elections vulnerable to preventable human error.

Voting is the central element in our democratic process, and as such, it has attracted the attention of groups who seek to do it harm. While we must remain vigilant against efforts to alter our elections through vote tampering, computer hacking, or voter suppression, it is clear that we must also take action to address the errors that occur right in front of our own eyes as we vote. The outcome of the next election may depend on it. ●

## References

- Associated Press. (2020, April 7). The latest: Voters return 77% of absentee ballots in time. *US News and World Report*. <https://www.usnews.com/news/best-states/wisconsin/articles/2020-04-07/the-latest-poll-workers-concerned-about-catching-covid-19>
- Bergman, E., & Yates, P. (2011). Changing election methods: How does mandated vote-by-mail affect individual registrants? *Election Law Journal*, 10(2), 115–127.
- Brennan Center for Justice (2016). *Voting system security and reliability risks*. [https://www.brennancenter.org/sites/default/files/analysis/Fact\\_Sheet\\_Voting\\_System\\_Security.pdf](https://www.brennancenter.org/sites/default/files/analysis/Fact_Sheet_Voting_System_Security.pdf)
- Brennan Center for Justice (2020). *What the Postal Service crisis means for the November election*. <https://www.brennancenter.org/our-work/research-reports/what-postal-service-crisis-means-november-election>
- Byrne, M. D., & Bovair, S. (1997). A working memory model of a common procedural error. *Cognitive science*, 21(1), 31–61.
- Corse, A. and Kendall, B. (2020, August 14). Lawsuits over voting rules coming down to the wire. *Wall Street Journal*. <https://www.wsj.com/articles/lawsuits-over-voting-rules-coming-down-to-the-wire-11597432606>
- Day, J. (2014, September 28). Study examines why mail ballots are rejected. *Davis Enterprise*. <https://www.davisenterprise.com/local-news/why-is-californias-mail-in-ballot-rejection-rate-so-high/>
- Hassell, H. J. G. (2017). Teaching voters new tricks: The effect of partisan absentee vote-by-mail get-out-the-vote efforts. *Research & Politics*, 4(1), 1–6.
- Keating, D. (2001, November 13). Election 2000: Recount. *The Washington Post*. <https://www.washingtonpost.com/wp-srv/liveonline/01/politics/keating111301.htm>
- Kamarck, E. & Stenglein, C. (2020). *Low rates of fraud in vote-by-mail states show the benefits outweigh the risks*. Brookings Institution. <https://www.brookings.edu/blog/fixgov/2020/06/02/low-rates-of-fraud-in-vote-by-mail-states-show-the-benefits-outweigh-the-risks/>
- Laskowski, S. J., & Redish, J. (2006). Making ballot language understandable to voters. In *Proceedings of the 2006 USENIX/ACCURATE Electronic Voting Technology Workshop*. Association for Computing Machinery.
- Love, J., Stevens, M., & Gamio, L. (2020, August 14). Where Americans can vote by mail in the 2020 elections. *The New York Times*. <https://www.nytimes.com/interactive/2020/08/11/us/politics/vote-by-mail-us-states.html?smtyp=cur&smid=fb-nytimes>
- News21. (2012). *Election fraud in America*. <https://votingrights.news21.com/interactive/election-fraud-database/>
- Niemi, R. G., & Herrnson, P. S. (2003). Beyond the butterfly: The complexity of U.S. ballots. *Perspectives on Politics*, 1(2), 317–326.
- Salame, R. (2020, June 18). As states struggle with vote-by-mail, many thousands, if not millions of ballots could go uncounted in November. *The Intercept*. <https://theintercept.com/2020/06/18/vote-by-mail-elections/>
- Sinclair, R. C., Mark, M. M., Moore, S. E., Lavis, C. A., & Soldat, A. S. (2000). Psychology: An electoral butterfly effect. *Nature*, 408, 665–666.
- Thompson, D. M., Wu, J., Yoder, J., & Hall, A. B. (2020). *The neutral partisan effects of vote-by-mail: Evidence from county-level roll-outs* (Working Paper 20-015). Democracy and Polarization Lab, Stanford University. <https://siepr.stanford.edu/sites/default/files/publications/20-015.pdf>
- Wand, J. N., Shotts, K. W., Sekhon, J. S., Mebane, W. R., Jr., Herron, M. C., & Brady, H. E. (2001). The butterfly did it: The aberrant vote for Buchanan in Palm Beach County, Florida. *American Political Science Review*, 95(4), 793–810.
- Weiser, W. R. & Ekeh, H. (2020). *The false narrative of vote-by-mail fraud*. Brennan Center for Justice. <https://www.brennancenter.org/our-work/analysis-opinion/false-narrative-vote-mail-fraud>
- Wright, P. (1981). “The instructions clearly state...” Can’t people read? *Applied Ergonomics*, 12(3), 131–141.
- Wright, P. (1998). Printed instructions: Can research make a difference? In Harms Zwaga, T. Boersema, & H. Hoonhout (Eds.), *Visual information for everyday use* (pp. 79–100). CRC Press.

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# Addressing Racial Equity Through Human-Centered Design

How an act as simple as redesigning municipal forms can make government more truly equitable

By Karissa Minnich

Over the past several months, many organizations have taken a critical look at racial equity in their work. Similarly, our applied social and data science research team—The Lab @ DC in the Executive Office of Washington, D.C., Mayor Muriel Bowser—has asked, “Is our work propping up or chipping away at racism?”

As we discuss large structural changes to things like policing, housing, and education, we should also look at one seemingly small yet powerful way we can make government truly equitable: tackling government forms.

For the past three-plus years, our team has revised more than 50 city forms as part of Mayor Bowser’s commitment to make city services easier to use (The Lab @ DC, 2017). But putting human-centered design principles to work hasn’t just been about making forms less of a headache. This effort has been a small but important act of antiracism (The Lab @ DC, 2019).

If a racist policy is “any measure that produces or sustains racial inequity between racial groups,” (Kendi, 2019), then we have to look critically at the explicit and implicit rules we set in our government programs and the outcomes they produce across racial groups. Many times, those rules first materialize in government forms. Seeking a driver’s license? Fill out the form. Want to enroll your child in school? Fill out forms. Need food assistance? More forms. The paperwork may be universal, but the experience and outcomes are not.

When we fail to adopt a human-centered approach that recognizes the diverse needs of *all* our residents, the rules of engagement burden residents experiencing poverty or low literacy. And when those same residents are disproportionately Black—in D.C., Blacks are 44% of our population but 67% of those experiencing poverty—we fail to ensure racially equitable outcomes (Deloitte, Datawheel, & Hidalgo, 2020). Here are a few examples of existing inequities.

## Burdening the Resident

Accessing public benefits may be thought of as costless. But burden is introduced right in the act of applying. First, there may be comprehension barriers. The Program for the International Assessment of Adult Competencies (PIAAC) measures literacy on a 5-point scale—1 being the ability to comprehend something

like a price tag; 3, a bus schedule; and 5, a complex tax form (National Center for Education Statistics, 2020). Most adults in the United States are at a level 2 (Organisation for Economic Co-operation and Development, 2020). If a form’s questions and instructions don’t achieve comprehension, residents may fill it out incorrectly or simply give up on completing it at all. There can also be submission challenges. Lack a printer or Internet access? That might slow you down. Required to submit the form in person but don’t have paid time off, childcare, or a flexible travel budget? You’ll be faced with some difficult trade-offs. When we make applying burdensome, we in effect restrict access to benefits our residents are entitled to.

## Demanding Proof of “Deservingness”

Attestations, notarization, documentation—the burden of proof is placed heavily on the applicant, and it’s time-consuming. But worse is when the need for assistance is rooted in a trauma—for example, seeking temporary shelter after being evicted, requesting unemployment insurance after losing a job, applying for burial assistance after losing a loved one. For those who are financially secure, these experiences can be avoided with personal safety nets. But those without financial security are left to prove their need at the expense of their mental and emotional health.

## Criminalizing and “Othering” the Resident

“Incomplete applications will be rejected.” “Falsifying information may result in a fine or criminal penalties.” How many government forms start with this type of language? At a minimum, it’s off-putting. For those who are already told their actions are suspect because of the color of their skin, these warnings can feel incriminating. Conflating need with criminal intent further reinforces that asking for services may not be worth the risk (Lawrence & Valsiner, 2003).

We further dehumanize our residents when we label them by the services they seek (e.g., as a homeless person, food stamp recipient, or voucher holder). When we use these labels, we risk stigmatizing our residents for seeking assistance and put their personhood in second position.

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**Karissa Minnich** is a senior operations analyst in The Lab @ DC, an applied research team in the Executive Office of the Mayor for the District of Columbia. She leads the team’s human-centered design work, which has focused heavily on improving customer service through accessible form design. She holds a bachelor’s degree in sociology and political science from Muhlenberg College and a Master of Public Administration from George Washington University.

So how can we address these inequities? If you are a psychological scientist in academia, contribute to the research that helps ground this work and commit to probing outcome measures by race. Most government agencies don't have research capacity. Help by investigating the behavioral questions that can inform the design of the processes and paperwork that connect residents to government services.

A few broad questions to consider:

- How do we internalize written messages? Who is deterred from seeking service by a warning?
- How does tone (e.g., formal vs. conversational) impact comprehension?
- What are the individual costs of recounting a trauma? What methods of data collection minimize those costs?
- Where is the line between providing transparent information and imposing a cognitive burden?
- How do we provide instructions to increase compliance?
- How do we increase the number of individuals who meet deadlines?
- How many steps can we include in a process before we see attrition?
- Do we see faster completion times for services with digital applications versus paper ones?

For program managers, agency directors, or other decision-makers who work in governments or have partnerships with them, start by looking at the metrics. Is the program serving every person it's designed to serve? Are there some groups who aren't applying or who aren't getting through the process? Before thinking, "oh, they just don't want it (enough)," ask whether the paperwork and process are the problem.

Talk with residents. Ask them about their experiences with seeking a service. Watch them navigate the system. Map the process from beginning to end and see where burden can be reduced. By connecting with residents who haven't successfully navigated the process in the past, you can identify where they get stuck in the paperwork.

## Minimize the Burden of Applying

Write plainly. Eliminate jargon. Use conversational language. Writing at an eighth-grade level ensures that you reach roughly 80% of American adults (Readable, 2020). A readability calculator can access your writing and help hold you accountable.

Establish agency agreements to securely share resident data like benefit enrollment, income and tax information, or even contact details. A government may function as dozens of distinct agencies, but to a resident, it's a single system that they've already shared information with. For renewals (e.g., annual school enrollment, social assistance programs, vehicle registration), prepopulate forms with the resident's most recent information to streamline a no-changes process.

Have some evening and weekend hours for services that must be done in person. For the rest, move forms online and make them mobile-friendly for those without access to a desktop.



THE LAB @ DC

The applied social and data science research team in The Lab @ DC has revised more than 50 city forms as part of Mayor Muriel Bowser's commitment to make city services easier to use. Learn about projects and more at [thelabprojects.dc.gov](http://thelabprojects.dc.gov).

## Assume Residents Are Deserving

For services that support residents experiencing a trauma, be judicious in what information you ask for. When you can verify something through shared agency data, do it. When you can't, be conscious of your language and, when possible, gather details through one-on-one conversations led by staff trained in trauma-informed care.

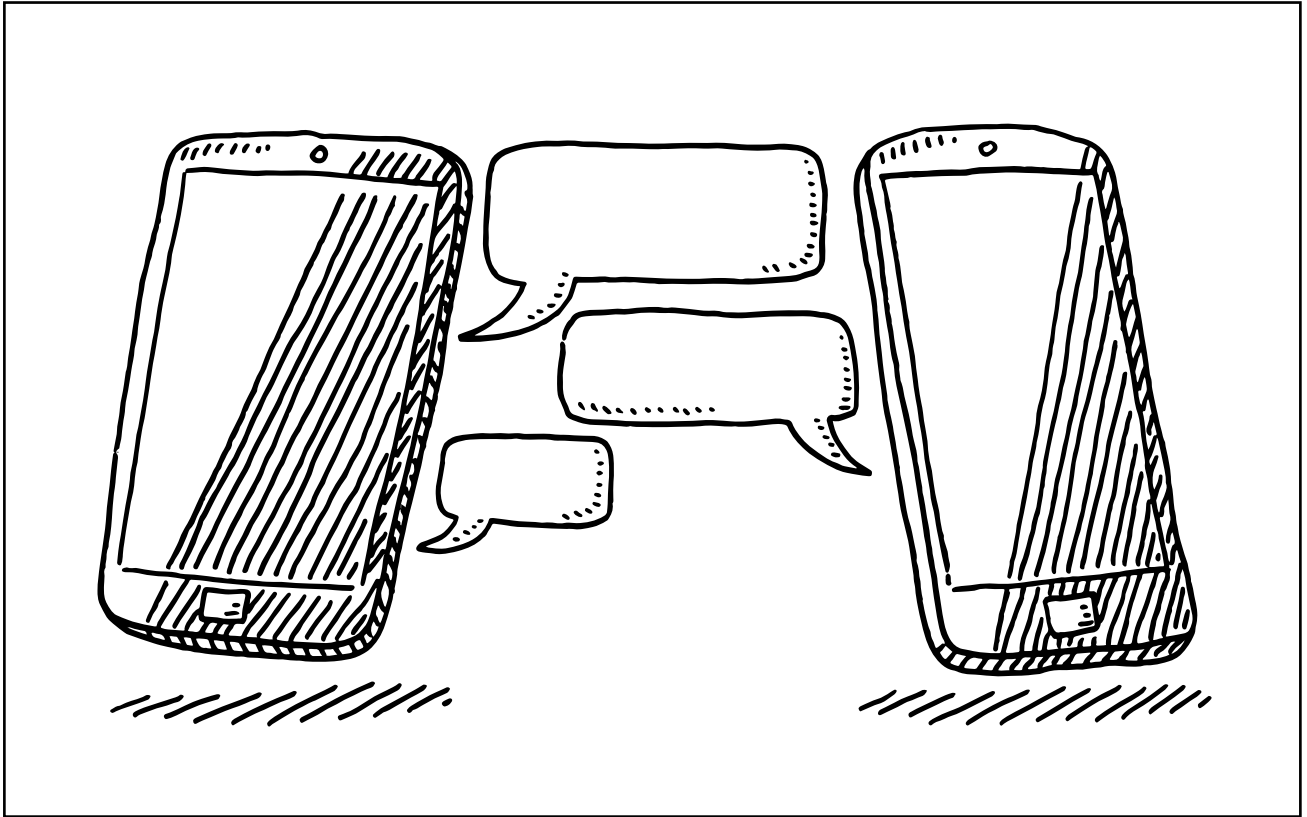
## Look Critically at Your Language

Lead with a welcome, not a warning. Infuse your language with the assumption that residents are applying with real need. Save the legally required statements for the end and don't forget a "please" and "thank you." Finally, check that your language doesn't "other" residents, but instead puts their personhood first. If you need to refer to an individual by a general term, use words like "resident," "applicant," "client," or "customer."

A form is one place where governments get to say whether their residents are deserving or suspect. Each of these small tweaks can go a long way in making government services truly equitable. ●

## References

- Deloitte, Datawheel, & Hidalgo, C. (2020). Washington, DC. [datausa.io/profile/geo/washington-dc/#about](https://datausa.io/profile/geo/washington-dc/#about)
- Kendi, I. X. (2019). *How to be an antiracist*. Random House.
- Lawrence, J. A., & Valsiner, J. (2003). Making personal sense: An account of basic internalization and externalization processes. *Theory & Psychology, 13*(6), 723–752. doi: [10.1177/0959354303136001](https://doi.org/10.1177/0959354303136001)
- National Center for Education Statistics. (2020). PIAAC proficiency levels for literacy. [nces.ed.gov/surveys/piaac/litproficiencylevel.asp](https://nces.ed.gov/surveys/piaac/litproficiencylevel.asp)
- Organisation for Economic Co-operation and Development. (2020). Education GPS. [gpseducation.oecd.org/](https://gpseducation.oecd.org/)
- Readable. (2020). The Flesch Reading Ease and Flesch-Kincaid Grade Level. *The Readable Blog*. [readable.com/blog/the-flesch-reading-ease-and-flesch-kincaid-grade-level/](https://readable.com/blog/the-flesch-reading-ease-and-flesch-kincaid-grade-level/)
- The Lab @ DC. (2017). Can residents transform government paperwork? [thelabprojects.dc.gov/formapalooza](http://thelabprojects.dc.gov/formapalooza)
- The Lab @ DC. (2019). How do we design things that work for residents? [thelabprojects.dc.gov/resident-centered-design](http://thelabprojects.dc.gov/resident-centered-design)



## TECHNOLOGY IN CONTEXT: THE SURPRISING SOCIAL UPSIDES OF CONSTANT CONNECTIVITY

By Kim Armstrong, APS Staff Writer

**T**he need to physically distance ourselves in order to “flatten the curve” of the COVID-19 pandemic has left much of the world more reliant on technology to meet our social needs than ever before. Until the virus is contained, the safest way to maintain relationships with many of the people we care about is digitally. Yet the very same technologies that make social distancing bearable have been cited as leading causes of social isolation, mental health issues, and even acts of mass violence.

Thankfully, given that millions of people are now studying and working online, psychological research suggests a more nuanced reality. In many cases, the effects of oft-maligned technologies such as smartphones, social media, and

video games appear to be determined not only by use but by social context—that is, how and why we use them, as well as the quality of our relationships offline.

Moreover, while these technologies may be today’s targets, the moral panic surrounding them is nothing new, as Amy Orben (University of Cambridge, England) described in a 2020 article in *Perspectives on Psychological Science*.

These concerns have bubbled up again and again since the rise of the novel, Orben explained, when some feared that “reading addiction” would tempt 18th-century youths into reenacting the risky behaviors found within the pages of classics like *Gulliver’s Travels*.

“While past panics are often met with amusement today, current concerns routinely engender large research investments and policy debate,” Orben wrote. “What we learn from studying past technological panics, however, is that these investments are often inefficient and ineffective.”

With each new technology, she explained, psychological scientists roll the research rock up the hill, scrambling to investigate its effects on children and adolescents and recommend best practices for the public at large. But then another technology comes along—whether it be radio dramas, movies, or the Internet—and the rock rolls back down, restarting the “Sisyphean Cycle of Technology Panics” (the title of her article) all over again.

In addition to fueling public panic, the perception that each new form of media represents a unique, unprecedented threat to society hinders the development of broader theories on the effects of technology, Orben wrote.

“Once a new technology is studied, previous understanding developed by studying an older technology often ceases to be considered. Without an underlying paradigm or reliable conceptual frame to guide research, each researcher is ‘forced to build his field anew from its foundations,’” she explained.

### The Cost of Connectivity

Despite the many benefits of connectivity, the mere presence of devices such as smartphones may impose a subtle social cost, according to Kostadin Kushlev (Georgetown University) and colleagues Ryan Dwyer and APS Fellow Elizabeth W. Dunn (University of British Columbia, Canada) in a 2019 article in *Current Directions in Psychological Science*. Although the cumulative effects appear to be relatively small, they explained, smartphones can distract us from friends and family in our immediate environment and lead us to opt out of casual interactions with strangers and acquaintances, which have been found to boost mood and feelings of belonging.

Other researchers have proposed that this “technoference” may arise in part because of an evolutionary mismatch that can cause otherwise adaptive human social behaviors to become maladaptive in the context of modern technology use.

“Smartphones and their affordances, although highly beneficial in many circumstances, cue humans’ evolved needs for self-disclosure and responsiveness across broad virtual networks and, in turn, have the potential to undermine immediate interpersonal interactions,” wrote APS Fellow David A. Sbarra (University of Arizona), Julia L. Briskin (Wayne State University), and Richard B. Slatcher (University of

Georgia) in a 2019 article in *Perspectives on Psychological Science*.

There’s little evidence, however, that smartphones are “ruining our social lives,” as is sometimes suggested in coverage of this kind of research.

Studies of online communication among adolescents—many of them “digital natives” who never experienced a world without the Internet and mobile devices—suggest that these interactions, while potentially alienating to those in an individual’s immediate environment, may serve primarily to shore up existing relationships.

Madeleine J. George (Purdue University) and APS Fellow Candice L. Odgers (University of California, Irvine) explored this theory in a 2015 article in *Perspectives in Psychological Science*. Earlier that year, an analysis of four days’ worth of text messages from 171 adolescents by Marion K. Underwood and colleagues had found that teens sent 70% of their messages to friends and peers, 21% to romantic partners, and just 1% to adults other than their parents. The effects of this kind of communication may vary significantly between individuals depending on the strength of their existing relationships and mental health vulnerabilities, George and Odgers added.

Further, two studies of 1,200 and 2,000 teens in the Netherlands and Bermuda (Valkenburg & Peter, 2007; Davis, 2013) found that teens who reported more online communication also reported higher-quality friendships and more time spent with those friends offline.

Similarly, a longitudinal study of 1,312 children found that those with strong relationships early in life were most likely to engage in frequent online communication, which in turn led to closer friendships (Lee, 2009). George and Odgers wrote that more isolated individuals have been found to experience greater feelings of loneliness when lurking online for entertainment rather than communication, but they may benefit from social interaction online. Lesbian, gay, bisexual, and transgender youths, for example, often cite online spaces as an important source of social support that may not be available to them in person, though they are also more likely to be the targets of cyberbullying.

“Most online behaviors and threats to well-being are mirrored in the offline world, such that offline factors predict negative online experiences and effects,” George and Odgers concluded.

### Social Media and Depression: Correlation, Causation, or Both?

The fact remains, however, that rates of depression, anxiety, and suicide increased significantly between 2010 and 2015, the same period in which “iGen”—those born between 1995 and 2012, when smartphones came into common use—began to enter adolescence and higher education, wrote APS Fellow Jean M. Twenge (San Diego State University) and colleagues in a 2018 article in *Clinical Psychological Science*. An analysis of 93 university counseling centers by the Center for Collegiate Mental Health found a 30% increase in caseloads between the 2009–2010 and 2014–2015 academic years, and the suicide rate among American adolescents ages 13 to 18 increased 31%, from 5.38 to 7.04 per 100,000, over the same period.

That increase in the need for counseling could reflect many factors, including a reduction in the stigma surrounding mental health issues, which may lead more students to seek professional help, Twenge and colleagues noted. But, they added, iGen also spends more time on electronic communication and less time interacting face-to-face than any other generation, which may contribute to the feelings of social disconnection and burdensomeness often associated with suicidal ideation.



## Playing for the Right Reasons

The term “gamer” often evokes the image of an adolescent boy shouting into a headset, but the numbers tell a different story, wrote Yemaya J. Halbrook, Aisling T. O’Donnell, and Rachel M. Msetfi (University of Limerick, Ireland) in a 2019 article in *Perspectives on Psychological Science*. The average video game player is 35 years old, with women and girls constituting 41% of the gaming market and more than 65% of U.S. households regularly using at least one device to play games. As with social media, and eating, and a range of other potentially problematic activities, the effects of gaming on well-being seem to depend largely on why and how an individual chooses to partake.

“Video games themselves should not be considered either ‘good’ or ‘bad’; rather, the effect on well-being depends on the aspects [of game play] present, motivation behind game play, and gaming in moderation,” wrote Halbrook and colleagues.

Social gaming in particular can positively influence well-being, the researchers noted, especially when games involve cooperative elements that encourage positive interactions, whether with other players or nonplayer characters in the world of the game. It’s only when individuals begin to play obsessively, or for escapism and a sense of achievement, that gaming’s deleterious effects begin to creep in.

Halbrook and colleagues described a survey of 206 World of Warcraft players ages 14 to 65, in which Huon Longman (Queensland University of Technology, Australia) and colleagues found that players’ self-reported fewer symptoms of depression, stress, and anxiety with higher levels of in-game social support. However, individuals who played between 44 and 82 hours per week reported lower levels of offline social support and higher negative symptoms. It seems, then, that playing video games socially is beneficial to well-being, but only when the game is not played in excess, Halbrook and colleagues explain.

While findings on the influence of violent video games on players’ real-world aggression and violence remain controversial, social context appears to play a more significant role than what games an individual plays in this case as well. In a 2015 meta-analysis of 101 studies on video games and aggression in *Perspectives in Psychological Science*, Christopher J. Ferguson (Stetson University) found both violent and nonviolent video games to have minimal impact on children’s and adolescents’ aggression, prosocial behavior, academic performance, and symptoms of depression and attention-deficit disorders.

Additionally, through a longitudinal study of 165 young men, Ferguson and colleagues (2012) found that symptoms of depression, antisocial personality traits, exposure to family violence, and peer influences—but not exposure to violent video games—predicted aggression and instances of dating violence over a 3-year period.

“Historically, theories of media effects have been focused on ‘hypodermic needle’-type theories, in which it is implied that media is essentially injected into passive viewers who automatically model viewed behaviors,” Ferguson wrote. “Such theories arguably have not been well supported by the current literature and may suffer from problematic assumptions, such as that the brain treats fictional media similarly to real-life violence exposure.”

Rather than serving as hotbeds of violence and aggression, Halbrook and colleagues noted, games like Wii Fit and Just Dance encourage players to be more active, improving measures of physical health such as balance and flexibility. And although “exergames” may be most effective when combined with traditional exercise, individuals may also be more likely to follow through on playing a game than hitting the gym, the researchers observed.

In a 2014 study involving 61 participants with multiple sclerosis, for example, Andreas Kramer (University of Konstanz, Germany) and colleagues found that patients assigned to play an exergame demonstrated the same improvements in balance and gait as those who were assigned a traditional exercise regimen—and were 55% more likely to stick with the intervention up to 6 months later.

“As video games thus far have been mostly perceived as negative, it is important to shed light on the positive impacts video games can have on well-being,” Halbrook and colleagues conclude. “These effects are nuanced and moderated by personal as well as video game factors.”





See this article online for an audio interview with Christopher J. Ferguson on how questionable research practices may have exaggerated the relationship between video games and aggressive behavior.

Through analyzing data from annual surveys of more than half a million American adolescents between 2009 and 2015, Twenge and colleagues found an increase in depressive symptoms (33%) and suicidal ideation or attempts (12%). As these surveys were given to a cross-section of all adolescents, not just those who sought help, the increases were unlikely to be due to greater help-seeking, Twenge adds. Furthermore, the researchers found that these increases were primarily driven by poorer mental health outcomes in girls, with those who reported more screen time (whether spent watching TV, browsing the Internet, or playing video games) and social media use also reporting more symptoms of depression and suicidal ideation. Overall, adolescents who reported 5 or more hours of screen time per day were 66% more likely to report suicide-related outcomes than those who reported an hour or less of screen time per day.

“It seems likely that the concomitant rise of screen time and adolescent depression and suicide is not coincidental,” Twenge and colleagues hypothesized, acknowledging that the study’s year-to-year comparison only allowed them to determine that screen time and rates of depression and suicide increased within that population during the same period, not what, if any, causal relationship might exist between these factors.

Making these kinds of statements based on correlations between screen time and mental health issues could mislead the general public, however,

suggest Yaakov Ophir, Yuliya Lipshits-Braziler (Hebrew University of Jerusalem, Israel), and Hannanel Rosenberg (Ariel University, Israel) in a 2020 *Clinical Psychological Science* article, leading people to assume a causal relationship exists when there may not be one.

In fact, in a 2019 *Clinical Psychological Science* study of 594 elementary and 1,132 undergraduate students in Canada, Taylor Heffer (Brock University, Canada) and colleagues found that the relationship between these factors, when it exists at all, may run in the other direction, such that symptoms of depression contribute to increased social media use. Throughout the longitudinal study, which followed the elementary students from 2017 to 2019 and undergraduates from 2010 to 2016, students provided an annual self-report of their symptoms of depression and their hours of social media use and other screen time, along with their nonscreen activities. Overall, the researchers found that female elementary students who reported increases in depression were more likely to report increased social media use later in the study. Additionally, depression did not appear to affect social media use, or vice versa, in male adolescents or in college students generally.

“While it may be common in popular media to suggest that social media use might cause depression, our results suggest that this claim may be premature,” Heffer and colleagues concluded.

Furthermore, when these effects do exist, they are rarely as influential as they are often made out to be, as Orben and Andrew K. Przybylski (University of Oxford, England) showed in a 2019 *Psychological Science* article. In a time-use diary study of 17,247 adolescents from Ireland, the United States, and the United Kingdom, the two found that the average effect size related to daily technology use was so small that participants would need to engage in an additional, impossible 63 hours and 31 minutes of technology use per day to become consciously aware of a decrease in their well-being. Even in the case of the largest effect size, the researchers added, participants might be subjectively aware of a decrease in well-being only after 11 hours of overall daily use.

“There is a small significant negative association between technology use and well-being, which—when compared with other activities in an adolescent’s life—is miniscule,” Orben and colleagues wrote.

## Media in Moderation

Whatever the effects of digital-device use, self-reports of past behavior may not be the best measure for studying them. People generally have difficulty accurately perceiving the time they spend on these activities, Orben and colleagues explained. Heavy Internet users in particular have been found to underestimate their time spent online, whereas infrequent users are more likely to overestimate theirs.

Furthermore, although “screen time” may seem like a convenient measure of overall digital-technology use, the concept may be too broad to meaningfully communicate the cumulative effects of different kinds of media. This model of technology use, Orben argued, treats media almost like a medical substance, suggesting that the dosage, or time spent using a technology, is the main determinant of media’s effects.

“We want to understand how using ‘x’ amount of this technology affects adolescents, for example, and in that way we’re kind of assuming that this kind of technology will have the same effect on every adolescent,” she said. But 20 minutes spent scrolling through social media is very different from 20 minutes video-chatting with family or playing a puzzle game, and each can have different effects on different people, or even on the same individual, on different days.

“The core thing to do in the short term is to think of technology as a more diverse concept than just the time spent on something,” Orben said. ➔

In a 2017 *Psychological Science* study of 120,115 English adolescents, for example, Przybylski and Netta Weinstein (University of Oxford) found that the effects of screen time on mental health varied significantly depending on what teens were doing online and when they were doing it. Teens who played video games for over an hour and a half on weekdays, for instance, reported a decline in well-being, but they could play for nearly twice as long on weekends before reporting similar effects.

In contrast to the view of digital-technology use that sees each “dose” of screen time as consuming time that might otherwise be spent on more satisfying offline activities, Przybylski and Weinstein proposed a “digital Goldilocks hypothesis,” stressing the importance of moderation in both directions.

“It might be that ‘too little’ tech use deprives young people of important social information and peer pursuits, whereas ‘too much’ may displace other meaningful activities,” the researchers wrote. “There are empirically derivable balance points, moderate levels, that are ‘just right’ for optimally connected young people.” ●

## References

- Center for Collegiate Mental Health. (2015). 2015 annual report, Pennsylvania State University. Retrieved from [https://sites.psu.edu/ccmh/files/2016/01/2015\\_CCMH\\_Report\\_1-18-2015.pdf](https://sites.psu.edu/ccmh/files/2016/01/2015_CCMH_Report_1-18-2015.pdf)
- Davis, K. (2013). Young people’s digital lives: The impact of interpersonal relationships and digital media use on adolescents’ sense of identity. *Computers in Human Behavior*, 29, 2281–2293. <https://doi.org/10.1016/j.chb.2013.05.022>
- Ferguson, C. J. (2015). Do Angry Birds make for angry children? A meta-analysis of video game influences on children’s and adolescents’ aggression, mental health, prosocial behavior, and academic performance. *Perspectives on Psychological Science*, 10(5), 646–666. <https://doi.org/10.1177/1745691615592234>
- Ferguson, C. J., Miguel, C. S., Garza, A., & Jerabeck, J. M. (2012). A longitudinal test of video game violence influences on dating and aggression: A 3-year longitudinal study of adolescents. *Journal of Psychiatric Research*, 46(2), 141–146. <https://doi.org/10.1016/j.jpsychires.2011.10.014>
- George, M. J., & Odgers, C. L. (2015). Seven fears and the science of how mobile technologies may be influencing adolescents in the digital age. *Perspectives on Psychological Science*, 10(6), 832–851. <https://doi.org/10.1177/1745691615596788>
- Halbrook, Y. J., O’Donnell, A. T., & Msetfi, R. M. (2019). When and how video games can be good: A review of the positive effects of video games on well-being. *Perspectives on Psychological Science*, 14(6), 1096–1104. <https://doi.org/10.1177/1745691619863807>
- Heffer, T., Good, M., Daly, O., MacDonell, E., & Willoughby, T. (2019). The longitudinal association between social-media use and depressive symptoms among adolescents and young adults: An empirical reply to Twenge et al. (2018). *Clinical Psychological Science*, 7(3), 462–470. <https://doi.org/10.1177/2167702618812727>
- Kushlev, K., Dwyer, R., & Dunn, E. W. (2019). The social price of constant connectivity: Smartphones impose subtle costs on well-being. *Current Directions in Psychological Science*, 28(4), 347–352. <https://doi.org/10.1177/0963721419847200>
- Kramer, A., Dettmers, C., & Gruber, M. (2014). Exergaming with additional postural demands improves balance and gait in patients with multiple sclerosis as much as conventional balance training and leads to high adherence to home-based balance training. *Archives of Physical Medicine and Rehabilitation*, 95(10), 1803–1809. <https://doi.org/10.1016/j.apmr.2014.04.020>
- Lee, S. J. (2009). Online communication and adolescent social ties: Who benefits more from Internet use? *Journal of Computer-Mediated Communication*, 14, 509–531. <https://doi.org/10.1111/j.1083-6101.2009.01451.x>
- Longman, H., O’Connor, E., & Obst, P. (2009). The effect of social support derived from World of Warcraft on negative psychological symptoms. *CyberPsychology & Behavior*, 12(5), 563–566. <https://doi.org/10.1089/cpb.2009.0001>
- Ophir, Y., Lipshits-Braziler, Y., & Rosenberg, H. (2020). New-media screen time is not (necessarily) linked to depression: Comments on Twenge, Joiner, Rogers, and Martin (2018). *Clinical Psychological Science*, 8(2), 374–378. <https://doi.org/10.1177/2167702619849412>
- Orben, A. (2020). The Sisyphean cycle of technology panics. *Perspectives on Psychological Science*. <https://doi.org/10.1177/1745691620919372>
- Orben, A., & Przybylski, A. K. (2019). Screens, teens, and psychological well-being: Evidence from three time-use-diary studies. *Psychological Science*, 30(5), 682–696. <https://doi.org/10.1177/0956797619830329>
- Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the Goldilocks hypothesis: Quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological Science*, 28(2), 204–215. <https://doi.org/10.1177/0956797616678438>
- Sbarra, D. A., Briskin, J. L., & Slatcher, R. B. (2019). Smartphones and close relationships: The case for an evolutionary mismatch. *Perspectives on Psychological Science*, 14(4), 596–618. <https://doi.org/10.1177/1745691619826535>
- Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among U.S. adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science*, 6(1), 3–17. <https://doi.org/10.1177/2167702617723376>
- Underwood, M. K., Ehrenreich, S. E., More, D., Solis, J. S., Brinkley, D. Y. (2015). The BlackBerry Project: The hidden world of adolescents’ text messaging and relations with internalizing symptoms. *Journal of Research on Adolescence*, 25, 101–117. <https://doi.org/10.1111/jora.12101>
- Valkenburg, P. M., Peter, J. (2007a). Online communication and adolescent well-being: Testing the stimulation versus displacement hypothesis. *Journal of Computer-Mediated Communication*, 12, 1169–1182. <https://doi.org/10.1111/j.1083-6101.2007.00368.x>

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Gordon Bower (left) and Alan Kraut (APS Executive Director Emeritus) in 2007, following the ceremony at which Bower received the National Medal of Science.

## REMEMBERING GORDON BOWER (1932–2020)

**G**ordon H. Bower, who served as APS President from 1991 to 1993, passed away on June 17, 2020. A world-renowned scientist and recipient of the United States' highest scientific recognitions, Bower was a long-time psychology professor at Stanford University, where he influenced generations of scientists throughout the field.

Bower's mark on psychological science is wide and deep, illuminating new connections between processes ranging from imagery to emotion and language

with memory, learning, and reasoning throughout a career spanning over 50 years. Among his lifetime of scientific accomplishments—for which he received the APS William James Award in 1989 and the U.S. National Medal of Science in 2005, in addition to numerous other recognitions—Bower is known for discovering the links between emotion and memory.

A recipient of the 2018 APS Mentor Award, Bower is fondly remembered by his students and collaborators alike for his larger-than-life personality and for his rare ability to challenge researchers to “tear the weak [ideas] to shreds in the search for a gem,” while simultaneously supporting them as individuals and working with them as equals.

APS is pleased to honor Gordon Bower with this collection of personal recollections by those who knew him best.

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**John Anderson**  
*Carnegie Mellon University*

**I** had no idea what I was in for when I showed up at Stanford to start graduate school in 1968. I was particularly green, just turned 21, with lots of enthusiasm

*See this article online for longer versions of many of these tributes, along with Bower's 2011 interview on Inside the Psychologist's Studio and links to other content featuring him.*

for studying human cognition but really little sense for how to do that. I knew I was going to work with the famous Gordon Bower and I thought I was going to study mathematical psychology. However, in our first meeting Gordon told me that mathematical psychology was dead (surely an exaggeration) and that I should study artificial intelligence. Being a compliant student, I followed his advice and together we began applying it to an understanding of human memory.

What I experienced is what so many of his graduate students have experienced—someone who was both encouraging of your ideas but also critical of any weaknesses in them. I spent time in his office almost every day, describing the newest results, receiving encouragement, feedback on how to best present these ideas, and advice on how to do it better. Every paper I wrote came back marked up with red ink. Considering where I started from, I emerged 4 years later with a remarkably productive graduate career. However, I was still pretty innocent in the ways of professional psychology, and Gordon assisted a lot in those first few years. Many times in subsequent years Gordon reached out to me with encouragement and advice. It is remarkable that Gordon was able to pursue his own successful scientific career and be so involved in the lives of so many of his students.

### Robert A. Bjork

*University of California, Los Angeles*

Over 50 psychological scientists, many among the most prominent in their fields, can claim officially to be a Gordon Bower student, but what would that number be if every student or postdoctoral fellow he influenced profoundly, like me, were to be counted? That number might be a record in both number and scientific diversity, given the scope of his research contributions. He made early contributions to research on reinforcement and reward mechanisms in animals; then to mathematical modeling of human learning and memory; then to connectionist modeling, artificial

intelligence, and story and schema understanding; and then to social/motivational dynamics and cognitive therapy. Gordon, however, was a pure accumulator of research interests: When venturing into a new research domain, he tended to see interesting linkages to his earlier research and never really lost interest in any topic he had explored.

Gordon Bower's mentoring may also set some kind of record for duration: As the years passed, as his students will testify, he went from being one's teacher and research supervisor to being one's friend, advocate, and booster. He kept track of and bragged about his former students' research and accomplishments; he took pains to be (very visibly) in the audience during their presentations at conferences and meetings; and he advocated for them when opportunities arose.

It is interesting that Gordon, though always a wonderful advisor, became—by all accounts—a gentler/kinder Gordon Bower over the years. I once told him that my tending to ask questions after talks at meetings was modeling after him. He then told me to be sure that my questions were not about me—that at some meeting he had realized, when back in his hotel room, that he had asked a student presenter some questions that were, in his words, self-aggrandizing and about him, not the student, and he vowed never to do that again. I thought my admiration of Gordon could not go higher, but that story made Gordon seem all the more human and admirable.

### Larry Erlbaum

*Bower's publisher at Lawrence Erlbaum Associates*

Gordon was a great mentor, not only with students, but to any who attended him carefully. He was a model of honesty, care, compassion, and giving. Being born in the Great Depression, where money and other resources were meager, he had a keen sense for helping his fellow human beings, which took form in the care and attention he lavished on students, friends, and family. Though not often noted for his sense of humor, he could easily fall into funny rants (those with whom he shared fictitious Moose-head gifts can attest to that) and shrewd observations on the social scene. His loyalties were clearly defined (The Warriors, almost any Stanford teams) as were his tastes (hamburgers, not caviar). Most of all, Gordon was a caring man, whether it was a friend's health or other contretemps, a student's needs, a colleague's worries. You could count on him to do whatever was in his power to lend a hand.

Although distinguished before he had hardly begun his climb to academic prominence, his modesty was apparent even then. Kenneth Spence co-opted him to edit *Advances in Learning and Motivation* before Gordon had hardly settled at Stanford. When asked by a publishing busy-body about his involvement, he retreated into a Gary Cooper reserve and allowed he was a "lucky fella" to be involved in the series.

If one was visiting Stanford, an invitation to lunch at Gordon's was always forthcoming. If there was a convention, there was always an invitation to the Stanford party. A hero to many, Gordon stayed true to a modesty and reserve that only burnished his image. We have lost a great scholar, a great friend, and a great man.

### Arnold L. Glass

*Rutgers University*

Gordon Bower was my mentor and thesis adviser for my PhD in psychology at Stanford. During my second year of graduate school I briefly went back East and came back engaged to be married. My fiancée, Lynne, joined me at the end of the summer and we immediately made plans to marry locally with none of our family or oldest friends in attendance. However, Gordon and Sharon would not let the occasion go uncelebrated so they gave us a wedding celebration at an elite restaurant for ourselves and some local friends. ➡

Later that year, Lynne and I had the opportunity to stay at the Bower house when Gordon and Sharon went away for a few days. The Bower household was a smoothly functioning enterprise and the three Bower children, Laurie, Tony, and Julia, took excellent care of us. Our only function besides joining their games was driving them to their neighborhood activities. This was something I did not do very well, denting the family car in the process.

We also invited Gordon and Sharon for dinner at our tiny efficiency in a neighborhood that no longer exists, Whiskey Gulch. It was so small that the only way for us to all eat together was to eat picnic style on the floor. We were all young enough to think this was fun and spry enough to accomplish it.

When I took up my position at Rutgers on the other coast, we were not able to see the Bowers often. Then we heard that they would all be staying with us overnight on a cross-country trip. We made great plans for how we would entertain them. At the arrival everything went as planned. Unfortunately, the next morning we all awoke to no water! That night our water heater had sprung a leak so I rented a water vacuum to de-flood our basement. The entire Bower clan treated this as a wonderful, unexpected adventure.

## Arthur Glenberg

Arizona State University

Gordon Bower inspired my career even before I had one: As an undergraduate, I heard him give a wonderful talk at the 1970 Midwestern Psychological Association meeting in Cincinnati. As a graduate student, I inherited research, speaking, and writing insights passed on by his student, Bob Bjork. And as a faculty member at the University of Wisconsin-Madison and Arizona State University, I used his handout, "Do's and Don'ts for Brief Research Talks," as a primary source for helping students give good presentations. I had gotten a

### Do's and Don't for Brief Research Talks (for mini-APA participants) - from Gordon H. Bower

1. A talk is not a written Journal Experimental Psychology paper. Talks have an informal narrative style and are dramatic rather than detailed or completely informative. Don't read your "speech". Speak it from memory.
2. The model for the short speech is the campfire story -- teller of a mystery, (or a Steve Martin skit), not the recitor of an encyclopedia.
3. You must be very *selective* of what you can say in a short time. Most short speeches can barely carry one main idea plus its support. Resist the temptation to tell everything you know or every thought you had about it: only the most interesting and important thing can be said.
4. Talk informally as though you were telling your grandmother what you did and why. Complexity of expression is uncorrelated with wisdom, intelligence, and originality; it's perfectly correlated with audience puzzlement and boredom.
5. A narrative style is preferable in talks. Research is done to tell a story, going from problem, goal, plan through actions (observations) to outcomes, resolution, and a moral (conclusion). Avoid a written journal-style organization.
6. Prepare your first two sentences like they were a Madison-Avenue advertisement for you and your talk. Grab the audience in these first sentences.  
(a) Example *weak* start: "The research I will tell you about stems from earlier

Arthur Glenberg used this handout to help students improve their presentations. Download a PDF of the entire 5-page list with this article at [psychologicalscience.org/observer](http://psychologicalscience.org/observer).

copy from UW's Lyn Abramson who, if I remember correctly, had gotten it from Lauren Alloy.

That handout got Gordon into a bit of trouble. Decades after 1970, I gave a talk at UCLA as part of a celebration of Bob Bjork's career. Gordon, accompanied by his wife Sharon, came up to me to congratulate me on the talk. I said, "Of course it was a good talk, I simply followed your list of Do's and Don'ts for Brief Research Talks." Sharon turned to him and said something like, "Gordon, how could you? That was MY list of Do's and Don'ts!"

## Mark Gluck

Rutgers University

Gordon never fulfilled his early dream of pitching a no-hitter at Yankee stadium; he spent his entire professional career at Stanford University and retired to

emeritus status in 2005. However, in his chosen career of psychology, where he went up to bat time after time against a broad and diverse lineup of the most challenging problems in learning and memory, Gordon hit a string of home runs worthy of his childhood idol, Lou Gehrig.

*(Also see this article online for a link to a tribute by Gluck published in June.)*

## Douglas Hintzman

*University of Oregon*

When I joined the Stanford graduate program in 1963, I had never heard of Gordon Bower. At first, I set up an experiment on electrical brain stimulation, using rats, in another lab. But a lab assistant plugged my DC circuitry into a wall outlet, bringing my study to a fizzling halt. Because I had worked in a memory lab as an undergrad, I went to see whether Bower would take me on. His response was brusque: “I’m a busy man, and don’t have time to waste on some fool student who doesn’t know what he’s interested in.” I thought he was going to kick me out of his office.

For the record, Gordon was indeed a busy man. Nearly every morning, we students would see him hand a full writing tablet to his typist. Rumor had it that these first drafts could be sent off for publication with few revisions. In those days, in addition to papers on conditioning in pigeons and mathematical models of concept learning, he produced multiple chapters bringing Hilgard’s classic *Theories of Learning* up to date. And then, to our surprise, Gordon turned his research almost entirely to visual imagery and other techniques for improving recall.

To return to my story, Gordon did not kick me out of his office, but got me working on a memory-span experiment. While running it, I discovered something unexpected: The to-be-remembered items were visual, and responses were written, but confusion errors reflected how the items were pronounced. With Gordon’s agreement, I dropped the experiment and designed a new one to investigate this interesting phenomenon.

Alas, a few weeks later Gordon alerted me to a recent article by R. Conrad, in the *British Journal of Psychology*, showing that I had been scooped!

As an advisor, I think, Gordon was like a parent teaching a child to ride a bike. He knew just when to provide a steady hand, and when to let go.

## Roberta Klatzky

*Carnegie Mellon University*

I was one of a cohort who entered Stanford’s “math psych” program in the period where cognitive psychology was nascent. Guided by the luminaries of mathematical learning theory, we struggled with now-classic issues: Had people learned anything about a concept if they kept making errors in classification? How many slots are in that short-term memory buffer? We students carried a copy of the “ABC book” by Atkinson, Bower, and Crothers as we trudged to the infamous Friday seminar where Gordon held sway. Gordon was intellectually demanding, more than a bit intimidating (at least to me), and kindness itself underneath. He and Sharon hosted the students for evening get-togethers—what a welcoming pair they were! In more recent times I had opportunities to see Gordon at APS meetings and was honored by being asked to introduce him for an award. I think he would be touched by our reminiscences and would then wave them away with his version (earthy, no doubt!) of an “aw, shucks.”

## Stephen M. Kosslyn

*Harvard University*

Gordon Bower had an immeasurable positive effect on my life, both professionally and personally. During my first quarter as a graduate student, Gordon was on leave but I had obtained a preprint of a chapter he wrote on his work on mental imagery. One line began “If visual mental images are like pictures, and can be scanned and the like . . . .” I read this and realized that if visual mental images are like pictures that could be scanned, then the farther people scanned across the visualized object, the longer it should take them. This turned out to be correct, and was the basis of my first-year research project, first solo publication, and then much of my career. The irony is that Gordon edited out that sentence in his final draft!

I took an unusual path as a graduate student because my original advisor resigned from the faculty and left me without an advisor. I consulted with many faculty and basically did my own work for the first year. When I presented that work to the weekly “Friday Seminar,” Gordon—as was his habit—was very direct, honest, and highly critical. He took seriously my answers to his questions. A week later Gordon happened to run into me at a vending machine, and we started talking. We ended up sitting down and talking about science for over an hour. After that, he started showing up at my office (one floor above his) to bring me reprints and preprints that he thought I would find interesting. He made time to talk to me even before I was officially his student. Gordon was a fantastic advisor: He was a master at hitting just the right balance between guidance and giving us freedom to explore and make mistakes.

I’ve never met anyone else remotely like Gordon, and marvel at what a huge impact he had—not just on the field, but also on my and so many other people’s lives.

## Alan G. Kraut

*APS Executive Director Emeritus*

Gordon Bower was always a good time! Many will talk about Gordon’s enormous contributions to our science, and he’ll deserve every accolade. But I’ll also remember Gordon for his hearty laugh and the delight he took in jumping headlong into the action in professional and social events.



Gordon took leave from Stanford when he was APS President to come to Washington as visiting scholar at the National Institute of Mental Health (NIMH). He and Sharon rented a Connecticut Avenue apartment in the heart of D.C. And once I got over my shock that the President who was supposed to be three time zones away was now just down the road (meaning no more time difference excuses, as in, “Sorry, Gordon. I was out of the office the last five times you called.”), Gordon quickly became an extension of the APS staff. I remember he invited the entire staff over to the apartment for happy hour. Some were hesitant to mix business with pleasure, unsure what to make of an invite from this towering (literally and figuratively) figure in psychological science. Any worry evaporated as Gordon and Sharon welcomed us all.

My wife, Jane Steinberg, and I enjoyed many wonderful dinners with the Bowers. Most memorable was a family-and-friends Maryland crab fest at our home, hastily moved indoors due to rain. Gordon hauled and dried off furniture, all the while telling stories of his baseball days to Jane’s dad. Then Gordon hammered away at crabs like an old pro. When he saw Jane at NIMH where she also worked, he’d always chuckle and ask if the living room still smelled like crabs.

Gordon and I often visited the director of some federal agency or double teamed some congressional office. A meeting might start awkwardly, but, invariably, there was Gordon’s outsized personality quickly putting it on a winning track. And Gordon was a bargain. When he put in for a meal reimbursement, it was often just for a Whopper—in fact, I believe he holds the record for the smallest meal reimbursement request ever at APS!

### Elizabeth Loftus

*University of California, Irvine*

I first laid eyes on Gordon Bower a half century ago. He was that terrifying professor at Stanford who tore into graduate students during the Friday



Bower (left) with APS Fellow Anders Ericsson, a cognitive psychologist at Florida State University. Both men died on June 17.

seminars with aggressive questions. We grad students bonded over that common ordeal. I had no idea then how important a role he would later play in my life.

As I developed my own interests in human memory, I naturally read many of Gordon’s papers. I especially appreciated his broad interests in how to process material for better learning, and his contributions to mnemonics. But what lots of others may not be writing about is how Gordon popped on the scene to provide support and comfort during hard times. For example, when I began working on rich false memories, and consulting on behalf of accused defendants in cases that rested on dubious claims of massive repression of memory, I became a target of hostility leveled by repressed-memory pa-

tients and some of the therapists who helped them recover these dubious memories. Those objectors sent angry emails to my colleagues, and tried to get professional organizations to rescind their invitations to have me speak. They filed complaints, and even a lawsuit. In the midst of this turmoil, Gordon send me a cherished email. It read in part “The idea that someone would try to sue the Southeastern Psychological Association to keep you off the program strikes me as extremely bizarre. It can’t succeed. I’m really sorry all this is happening to you; it seems the result of your sticking your head up above the crowd of cowering cowards.”

I’ve tried to follow Gordon’s example, and send support to my fellow academic colleagues when they are facing difficulties of the sort I faced.

### Lynne Reder

*Carnegie Mellon University*

Gordon’s scientific and intellectual curiosity was famous. He never lost interest in the fields he had conquered, but he was always excited to learn about new ones. Unless he thought the new idea was garbage (he would probably have a more colorful description), he would jump right in to follow up on these cool new ideas, perfecting studies that were often better than the first ones. He was delighted to hear what others were doing and offered great suggestions and predictions based on their presentations to him.

One of my favorite Gordon stories is when I first attended the Friday afternoon seminar in Jordan Hall, which the cognitive faculty and graduate students attended.



I sat down in an empty chair at the foot of a large table. I was immediately told that that chair was reserved for Gordon Bower, and I quickly found another seat. Arnold Glass was about to describe his first-year project to the group. Arnie told this large audience that he could either present his first-year project or tell us about his comic book collection, and he asked for a vote. Virtually every hand was raised in favor of hearing about Arnie's comic book collection; everyone save one person: Gordon. After Gordon raised his hand in favor of hearing his first-year project, Arnie said "Well, after taking a weighted count, I will talk about my research."

Gordon was full of jokes that made everyone laugh, whether it was in the hallway, the elevator, or in a cab to a restaurant during Psychonomics. He also commanded everyone's respect with his keen intellect, penetrating questions, and desire to learn and explore all there was to know. The field has lost a giant, not just from his imposing size and booming voice, but from his intellect, wit, and passion for psychology. He is missed.

### Steven Sloman

*Brown University*

I arrived at Stanford with some trepidation, wondering if I'd fit in and if I'd keep up. I knocked on the office door of my new advisor. Gordon opened it, looked at me, and said, "So you're Sloman. What do you know about connectionism?" Gordon always got to the point, right away. No dilly-dallying and no flim-flam; just the facts, please. In 1985 he published a paper entitled "Failure to replicate mood-dependent retrieval." In anyone else's hands, such a paper would be castigating some competing researcher for shoddy research. Not Gordon. Gordon was deriding himself; he was famous for, among other things, demonstrating mood-dependent retrieval. Gordon wanted things to be

right. He expected the people around him to get things right. That ethic is what allowed him to play a central role in building a program in cognitive psychology at Stanford that included the likes of Herb Clark, David Rumelhart, Roger Shepard, Amos and Barbara Tversky, a program like no other. And he set only the highest standards for himself. That's why he is known variously as the father of cognitive psychology, of mathematical psychology, and of cognitive science, depending on the audience. And he worked hard at being a mentor. That's why his list of PhD students is long and, in some cases, highly distinguished. He gave everyone around him all the independence they could handle and enough respect to criticize their ideas. He fostered an esprit de corps in his department that I have yet to witness anywhere else 30 years later.

### Ewart Thomas

*Stanford University*

After I came to Stanford in 1972, Gordon and I occasionally interacted with each other's graduate students—future professors such as N.E. Cantor, A.P. Cole, T.W. Malone, and B.H. Ross. These interactions led sometimes to a student publication, but sometimes only to my having to apply salve to a bruised but resilient ego! The subfield in which we toiled was not a diverse one in those days. In my second decade at Stanford, I served as department chair concurrently with Gordon's term as associate dean of the School of Humanities and Sciences. He was a generous source of wisdom on the evaluation of academic portfolios, and on enhancing our faculty by using the University's affirmative action initiatives. These lessons proved invaluable when I was appointed dean a few years later.

During the past three years, Gordon and I had many conversations—first on our walks on or near campus, and then, as his condition deteriorated, at the home he shared with Sharon Bower, his wife of more than 6 decades. One of the many gifts from this period was Gordon's putting me in touch with Bob Audley, whom I had not seen in about 3 decades. I visited Bob and his wife, Vera Bickerdike, last September and made sure to thank Bob for his many kindnesses 5 decades earlier. But the true value of Gordon's gift became evident only days ago, when I learnt that Bob had just passed away. The sense of loss would comingle with the satisfaction from last year's visit in London, putting into focus my thankfulness that I was able to assure Gordon, not only of my debt to him, but also that of his many friends and colleagues. We will miss his inventive mind, his modeling of excellence and his intellectual leadership.

### Barbara Tversky

*Stanford University*

It seems that no matter what we aspire to do, we need giants to inspire us. Gordon was in the pantheon when I became enamored with memory as an undergrad. Imagine my astonishment when he discovered my PhD thesis before it was published, adding it to an influential chapter on imagery and memory he was writing. Later I had the good fortune to be a vicarious and eager student; still later, a close colleague at Stanford for more than 30 years and always a friend. He was exemplary beyond reach in each of those roles. He made each of us feel special as researchers, as colleagues, and as friends. That impeccably organized mind that kept track of a vast quantity of research also kept track of a vast social network buttressed by a firm set of values. He gracefully and effortlessly combined humanity and integrity. Gordon truly cared about each of us, as people, as professionals. I keep him close. ●

**See this article online for longer versions of many of these tributes.**

# LEARNING THE INTRICACIES OF INTOLERANCE

By C. Nathan DeWall

Verkuyten, M., Adelman, L., & Yogeeswaran, K. (2020). The psychology of intolerance: Unpacking diverse understandings of intolerance. *Current Directions in Psychological Science*. Advance online publication. <https://doi.org/10.1177/0963721420924763>

In August 2017, the Unite the Right rally took place in Charlottesville, Virginia. Neo-Nazis, white supremacists, and counterprotesters flooded the streets. Violence erupted when a white supremacist, James Alex Fields, Jr., rammed his car into a crowd of counterprotesters, killing one person and injuring 19 others. President Donald Trump declared that the Unite the Right rally had “very fine people on both sides.”

Amid Charlottesville’s chaos and carnage was a Muslim documentary filmmaker, Deeya Khan. Khan attended the rally with neo-Nazis to understand their intolerance. She went on to interview others who reviled her religion, beliefs, and practices. Khan’s resulting film, *White Right: Meeting the Enemy*, illustrated the intricacies of intolerance. In their article, Maykel Verkuyten, Levi Adelman, and Kumar Yogeeswaran (2020) present a framework for understanding the multifaceted psychology of intolerance.

Verkuyten and colleagues argue that intolerance takes three main forms:

**Prejudicial intolerance:** a rigid,

close-minded, and hostile approach toward others based on their group membership.

**Intuitive intolerance:** an automatic negative evaluation of an out-group member’s beliefs or practices.

**Normative intolerance:** a deliberate negative judgment of how an out-group member’s beliefs or practices conflict with one’s worldview.

Khan documented and experienced each type of intolerance. The white supremacists and neo-Nazis she interviewed held inflexible mental models of others that bred dogmatic thinking and actions (Allport, 1954; Rokeach, 1960). Such prejudicial intolerance contributed to Khan receiving death threats from people who viewed her with a rigid and hostile mindset.

Intuitive intolerance occurs when people automatically respond negatively to out-group members’ beliefs or practices. For example, even if people profess tolerance toward Muslims as a group, they may respond negatively to the Islamic tradition of wearing a headscarf (Helbling, 2014). Khan noted her experience with intuitive intolerance during her childhood in Norway, with many Norwegians having automatic negative reactions to her based on her group membership.

Normative intolerance is a deliberate process in which people weigh the consequences of negatively evaluating out-group members’ beliefs and practices. When people engage in normative intolerance, they reason that harm caused by out-group members’ beliefs and practices exceeds any downside associated with rejecting those beliefs and practices (Verkuyten & Yogeeswaran, 2017). Normative intolerance can explain how people believe they are tolerant toward others yet show intolerance to others’ beliefs and practices. Norway, the country Khan grew up in, for example, is often characterized as a paragon of egalitarian values. Yet the Norwegian parliament openly discriminates against Muslims, such as by prohibiting Muslim students from wearing burqas in school.

Teaching students about the psychology of intolerance can help them increase their self-awareness, improve their relationships, and enhance their compassion and regard toward other groups. Hence, the following activity aims to enhance both the understanding of intolerance and students’ well-being.

Instructors can begin by reviewing the three forms of intolerance that Verkuyten and colleagues (2020) identify. Once students understand the differences among those types of intolerance, show them the following information on two PowerPoint slides. For the discussion section, have students select a discussion partner in a face-to-face class; in a virtual class, instructors can

have the program automatically assign students to breakout rooms with one or two other students.

## The Intolerance Task

**Instructions:** We live in a time of extreme intolerance toward others. To reduce our intolerance, it helps to understand intolerance's three primary forms: *prejudicial intolerance*, *intuitive intolerance*, and *normative intolerance*. Reflect on how you have experienced each form of intolerance. Next, consider how a close relationship partner (e.g., romantic partner, close friend) has experienced the various types of intolerance. Finally, identify an out-group in your society and think about how members of that group have experienced the three types of intolerance.

**Discussion:** With one or two partners, share your personal experience

of intolerance. What happened in the situation? How often did it occur? When discussing your close relationship partner's intolerance experience, think about why it occurred. How did each form of intolerance affect your relationship partner differently?

When considering intolerance toward out-group members, ask yourself why they experience intolerance. Consider how these out-group members may feel about intolerance toward them. How might taking their perspective change your tendency to act toward them with various forms of intolerance?

Many psychologists, policymakers, and laypeople wish to promote tolerance. But these groups will struggle to bring about the change they desire without understanding different forms of intolerance. By diagnosing the problem as related to prejudicial, intuitive, or normative intolerance, people can identify how to address the problem of intolerance in diverse situations and societies. Such efforts are the first step in preventing future violence in the name of intolerance. ●

## References

- Allport, G. W. (1954). *The nature of prejudice*. Addison-Wesley.
- Helbling, M. (2014). Opposing Muslims and the Muslim headscarf in Western Europe. *European Sociological Review*, 30(2), 242–257. <https://doi.org/10.1093/esr/jct038>
- Rokeach, M. (1960). *The open and closed mind*. Basic Books.
- Verkuyten, M., & Yogeeswaran, K. (2017). The social psychology of intergroup toleration: A roadmap for theory and research. *Personality and Social Psychology Review*, 21(1), 72–96. <https://doi.org/10.1177/1088868316640974>

### QUOTE OF NOTE

*“We are learning that this virus, like so many human diseases, is a product of human behavior as much as biology. Illness prevention depends importantly on how we live our lives every day, and the psychology of behavior change is critical to understanding how to get healthy and stay that way. Controlling this virus depends on how effectively we encourage people to social distance, practice hygiene, wear masks, and avoid risk-compounding behaviors like smoking and vaping.”*

—APS Fellow Wendy Wood (University of Southern California), on how psychological science can contribute to the adoption of protective behaviors against COVID-19. Learn more about the National Academies report she coauthored on the topic at [psychologicalscience.org/behavior-guidance](https://psychologicalscience.org/behavior-guidance).

## EDITED BY C. NATHAN DEWALL

Teaching *Current Directions in Psychological Science* offers advice and guidance about teaching a particular area of research or topic covered in this peer-reviewed APS bimonthly journal, which features reviews covering all of scientific psychology and its applications. Visit this column online for supplementary components, including classroom activities and demonstrations:

[psychologicalscience.org/publications/teaching-current-directions](https://psychologicalscience.org/publications/teaching-current-directions).

# DIGITAL EMOTION REGULATION: USING DEVICES TO FEEL DIFFERENT

By Beth Morling

Wadley, G., Smith, W., Koval, P., & Gross, J. (2020). Digital emotion regulation. *Current Directions in Psychological Science*, 29(4), 412–418. <https://doi.org/10.1177/0963721420920592>

During a family beach trip, the teenagers enthusiastically engage with the family most of the week but periodically retreat into their phones. The adults worry: Are the kids addicted to their devices? Do they have undeveloped social skills? Perhaps there's a more constructive view. Forced togetherness among individuals with different personalities can generate emotions that people feel uncomfortable experiencing or expressing. It's possible a bit of social media distraction is helping the teenagers regulate their emotions.

Some journalists and scholars have argued that smartphones endanger our mental health (and, indeed, jumps in adolescent depression and anxiety occurred around the same time the iPhone became ubiquitous in the United States; Twenge, 2020). However, smartphones might also play a healthy role in our emotional lives by enabling a digital form of emotion regulation (ER). That's the argument made by Greg Wadley, Wally Smith, Peter Koval, and James Gross (2020), an interdisciplinary team of human-computer interaction scholars and psychologists, who wrote a theory-driven overview of how smartphones might be harnessed for ER.

In this work, ER is defined as “attempts to influence which emotions

one has, when one has them, and how one experiences or expresses these emotions” (Gross, 2015). We can regulate our emotions by changing our breathing, distracting ourselves, connecting with other people, even drinking alcohol. Depending on the situation, our goal may be to “downregulate” potentially harmful emotions (e.g., to feel less anxious before a presentation) or to “upregulate” potentially useful emotions (e.g., to feel angrier before a competition).

Researchers have started to study how people use digital technologies to regulate their emotions. For example, one intensive longitudinal study uncovered bidirectional relationships between app use and emotions. Using certain phone apps led to particular emotions (e.g., social app use preceded positive emotions), but certain emotions also preceded the use of particular apps (e.g., sadder emotions drove social app use; Sarsenbayeva et al., 2020). Another study found that some people's problematic phone use was associated with the desire to suppress emotions (Rozgonjuk & Elhai, 2019). Despite these studies, much of the research so far has been piecemeal, theoretical, and correlational. In response, Wadley, Sarsenbayeva, and Goncalves (2020) provide a framework for past and future work, based on James Gross's (2015) process model of ER.

To help students consider the possibility that people use devices for ER, first provide students with definitions of the terms “emotions” and “emotion regulation.” Then give students time to write a brief description of three recent times they used their smartphone or other digital device. After they've done so, ask:

- What emotions were you feeling before you started using your device?
- How did you use your device?
- How did you feel afterward?
- Did using your device change your mood or feelings in any way?

Students can share their answers to the questions with partners in a face-to-face classroom or an online breakout room, or they can post their answers to a Google document or discussion board.

Some students might share examples of feeling amused by an Instagram post, angered by someone's text, or saddened by seeing friends having fun without them. Such stories are usually examples of first-order “emotion generation,” which is different from ER. ER occurs later, when people evaluate their emotions, decide if they should try to modify them, and implement selected strategies (Gross, 2015).

Guide students to categorize examples of true ER by helping them slot their ideas into the table below. In a synchronous online session, you can paste this partially filled table into a Google document and invite students to provide their own examples.

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APS Fellow **Beth Morling** is professor of psychological and brain sciences at the University of Delaware. She attended Carleton College and received her PhD from the University of Massachusetts at Amherst. She teaches methods, cultural psychology, a seminar on the self-concept, and a graduate course in the teaching of psychology.

After reviewing students' ideas in the third column, point out the higher-order critical thinking they engaged in. First, they used theoretically derived categories of ER to further their own thinking. Second, the examples in the table illustrate how simple arguments about technology's goodness or badness are rarely accurate. Although some critiques of smartphone culture (like those of critical adults at the family reunion) emphasize the worst, devices can be helpful, too. Similarly, students might discuss whether digital ER is a good thing. You can prompt them: "Good for whom? Are there any risks or costs?" Perhaps a digital ER strategy (e.g., watching distracting videos) is effective in the short term but counterproductive in the long term.

Finally, you could deepen the discussion to emphasize the power of psychological theory for generating practical solutions as well as research questions. For example, Wadley, Smith, et al. (2020) point out that the development of many ER apps was driven by market forces, not by scientific or theoretical principles. Your students could come up with ideas for phone apps inspired directly by the theory above. ●

**References**

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1–26. <https://doi.org/10.1080/1047840X.2014.940781>

Rozgonjuk, D., & Elhai, J. D. (2019). Emotion regulation in relation to smartphone use: Process smartphone use mediates the association between expressive suppression and problematic smartphone use. *Current Psychology*. Advance online publication. <https://doi.org/10.1007/s12144-019-00271-4>

Sarsenbayeva, Z., Marini, G., van Berkel, N., Luo, C., Jiang, W., Yang, K., Wadley, G., Dingler, T., Kostakos, V., & Goncalves, J. (2020). Does smartphone use drive our emotions or vice versa? A causal analysis. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3313831.3376163>

Twenge, J. M. (2020). Why increases in adolescent depression may be linked to the technological environment. *Current Opinion in Psychology*, 32, 89–94. <https://doi.org/10.1016/j.copsyc.2019.06.036>

Wadley, G., Sarsenbayeva, Z., & Goncalves, J. (2020, April 2). Do devices help us regulate our emotions? *Pursuit*. <https://pursuit.unimelb.edu.au/articles/do-devices-help-us-regulate-our-emotions>

**EMOTION REGULATION STRATEGY EXAMPLES**

Emotion-Regulation Stage or Strategy (see Gross, 2015)	Example of Digital Emotion Regulation (adapted from Wadley, Smith, Koval, & Gross, 2020)	Students' Examples
Identification stage: Should I regulate this emotion?	Use a phone-based app to help identify emotional states and decide if regulation makes sense.  Notice that fellow social media users are criticizing one's expressed emotion.	
Selection stage: What strategy might work?	Read online about strategies that might work (such as those in this table).  Swipe through app icons on your smartphone.	
Implementation stage: employing an emotion-regulation strategy		
Situation selection: taking action to be in a situation that will give rise to desired emotions	Choose to watch videos rather than attend a social gathering.  Switch to an online discussion that features less conflict.	
Situation modification: taking action to alter a situation to change its impact	Use messaging tools to change work or family situations.  Listen to music while exercising for motivation or to feel happier.	

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Ananya Tiwari, cofounder of SwaTaleem, works with students on building socioemotional skills at their residential school in Haryana, India. SwaTaleem works within a cross-functional community framework to help stakeholders, including government officials, teachers, and the students themselves, to identify educational challenges. Currently, they're working on English as a second language.

## ANANYA TIWARI ON HOW EDUCATION CAN DETER EARLY MARRIAGE IN INDIA

### Ananya Tiwari Spotlight

Current role: Cofounder of SwaTaleem, 2018–present

Education: PhD in educational psychology, University of Illinois at Urbana-Champaign, 2018–present; postgraduate diploma in liberal arts Ashoka University, India, 2015–2016; master's in psychology Kanpur University, Kanpur, India, 2013–2015; bachelor's in chemistry St. Stephen's College, New Delhi, India, 2007–2010

Ananya Tiwari, a PhD student studying educational psychology with an emphasis on developmental sciences at the University of Illinois at Urbana-Champaign, cofounded and runs the SwaTaleem Foundation ([SwaTaleem.org](https://www.swataleem.org)). This international nonprofit works to enhance the educational outcomes of adolescent girls in India who may be prone to early marriage.

### From Chemistry and Neuroscience to the Classroom

I majored in chemistry in my undergrad, and then I transitioned into neuroscience. I was in a hardcore brain research space for a while, but on the side I engaged in education and volunteer work, and then I transitioned into that for good. For two years, I was a schoolteacher in rural areas back in India. I was working in classrooms, interacting with the families of the children, working with the leadership of the schools to better understand how resource allocation takes place.

I think those were very crucial years for me to understand more deeply how the classroom environment really works. It really made me very confident as to what works in reality and what doesn't, and my own set of experiences in low-resource settings. One thing that I really learned during this time was how to

**SwaTaleem** is running a crowdfunding campaign to support continuing education in rural communities during COVID-19. Please donate and show support: [milaap.org/fundraisers/support-900-adolescent-girls](https://milaap.org/fundraisers/support-900-adolescent-girls).

address power differentials in spaces with low literacy but huge levels of local contextual knowledge. Everything sort of boils down to working with people on different projects—we try to emphasize a lot of co-creation in our organization.

## Starting SwaTaleem

Child marriage is practiced in a lot of places. There are 223 million child brides across the globe. Specifically in India, there are still 102 million, according to the United Nations. We wanted to work with these girls to improve their academic outcomes, build socioemotional skills, and ultimately delay these marriages.

For us, there were two parts to starting a nonprofit. One is the internal commitment that you want to start working in this area and you want to be in this for the long term. The other is the development aspects for the organization you have to take care of externally.

SwaTaleem (meaning “self” and “owning your education” in Sanskrit and Arabic, respectively) took a lot of gestation time. I cofounded it with Vaibhav Kumar, who is currently operating from India. Both of us have been in the international-development sector for a while, and we’ve also had very immersive field experiences in low-resource settings. Just understanding the sociocultural context of adolescent girls who are prone to early marriage, understanding the educational processes

for them, developing expertise in terms of pedagogy and also the life skills and socioemotional skills required to work in this area took time to figure out internally.

Once that was done, of course, a lot of things followed, including our legal status and incorporation, fundraising plan, operational model, and recruitment. I think the first and the biggest thing is having that conviction that you want to start this. This is an area that’s extremely complex, and it will take a lot of time to see the effects. When the young girls grow up, their life outcomes will actually reveal how effective we’ve been, and that will take time.

## Socioemotional Skills Take Root

Child marriage is really a complex intersection of sociocultural layers. There’s this huge gender aspect to it. Theoretically, boys can also get married at younger ages, but early marriage disproportionately affects girls. Another aspect is rural spaces. Generally, families from rural settings are much more likely to get their daughters married at an early age. There’s an angle of low economic status; class and income also play a role.

Now, when we sort of zero in on education, there are two aspects to it in terms of what works in this scenario. One is that just by design, if we keep girls in schools—here we’re not yet talking about the kind of education that they are getting there, but just that in residential schools they are away from their families—we are sort of pulling them away from child marriage as time passes.

Secondly, we focus on what’s happening in the schools—the quality of education. There is a huge component of foundational literacy and socioemotional skills. These are the beliefs, attitudes, or behaviors that allow everyone—children, youth, adults—to manage themselves and to manage relationships with others, to make responsible decisions. These skills have been tied to academic outcomes, and also with long-term life outcomes.

What they learn within the classroom doesn’t tend to just stay in the classroom; it manifests itself in family negotiations as well, such as when they’re speaking to their fathers about when they want to get married or what their aspirations are in general.

At a societal level, when people see healthy, educated, and safe adolescent girls who are unmarried, who are leading their lives normally, it also sets a new normal. People want to see more and more such girls around them, and it can really change societal perceptions in that manner.

## Building Belonging

One of the ideas I am passionate about is longitudinally mapping the socioemotional skills of adolescent girls who are prone to early marriage. A very, very limited amount of literature on socioemotional skills is available, but even when we look at socioemotional skills in a broader global perspective, only about 14% of research studies were done in the Global South. This creates a huge gap when you want to understand populations at global levels. This is a quantitative piece of work where I’m basically trying to create measurement models around concepts like self-esteem, sense of belonging, perseverance, growth mindset, effort, beliefs, and learning orientation.

This project also led into a more qualitative piece of work on sense of belonging. When we think of girls in these situations, they have subtly but day in and day out been told that “Your only job is to get married early—you may be going to school, but you will never be able to work.” I really want to understand how this construct manifests itself for these girls when they may have a high sense of belonging within the school premises but at the same time are extremely aware that in society, they have less space. ●



# CALL FOR APPLICATIONS

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  - Applicants must not have had a leave with pay for the 5 years preceding the requested sabbatical (medical or pregnancy leaves are considered exceptions), including the entire 2020-2021 academic year. Sabbatical requests must be for the Academic Year 2021-2022.
  - Prior recipients are not eligible
- 

Applications may be submitted online: [www.cattell.duke.edu](http://www.cattell.duke.edu)



# OPPORTUNITIES FOR PURSUING A PASSION IN PSYCHOLOGY

By Sami Sorid



**Sami Sorid**  
College of William & Mary

**M**y passion for learning about human behavior and mental health dates back to grade school. But while I had no doubt that I wanted to pursue a career in psychological science, I had difficulty finding opportunities that aligned with my interests and allowed me to gain valuable experience. Luckily, I was able to get creative and find some amazing opportunities that helped me to grow as a student, a person, and, hopefully, a (future) psychologist. Here are some suggestions for other students considering majoring in psychology.

## Get Involved With a Nonprofit

One rewarding way to gain experience and make a tangible difference is by finding a nonprofit that aligns with your passions. There are nonprofits that center around everything from mental health to education programming. Additionally, volunteering may actually result in a

positive change in your well-being (Lawton, Gramatki, Watt, & Fujiwara, 2020). One of the first nonprofits that I became involved with was my local chapter of Mental Health America ([mhanational.org](http://mhanational.org)). This experience not only allowed me to volunteer for a cause I was passionate about but also gave me the inspiration and momentum to eventually start my own nonprofit to bring together two of my passions—cycling and mental health advocacy. I started Move for Mental Health ([moveformentalhealth.org](http://moveformentalhealth.org)) in 2016, and I hosted two bike rides to benefit mental health organizations, each with more than 250 participants in attendance. This has no doubt been one of the most important learning experiences in my life. I learned so much about what it means to be an advocate, but I was also able to learn firsthand how to plan large-scale events. Most often, nonprofits will appreciate any time you can offer while you gain greater insight into a topic you're passionate about.


## Look for Volunteer Research Positions

Perhaps you are interested in eventually applying to graduate school, or maybe you are passionate about a specific area of research. Although it can be intimidating to contact a researcher, being a research assistant can be an amazing opportunity to learn about the research process and help with a project you are interested in.

At the start of high school, I saw an amazing speech by a psychologist whom I greatly admire. I followed her work over the years and eventually reached out via email to let her know that I would be interested in helping around her lab in any way if she needed an extra set of hands (knowing that it was very unlikely that I would get a response). I ended up hearing back, which was exciting in itself, but she was understandably busy. I reached out again a year later, and she offered me a position as an intern in her lab for the summer. Not only did I meet amazing people that I still keep in contact with today, but I was also given the opportunity to present a final project to the entire lab. I will forever value this experience, as it gave me the confidence and skills I needed to move on to another research position in college. If you are looking for a place to start, I would highly suggest checking out research opportunities on the American Psychological Association website ([apa.org/education/undergrad/research-opportunities](http://apa.org/education/undergrad/research-opportunities)).

Additionally, if you have specific research interests, it may be beneficial to narrow your search to find labs that align with them. Personally, I am interested in research on obsessive-compulsive disorder (OCD) and have found the International OCD Foundation ([iocdf.org/research/](http://iocdf.org/research/)) to be extremely helpful. Engaging in research pays dividends far beyond building your academic resume—it can help you to develop critical skills, such as perseverance in the face of obstacles (Petrella & Jung, 2008). Additionally, you may be able to develop technical skills that will be incredibly helpful later in your career.

## Read!

Books are extremely helpful resources, whether you have a specific topic of interest or are looking for a comprehensive overview of popular topics in 

**Sami Sorid** is a junior at the College of William & Mary in Williamsburg, Virginia. She is majoring in psychological sciences and minoring in organizational leadership and management.

psychology. I have a growing collection of books that I know I can reference when I am curious about a research question or simply looking for a way to learn something new. If you are interested in current research in the field, it can be beneficial to start reading peer-reviewed articles that revolve around your interests. Databases like PsycInfo and PsycArticles can be especially helpful, as they allow you to search thousands of articles by keywords. Not only is reading a way to learn more about a subject that interests you, but it can also be a starting point for eventually beginning your own research project.

While collecting relevant books or articles, you may also start to notice gaps in the literature. If you end up pursuing research, you might be able to fill in those gaps and add to the literature someday!

Each of these resources and opportunities has helped me in my educational career—especially when I had no idea where to begin. If you're looking to get

into psychology, don't be afraid to start small. Each of these tips will help you to discover and pursue your passions on whatever path you choose. ●

## References

- Lawton, R.N., Gramatki, I., Watt, W., & Fujiwara, D. (2020). Does volunteering make us happier, or are happier people more likely to volunteer? Addressing the problem of reverse causality when estimating the wellbeing impacts of volunteering. *Journal of Happiness Studies*. Advance online publication. <https://doi.org/10.1007/s10902-020-00242-8>
- Petrella, J. K., & Jung, A. P. (2008). Undergraduate research: Importance, benefits, and challenges. *International Journal of Exercise Science*, 1(3), 91–95.



*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](https://psychologicalscience.org/members/apssc).*

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## ILLINOIS

### The University of Chicago

### Psychology Department

### Instructional Professor

The Division of Social Sciences at the University of Chicago invites applications for a part-time Instructional Professor (IP) in the Department of Psychology ([psychology.uchicago.edu](http://psychology.uchicago.edu)). This is a non-renewable position for winter and spring quarters during the Academic Year 2020-21.

The IP will teach 4 quarter-long undergraduate classes, including “Introduction to Statistical Concepts and Methods” and other introductory survey-level classes and upper level elective seminars in psychology. The IP also may be expected to participate in co-curricular activities that help support the undergraduate teaching mission of the department, including advising and mentoring undergraduates seeking careers in psychological science.

Applicants must have a PhD in experimental psychology or equivalent scientific area. Teaching experience with undergraduate courses focusing on basic research questions, methods or statistics in psychology is required. Preference will be given to candidates who can teach a wide range of classes in different areas of psychological science, and a strong commitment to undergraduate teaching.

Applicants must apply online at the University of Chicago’s Interfolio [website at apply.interfolio.com/78184](http://apply.interfolio.com/78184). Applications are required to include 1) a cover letter, 2) a current curriculum vitae, and 3) a teaching statement. In addition, as optional and if available, teaching evaluations from courses previously taught are strongly preferred, as well as syllabi from prior courses taught. Also, three letters of reference are required to be submitted online.

Review of applications will begin on October 5, 2020 and continue until the position is filled or the search is closed.

This position will be part of the Service Employees International Union.

We seek a diverse pool of applicants who wish to join an academic community that places the highest value on rigorous inquiry and encourages diverse perspectives, experiences, groups of individuals, and ideas to inform and stimulate intellectual challenge, engagement, and exchange. The University’s Statements on Diversity are at [provost.uchicago.edu/statements-diversity](http://provost.uchicago.edu/statements-diversity).

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Job seekers in need of a reasonable accommodation to complete the application process should call 773-702-1032 or email [equalopportunity@uchicago.edu](mailto:equalopportunity@uchicago.edu) with their request.

# Recognizing Excellence

## CALL FOR NOMINATIONS

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.**

### 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**

### 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.

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### 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.

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### 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**

To submit a nomination or for more information, including past recipients and nomination materials, please visit **[www.psychologicalscience.org/awards](http://www.psychologicalscience.org/awards)**

# ANNOUNCEMENTS

Let us help you promote your grant opportunities and upcoming events (including virtual).  
Send info to [apsobserver@psychologicalscience.org](mailto: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](https://obssr.od.nih.gov/research-support/funding-announcements).

### 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](https://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 program has five goals:

- identifying and supporting NSF-sponsored research and technologies that have the potential for accelerated commercialization;

- supporting prior or current NSF-sponsored investigators, institutions of higher education, and nonprofit organizations that partner with an institution of higher education in undertaking proof-of-concept work, including the development of technology prototypes that are derived from NSF-sponsored research and have potential market value;
- promoting sustainable partnerships between NSF-funded institutions, industry, and other organizations within academia and the private sector with the purpose of accelerating the transfer of technology;
- developing multidisciplinary innovation ecosystems that involve and are responsive to the specific needs of academia and industry; and
- providing professional development, mentoring, and advice in entrepreneurship, project management, and technology and business development to innovators.

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](https://bit.ly/3ac7JDw)

## MEETINGS & EVENTS

Join APS this fall to attend live webinars and enjoy recordings of past events. Visit [psychologicalscience.org/conventions/virtual](https://psychologicalscience.org/conventions/virtual) to learn about the Student and Early Career Webinar Series; Government Research, Funding, and Policy Webinars; and other virtual events.

### Sex and Gender Dimension in Frontier Research

November 16, 2020

Location TBD

[erc.europa.eu/event/sex-and-gender-dimension-frontier-research](https://erc.europa.eu/event/sex-and-gender-dimension-frontier-research)

### 13th Annual Conference on the Science of Dissemination and Implementation in Health

December 15-17, 2020

Online Event

[academyhealth.org/events/2020-12/13th-annual-conference-science-dissemination-and-implementation-healthresearch](https://academyhealth.org/events/2020-12/13th-annual-conference-science-dissemination-and-implementation-healthresearch)



# STUDENT RESOURCES

## 1 Funding & Recognition

Student Grant Competition  
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**Lotte van Dillen**  
Leiden University

### What led to your interest in the role of affect in decision making?

Studying the role of affective processes in decision making allows you to look at the body, the brain, the (social) context, and actual behavior, all at the same time. I've always had a hard time choosing between subjects, so for an omnivore like me it makes for a perfect topic.

### A central premise of your research is that our mental capacity is limited, which can suppress sensory experiences and lead to unhealthy behaviors. How can we adjust our priorities to change our practices in healthier ways?

I think it's true that we're now more distracted than ever. To illustrate, in two different surveys (in prep) we've found that Dutch citizens engage in multitasking during at least 75% of their meals and snacks. Technological and economic developments have realized a society where we can do whatever we want wherever we are at any moment in time. That said, I don't think this means we should all start meditating or train our attention in other ways; you can build simple habits in your daily lives to prevent too much distraction. These include treating consumption moments as

# DRIVEN FROM DISTRACTIONS

**Lotte van Dillen**, an associate professor of psychology at Leiden University, studies the role of affect in consumption, financial decision making, and judgment, especially under trying circumstances.

separate activities and putting away your devices while eating. When you decide to indulge, you might as well get the most out of those unhealthy but tasty calories.

### Some of your more recent research has focused on financial behavior.

#### What do you consider your most significant findings in that area?

Most of our work in this domain involves the negative impact of financial strain on decision making, and we collaborate with policymakers, credit companies, and banks to minimize those effects. Having financial stress compromises one's capacity to adequately weigh and prioritize information. So anything that helps people in this process is useful, such as clarifying the total costs of a loan next to its monthly rates, or reminding people of their appointments with practitioners. Policymakers sometimes wrongly attribute people's mistakes and failures to being lazy or unmotivated, but in reality, regulations are often just too difficult to decipher when people are busy making ends meet.

### What are the objectives of Work Hard, Play Hard?

In this project, together with my long-term collaborator Wilhelm Hofmann, we aim to examine the consequences of distracted consumption. We argue that mental load, induced by concurrent

tasks or concerns, interferes with reward processing from consumption. Because people strive to obtain pleasure from the goods they consume, they then employ compensatory behaviors to up-regulate hedonic value. We advance a new framework to understand this phenomenon, which we have labeled hedonic compensation. Through the integration of lab-based behavioral neuroscience experiments with experience sampling studies in the field, we hope to gain more insight in the relationship between mental capacity, hedonic experience, and consumption.

### How have law enforcement and legal professionals applied your research to their work?

It takes time to establish a fruitful relationship with stakeholders outside academia, and you should be as willing to incorporate new insights into your work as the other way around. I feel like only now I have come to the point where I am able to provide some useful advice. For example, in a recent project for the police, we have studied the use of visual evidence during crime investigations and interrogations. Because most people treat such evidence as "more objective", there can be a risk of overinterpretation, on both the side of the police and the suspects. We summarized our 120-page report, which involved lab and field experiments and structured interviews, in a one-page infographic. ●



See this article online for a longer version of the interview, including van Dillen's suggestions for students entering the job market, at [psychologicalscience.org/observer/dillen](https://psychologicalscience.org/observer/dillen).

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](mailto:apsobserver@psychologicalscience.org).

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