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March Methodology Madness

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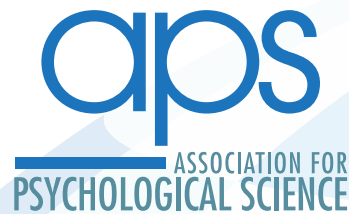
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Psychological Science as a Source of Wisdom for Antitrust
What Do Consumers Really Want?

Eleanor M. Fox *is the Walter J. Derenberg Professor of Trade Regulation at New York University School of Law. She is much in demand as an expert in competition (antitrust) law, both in the US and internationally, and has advised many US governing bodies as well as those of numerous younger countries in Africa, Europe, and Asia on the complexities of and needs for for competition law. Some of that thinking is evident in the piece she generously wrote for the* Observer. *She is a fellow of the American and New York Bar Foundations, served on the Executive Committee and as Vice President of the Association of the Bar of New York City and the American Bar Association Antitrust Law Section, has coauthored or edited more than eight books on competition law, and served on numerous national and international committees. Among her many honors are an honorary doctorate from the University of Paris-Dauphine and awards from the Global Competition Review, the Academic Society for Competition Law, and the Antitrust and Economic Regulation Section of the Association of American Law Schools.*
-**Barbara Tversky**
APS President

Eleanor M. Fox

My field is competition law, also known as antitrust. This body of law is designed to control corporate market power and its abuses. Most countries in the world have competition laws. The United States was the pioneer, having adopted its antitrust law in 1890. In the United States for most of a century, antitrust was the economic democracy of markets. Its purpose was to make markets fair for business and consumers, and in general for the people, lest we be governed economically by tyrants of trade – monopolies.

But the narrative has changed. Beginning with the Reagan Administration in 1981, it commonly has been said: Antitrust is for "consumer welfare," which means making people as consumers better off. But what does that mean? We have put the definition in the hands of economists. Economists generally define the term as commensurate with the efficiency and competitiveness of business firms. Antitrust has become a technocratic discipline, and the economists are the technocrats in chief.

I am honored to have been invited to write an essay for this issue on how psychological science may influence the law and policy of antitrust. This gives me the occasion to ask: What insights from psychological research might help to define consumer welfare and, derivatively, the goals of antitrust?

In the background is a very public debate. We hear every day a public outcry against abuses by the big data/high tech firms, expressions of fear that they are controlling our lives, and a call for "antitrust" to do something about it. In my technocratic circles, I hear this response: Consumer welfare is the goal of antitrust, and economics proves that antitrust lawsuits against the high tech firms will kill their incentives and harm consumers.

How do we know what makes people as consumers better off? Should psychological science, no less than economics, be our guide? If we open our minds to the lessons of psychological science, might we better understand what it means to improve consumers' welfare?

From psychology literature (Kahneman, 2011; Kahneman et al., 1986; Fehr et al., 1999), we might learn that people care about fairness. They want equality of treatment and equality of opportunity. People care about a fair distribution of the gains from trade and economic transactions. People care about being *relatively* well off, not just abstractly getting more wealth. People place more value on not losing what they have than on winning what they do not have. People get angry when they feel they are being exploited and used by powerful corporations. By definition, when we provide more of what people care about we improve their welfare; when we provide less, we decrease their welfare.

Let me give some examples of how our antitrust laws operate under the rubric of consumer welfare, and consider how well the application of the law in the name of consumer welfare matches with what makes people better off.

Here is a really brief summary of one event and two legal cases. In 2015, Martin Shkreli bought the license for the drug Daraprim, which averts a deadly parasite for people with HIV/AIDS, and he raised its price 5000% from $13.50 to $750 per pill. People called for antitrust action to stop the outrageous exploitation, only to learn that US antitrust law (unlike European and Asian laws) does not prohibit very high prices. This position is staunchly defended by advocates of the consumer welfare standard, on grounds that firms must be free to set prices (if they do it alone and not in conspiracy); that otherwise we impair the

price mechanism, undercut the efficiency of markets, and involve judges in a task for which they are not suited – setting prices. That is the dominant view of antitrust experts in America.

Second, the association of dentists in California had "rules of ethics." The rules prohibited the members from advertising discounts, and from advertising "inexpensive fees," "reasonable fees," and "gentle care." When sued by the Federal Trade Commission (FTC), the association responded that its rules were necessary because price-cutting dentists might be deceptive rogues. The FTC was not persuaded. It held that the rules were anticompetitive and illegal. But the Supreme Court overturned this holding. It said that the rules might be procompetitive and enhance consumer welfare by stopping deception, and that a much more complex trial was necessary.

Third, last year the US Supreme Court decided a case against American Express. AmEx (and Visa and MasterCard before they settled the cases against them) had clauses in their contracts with merchants that effectively said to the merchant: Don't steer your customers away from my card. Don't tell them there are cheaper cards (on which the merchant pays a lower service fee). Don't offer them a discount to use the cheaper cards. American Express responded that it needed to keep the low-price information away from customers because it needed the money to give more rewards to its card holders. The first court said that the restriction was anticompetitive and illegal; but, in the name of consumer welfare, the Supreme Court disagreed. The Court said that the information "gag" on the merchants was not anticompetitive because the AmEx card holders could gain more value in frequent flyer points than the merchants, and derivatively, consumers would lose in higher costs.

Such are economists' calculations of what enhances the welfare of consumers. There are innumerable more examples. They are complex to relay, and were there more time and space one might ponder the large mergers, such as AT&T/Time Warner, the second biggest media merger in history. The firms won their antitrust battle because the government could not prove to the satisfaction of the judge that the merged firm would gain power and leverage.
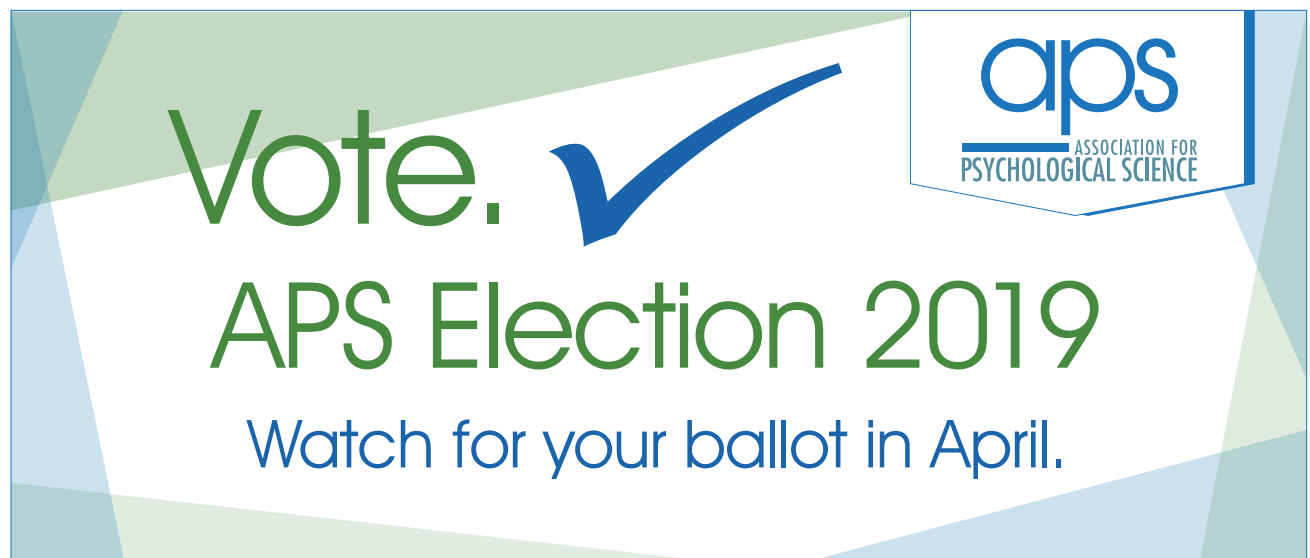
If the notion of consumer welfare were informed by the science of what people want, the stage would be set for the exact opposite results in every case I described above. At least as a working hypothesis, people would want prescription drugs at a competitive price and would not worry excessively about the difficulties of identifying an extraordinarily high price and condemning it. People would want dentists to be able to advertise discounts and would leave it to regulators to weed out deceptive advertising. People would expect their local merchants to be free to tell them about a cheaper credit card and offer them a discount if they use one, and might be outraged by a big-brand card's gagging the merchants to support more frequent flyer points for its elite card-holders.

What does this mean for antitrust? It means one of two things. First, it could mean that antitrust experts who swear by the "consumer welfare" standard should stop proclaiming that antitrust is for the welfare of consumers and say what they really mean: that antitrust is for the efficiency of markets and the competitiveness of business. Alternatively, it means that experts who are truly trying to please the people as consumers are wrong in their assumptions about what people as consumers want, and they should recalibrate antitrust law to satisfy revealed consumer welfare. They may find that the real welfare of people as consumers aligns fairly well with the economic democracy of markets. ◉

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Researchers Propose a New Framework for Understanding Self-Control: *PSPI*

Whether we want to spend less time looking at screens, to eat more vegetables, or to save money for retirement, we often strive to forego the behavior we want to engage in for the one we think we *should* engage in. In a new report, leading researchers in behavioral science propose a new framework that outlines different types of self-control strategies and underscores how effective self-control entails much more than sheer willpower.

The report, authored by APS Fellow **Angela L. Duckworth** (University of Pennsylvania), **David Laibson** (Harvard University), and **Katherine L. Milkman** (The Wharton School of the University of Pennsylvania), is published in *Psychological Science in the Public Interest*. The report is accompanied by a commentary from APS Fellow **George Loewenstein** (Carnegie Mellon University), a leading researcher in the science of decision making.

Based on their comprehensive review of available research, Duckworth, Laibson, and Milkman propose a framework that organizes evidence-based self-control strategies along two dimensions: approach and agent. They observe that sometimes the best self-control strategy involves changing the objective situation, while other times it's more effective to change how the situation is interpreted. And some strategies are most effective when we initiate them ourselves, while others are better implemented by someone else, such as the government or an employer.

"This framework yields four ways to reduce self-control failures," says Duckworth. "All of the approaches we describe fall into these four categories, and all are better than expecting individuals to just muster more willpower."

The four categories include:

- **Self-deployed cognitive strategies**: Individuals employ techniques that help to change the way they think, making long-term goals more appealing or easier to accomplish relative to short-term temptations. Examples include goal setting (e.g., identifying clear, specific, and achievable academic goals), planning (e.g., making *if-then* plans that outline how to handle financial issues in different situations), and self-monitoring (e.g., tracking eating behavior by keeping a food diary).

- **Self-deployed situational strategies**: The individual changes her own environment to create incentives, obstacles, and affordances that favor long-term goals over short-term temptations. Examples include self-imposing constraints (e.g., using an app that restricts your phone usage), bundling temptations (e.g., only watching your favorite TV show while exercising), and modifying your situation (e.g., removing junk food from the house).

- **Other-deployed cognitive strategies**: Policymakers, practitioners, and others employ techniques that prompt individuals to think in ways that favor long-term goals.

Examples include descriptive social norms (e.g., informing individuals that their peers or neighbors engage in eco-friendly behavior), social labeling (e.g., linking alcohol consumption with a distinct social group), and joint evaluation (e.g., requiring the relative strengths of all job candidates to be assessed at one time).

- **Other-deployed situational strategies**: Policymakers, practitioners, and others establish incentives, penalties, affordances, or constraints aimed at reducing self-control failures. Examples include hard paternalism (e.g., cigarette taxes, speed cameras, energy savings incentives), microenvironments (e.g., making healthy foods more accessible in certain areas), and defaults (e.g., automatically enrolling employees in retirement savings plans).

The strategies included in the four categories cross traditional academic boundaries, drawing from insights in psychological science and economics. Classifying the strategies in this way highlights the tradeoffs inherent in the different approaches, which are especially relevant to policymakers, employers, healthcare professionals, educators, and other practitioners working to address pressing issues that stem, at least in part, from failures in self-control.

Identifying four types of self-control strategies that go beyond willpower sends an important message, Loewenstein writes in his commentary, considering that people often believe that willpower is sufficient despite its high failure rate. One of the reasons people tend to fail in New Year's resolutions is "naivety about the limitations of the brute-force approach and ignorance of the far more effective strategies enumerated in the review," he writes.

But Loewenstein also notes some important caveats to keep in mind when interpreting the research, which the researchers also acknowledge in the report. Many studies have examined self-control strategies in small groups of participants over brief periods of time, which raises questions about whether they will remain effective if implemented at a broader scale and how long the effects will last.

Duckworth, Laibson, and Milkman hope that their review helps to integrate existing research on self-control from several disciplines into a comprehensive whole.

"There is an urgent need for a cumulative and applied science of self-control — one that incorporates insights from theoretical traditions in both psychological science and economics," Duckworth, Laibson, and Milkman write. "We hope this review is a step in that direction." ◐

The full report is available at
www.psychologicalscience.org/selfcontrol

OBSERVATIONS

Longitudinal Data Show No Evidence of Teens' Social Media Use Leading to Depression

Longitudinal data from adolescents and young adults show no evidence that social media use predicts later depressive symptoms, according to research published in *Clinical Psychological Science*. However, the findings do show that relatively higher depressive symptoms predicted later social media use among adolescent girls.

This research stands in contrast with recent claims that adolescents' use of social media may lead to depression. Those claims are based primarily on studies that examined associations between average social media use and average well-being measured at a single point in time.

"You have to follow the same people over time in order to draw the conclusion that social media use predicts greater depressive symptoms," says lead author Taylor Heffer of Brock University. "By using two large longitudinal samples, we were able to empirically test that assumption."

Beginning in 2017, Heffer and coauthors surveyed 6th, 7th, and 8th graders in Ontario, Canada once a year for 2 years. The researchers also conducted annual surveys of undergraduate participants, beginning in their first year of university over a span of 6 years.

To measure depressive symptoms, the researchers used the Center for Epidemiological Studies Depression Scale for the young adults and an age-appropriate version of the same scale for the adolescents. All participants answered two questions about their average daily hours spent on social media – one measuring weekday use and the other measuring weekend use. The participants also answered questions about other screen time, such as watching TV, and non-screen activities including doing homework and exercising.

Heffer and colleagues analyzed the data separately for each age group and gender.

The results showed that social media use did not predict later depressive symptoms among adolescents or college undergraduates. Rather, greater depressive symptoms predicted more social media use over time, but only among adolescent girls.

"This finding contrasts with the idea that people who use a lot of social media become more depressed over time. Instead, adolescent girls who are feeling down may turn to social media to try and make themselves feel better," says Heffer.

Overall, the research suggests that the fear surrounding social media use and its impact on mental health may be premature. "Policymakers also have recently been debating ways to tackle the effects of social media use on mental health," Heffer says. Evaluating whether fears about the impacts of social media have merit requires prospective longitudinal studies that allow researchers to examine whether it is social media use that predicts depressive symptoms (rather than the other way around), while controlling for other potential influences. As Heffer and colleagues note, individual differences in personality, motivation, and current well-being are likely to play a critical role in the relationship between media use and future well-being.

"There may be different groups of people who use social media for different reasons," Heffer explains. "For example, there may be a group of people who use social media to make social comparisons or turn to it when they are feeling down, while another group of people may use it for more positive reasons, such as keeping in contact with friends."

Examining the role that these differences play will help clarify the ways in which social media interacts with mental health, with implications for parents, policymakers, and healthcare professionals alike.

Coauthors on the research include Marie Good of Redeemer University College and Owen Daly, Elliott MacDonell, and Teena Willoughby, all of Brock University.

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AMPPS Review Shows Shortcomings in Policy Statements on the Effects of Media Use

As different forms of media infuse everyday life, several organizations and associations have issued public statements about the effects of media exposure. However, a scholarly review suggests that many of these statements do not accurately reflect the available scientific evidence, offering overly simplified or one-sided accounts of the scientific research. The findings are published in *Advances in Methods and Practices in Psychological Science*.

"Although there certainly are some pretty good media policy statements out there, many of the policy statements were not very accurate and where there were inaccuracies, these tended to lean in the direction of conclusions that were generally scarier than could be defended by the actual data," says psychology researcher **Christopher J. Ferguson** of Stetson University, who coauthored the paper with fellow media researchers. "There's no assumption of bad faith, of course, but it seems many professional organizations are struggling to develop policy statements that effectively communicate the complicated, messy and nuanced nature of many media effects fields."

Ferguson and his coauthors are all researchers with expertise in some aspect of media effects, although they don't always draw the same conclusions about the impact of different forms of media. They consider ongoing discussion and debate to be an important part of the scientific process, but they noticed that many organizations' policy statements about media effects didn't acknowledge that any such debate was taking place.

"We were curious to know how often this was happening and, if this was happening a lot, point out directions that could lead to more accurate statements in the future," says Ferguson.

Policies Date Back to the 90s

Using Google Scholar and targeted web searches, the team of researchers identified media effects policy statements produced by professional advocacy organizations that represent scholars or clinicians in relevant fields (e.g., American Academy of Pediatrics, American Psychological Association). These searches produced 24 public statements, with the earliest issued in the early 1990s. The statements covered impacts resulting from media violence, screen time, sexual content, and more general effects.

The research team broke into subgroups to evaluate each type of statement, using a standardized rubric focused on specific characteristics: citation bias, false consistency, lack of clarity of transparency, overgeneralization, exaggeration, insulation, and noncredible sources.

In general, the researchers found a noticeable increase in the frequency of media effects statements over the last 30 years. Most of the 24 policy statements came from organization-based committees and were produced by scholars who had interest and expertise in the field.

The research team found that the majority of statements, 19 out of 24, showed citation bias, citing evidence that supported a specific conclusion without mentioning existing evidence that did not support the conclusion. Similarly, 22 out of 24 statements were characterized by false consistency, implying that the evidence of media effects was more consistent than it was in actuality. And only one statement made any reference to the existence of diverse viewpoints among scholars in that area.

The team concluded that 15 out of the 24 statements overgeneralized results, applying media effects findings to contexts far beyond the scope of the original research. And 19 out of 24 statements made exaggerated claims about media effects, suggesting public health or other societal impacts without noting the small or trivial size of the effects found in many research studies.

Most of the statements did not provide detailed information or supporting data.

Cautionary Notes

Ferguson and colleagues suggest that these findings have important implications for both policymakers and parents.

"Since these are 'policy statements,' presumably they are staking out policy positions the organizations would like to see policymakers move on. But policymakers may need to be cautious not to mistake these policy positions for a fair summary of current research," Ferguson says. "The other group of concern is parents, since many parents may become needlessly worried about media effects when policy statements proclaim the evidence to be stronger, more consistent, or more applicable to real life behaviors than it actually is."

Based on their findings, the research team devised a checklist for best practices that, if followed, would substantively improve the accuracy and quality of such policy statements:

- Acknowledge disconfirmatory data
- Focus on the magnitude of effects
- Acknowledge limitations of research methods
- Solicit balanced views
- Avoid secondary sources
- Distinguish scientific statements from advocacy statements
- Release fewer statements
- Be mindful of unintended harms
- Prioritize and encourage open science practices ◉

Reference

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OBSERVATIONS

New Replicability Project Bolsters Research Correlating Personality Traits and Life Outcomes

Ample research has identified links between personality traits and dozens of life outcomes, ranging from marital stability to vocational success. But how reliable are those findings?

Results of a replication project, results of which will be published in *Psychological Science,* show that this literature provides a reasonably accurate map of the relationship between personality and various aspects of one's life.

The results of the project "provide grounds for cautious optimism about the personality-outcome literature," author **Christopher J. Soto** of Colby College writes.

Soto and his *personality lab* conducted preregistered, high-powered replications of 78 previous trait-outcome associations included in a comprehensive literature review by APS Fellow **Daniel J. Ozer**, University of California, Riverside, and Veronica Benet-Martínez, Pompeu Fabra University, and published in 2006 in the *Annual Review of Psychology*. Soto's replication effort is dubbed the "Life Outcomes of Personality Replication (LOOPR)" Project.

The project looked specifically at previously identified links between traits in the Big Five model — openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism — and 48 individual, interpersonal, and institutional outcomes ranging from subjective well-being to personal behavior to occupational performance.

Soto and his research assistants then sent questionnaires to four online samples totaling more than 6,100 adults, using a version of the widely-used Big Five Inventory to measure personality traits, as well as various measures of life outcomes, such as career and relationship success, political beliefs, and criminal history. (Some of the outcome measures were abbreviated to conserve assessment time.) Concurrently, Soto and his lab team registered their hypotheses, design, materials, and analysis plans on the Open Science Framework.

In the analysis, Soto found that about 87% of the previous trait-outcome links replicated, although the effect sizes were smaller than those originally reported in 63% to 71% of cases, and *substantially* smaller 30% to 42% of the time. (The variability reflects some partial corrections for the fallibility of abbreviated outcome measures, he says in the report.)

Soto cites some limitations in the LOOPR project. The new data come from cross-sectional, self-report surveys completed by online research panels, whereas some of the original studies used longitudinal designs or other sources, including in-person interviews and community samples. He notes that that replication effect sizes tended to be larger when the original study used a self-report survey to measure a specified outcome. As such, the LOOPR project represents a first step in examining the reliability of trait-outcomes associations, with the next phase ideally involving longitudinal designs and alternative sampling and assessment methods. ◉

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SOUND BITE

"I'd like to observe that the term 'behavioral economics,' as it is used today, the kinds of things that behavioral economists are supposed to do, that's really social psychology. It's principles about how to affect behavior. It is remarkable, and some people find it sad, that social psychology had to disguise itself as economics before it had an impact on the culture."

-Nobel laureate and APS William James Fellow **Daniel Kahneman**, for the radio show and podcast *On Being with Krista Tippett*

How Marginal Are "Marginally Significant" *p*-Values?

As the research community debates whether the *p*-value should be swept into the statistical dustbin, the question remains: How are authors actually presenting *p*-values? Are authors reporting only the values that make the .05 cutoff or are they reporting every *p*-value, significant or not? And for the values that reside above .05, how often do authors succumb to the temptation of the "marginally significant"?

In a 2016 study in *Psychological Science*, Pritschet and colleagues found cause for concern, showing an increase in the number of articles containing marginally significant results reported over time. But Tilburg University researchers **Anton Olsson-Collentine**, **Marcel A. L. M. van Assen**, and **Chris H. J. Hartgerink** found a different trend when they accounted for base rates. These findings appear in *Psychological Science*.

Olsson-Collentine and colleagues argue that since authors now report more *p*-values per article than they used to, more articles will also contain *p*-values between .05 and .10. Consequently, even if the proportion of *p*-values reported as "marginally significant" stays the same over time, one would expect more articles to contain "marginally significant" results. In other words, observing that more articles contain "marginally significant" results doesn't necessarily mean that the tendency to report any given *p*-value as "marginally significant" is actually increasing.

The researchers used regular expressions to search for and automatically extract *p*-values from articles published in 70 American Psychological Association journals between 1985 and 2016.

Searching for any mention of "margin*" and "approach*" in the 200 characters preceding and succeeding any *p*-value result, the researchers obtained a final sample of 42,504 *p*-values between .05 and .10.

In line with results reported in Pritschet et al. in 2016, the results showed an increase in articles reporting "marginally significant" results in the two journals, *Journal of Personality* and *Social Psychology* and *Developmental Psychology*.

But closer inspection of the data revealed a more complex story. In *Developmental Psychology*, the percentage of *p*-values between .05 and .10 that were described as "marginally significant" actually decreased over time, but this was masked by an increase in the overall number of reported *p*-values that fell between .05 and .10.

This finding "demonstrates the importance of distinguishing results at the level of the articles from those at the level of *p*-values," Olsson-Collentine and colleagues write.

Overall, the researchers found results described as "marginally significant" to be quite common, characterizing about 40% of all the *p*-values in the sample that fell between .05 and .10. Across nine psychology disciplines represented in the journals, they found the practice to be most common in journals focused on organizational psychology (45% of *p*-values between .05 and .10) and least common in those focused on clinical psychology (30% of *p*-values between .05 and .10).

Of note, the results showed that the percentage of *p*-values reported as "marginally significant" decreased over time across all journals, and also within most of the disciplines. In no discipline was there evidence of an increasing percentage of "marginally significant" results, although the trend was largely stable over time for several disciplines.

Olsson-Collentine, van Assen, and Hartgerink suggest several possible explanations for decreasing usage of "marginally significant" to describe individual *p*-values, including increasing statistical awareness on the part of researchers and increasingly stringent editorial criteria.

"Such a high prevalence is a call for disciplines and journal editors to examine where they stand on the reporting of *p*-values as marginally significant," Olsson-Collentine says. "We recommend not interpreting *p*-values between .05 and .1 as marginally significant due to their low evidential value, and note that doing so might be an indication of post-hoc flexibility in decision rules." ◉

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QUOTE OF NOTE

"Psychology, which makes extensive provision in its curriculum for teaching research methods, uses textbooks that make little or no effort to inform students in depth about the nature of the scientific method. Nor does its curriculum foster a critical appreciation of the various research methods that its textbooks deal with. Consequently, both psychological scientists and psychology students tend to have a limited understanding of the scientific method, which in turn contributes to a misuse of research methods and a sub-optimal level of scientific literacy."`

APS Fellow **Brian D. Haig**, University of Canterbury, New Zealand, in his new book *Methods Matter in Psychology: Essays in Applied Philosophy of Science* (Springer, 2018).
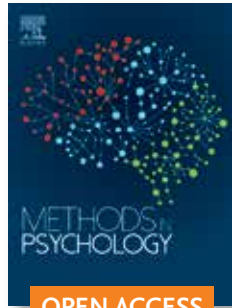
NIH Training Opportunities in Psychological Science

By Richard P. Moser, Erica L. Spotts, and Aneka Reid

Psychological scientists have a ripe opportunity to train at the leading medical research agency in the United States. The National Institutes of Health (NIH) is leading several high-profile initiatives, including the Cancer Moonshot, the All of Us program, and the BRAIN initiative, as part of its larger mission to promote health and reduce morbidity and mortality related to problems like heart disease, diabetes, and cancer. All of these initiatives require multidisciplinary teams and include researchers trained in psychological science. To help create this workforce, one fundamental aspect of the NIH mission is to cultivate and train the next generation of researchers who are needed to understand the multiple determinants of disease prevention, diagnosis, and treatment. These factors encompass the genetic, biological, policy-related, and behavioral and psychological, including lifestyle and the environment.

NIH trainees are mentored by experts in their area of research; meet and network with other NIH trainees and staff; attend and present at scientific conferences, workshops, and symposia; learn about the grants process; and receive training in their areas of interest. Trainees perform research, engage in quantitative and qualitative analyses, complete literature reviews and portfolio analyses, give presentations and write manuscripts, develop websites and contribute to applied communication and project management efforts, among other activities. More information about training programs at the NIH can be found at *www.training.nih.gov/programs*.

The specific training opportunities that focus on psychological science are supported by several institutes within NIH, including the National Cancer Institute (NCI) and the National Institute for Mental Health (NIMH), along with the Office of Behavioral and Social Sciences Research (OBSSR). These examples demonstrate the breadth of opportunities, including awards to individuals to train at NIH, awards to attend NIH courses and workshops, and grant awards to institutions that the NIH supports. Many other offices, institutes, and centers at NIH offer training opportunities and can be contacted directly. The training slots typically require you to be a US citizen or permanent resident — but some fellowships are available to foreign nationals. You should check eligibility information carefully when applying.

Richard (Rick) P. Moser *is the Training Director and Research Methods Coordinator in the Behavioral Research Program's Office of the Associate Director, which is housed within the Division of Cancer Control and Population Sciences at the National Cancer Institute.* **Erica L. Spotts** *is a Health Scientist Administrator for the Office of Behavioral and Social Sciences Research.* **Aneka Reid** *is a Science Education Coordinator in the Office of Fellowship Training at the National Institute of Mental Health.*

In addition, there are individual research career development awards that are typically given to those seeking to transition to an independent academic research position after they finish their NIH fellowship. For more information, visit *https://researchtraining.nih.gov/programs/career-development/K01*.

Training Trends

Several trends in training health researchers have emerged in the 21st century. One is the emphasis on training a diverse and culturally competent generation of researchers. The demographic make-up of the United States is changing, and our research workforce needs to reflect those changes to make sure all those who seek training are afforded opportunities for an exceptional experience.

A second trend is a focus on working in multidisciplinary teams. Now more than ever, research groups representing a range of disciplines are needed to study and understand the multiple factors — from cellular to societal — that interact to affect disease prevention, progression, and treatment. Researchers trained in psychological science are needed to provide their unique perspectives, but they also need to converse and understand the language of their colleagues from different disciplines and be able to synthesize information to better understand the problem and provide solutions.

Lastly, the NIH has adopted a strategic plan for data science which highlights the need for advanced analytic methods to glean useful information from Big Data. One of the goals of this plan is to enhance the data science workforce to make sure the next generation of researchers has expertise in advanced quantitative methods and computational skills and can adhere to principles such as FAIR (Findable, Accessible, Interoperable, and Reusable) (FAIR; Wilkinson et al., 2016). This emphasis on data science methods is especially critical for those with backgrounds in psychological science, who need to be trained in the latest, cutting-edge methods and to be able to apply these to answer novel research questions.

Although OBSSR, NCI, and NIMH offer the most abundant training opportunities for psychological scientists, additional institutes and centers will have further opportunities that you should examine if interested. Visit *https://www.nih.gov/institutes-nih/list-nih-institutes-centers-offices* to learn about the various institutes and centers.

OBSSR

Because OBSSR is an office rather than an institute, opportunities for training look different than at other NIH locations. OBSSR supports training through many mechanisms and channels, as the office has the latitude to work with institutes and scientists to

> ❝ The NIH emphasis on data science methods is especially critical for those with backgrounds in psychological science, who need to be trained in the latest, cutting-edge methods and to be able to apply these to answer novel research questions. ❞

OBSSR also supports some training opportunities in addition to the courses supported through grant mechanisms. For example, the Office hosts the Training Institute for Dissemination and Implementation Research in Health (TIDIRH). This institute combines an online course with 2 days of in-person training to provide participants with the skills needed to conduct dissemination and implementation research across all areas of health and healthcare.

For many years, OBSSR and the National Heart Lung and Blood Institute have supported a Summer Institute on Randomized Clinical Trials. The program aims to provide a thorough grounding in the conduct of randomized clinical trials to researchers and health professionals interested in developing competence in the planning, design, and execution of randomized clinical trials involving behavioral interventions.

OBSSR and the National Institute of Drug Abuse (NIDA) sponsor a Training on Optimization of Behavioral and Biobehavioral Interventions. This short course is designed to help participants become adept at using the multiphase optimization strategy (MOST) to optimize behavioral interventions. MOST is rooted in engineering and provides a framework for engineering efficacious and effective behavioral interventions so that they can be developed in a systematic way.

OBSSR also recently issued a T32 RFA (RFA-OD-19-011: Predoctoral Training in Advanced Data Analytics for Behavioral and Social Sciences Research) that focuses on innovative computational and/or data science analytic approaches and their incorporation into training for the future BSSR health research workforce. The intent is to develop a cohort of specialized predoctoral candidates who will possess advanced competencies in data science analytics to apply to an increasingly complex landscape of behavioral and social health-related big data.

OBSSR has a long history of hosting Science and Technology Fellows from the American Academy for the Advancement of Science (AAAS). This fellowship program helps outstanding scientists and engineers gain firsthand experience with policymaking at all levels. AAAS works closely with NIH to place trainees at various institutes and offices at the NIH. OBSSR is an ideal location for trainees interested in health research and healthcare, given its coordinating function. Trainees have broad latitude in the projects and activities that they are involved in and can experience a broad range of scientific and health-related opportunities.

In addition to the AAAS fellowship program, OBSSR has hosted trainees from other associations, including the Society for Research in Child Development (SRCD); and the Population Association of America (PAA).

National Cancer Institute

Within NCI, the Behavioral Research Program (BRP) is a good fit for those with backgrounds in psychological science. The program's interest areas include health communication; understanding cancer-related behaviors such as tobacco use, physical activity, diet/nutrition, sun safety, and alcohol use; and understanding the role of basic psychological processes, such as affect and cognition, on cancer control. Given that

identify gaps and needs in the training landscape, and then can assist in developing solutions. OBSSR has worked with various NIH institutes to develop training initiatives that are core to the OBSSR mission. For example, the Office has conducted many preconference workshops and seminars, which are an effective method for disseminating information about innovative new methods or providing grants-writing information to young investigators. OBSSR is also able to cofund training grants from other NIH institutes that fit within the office's interests and mission.

OBSSR has funded an R25 program to fund short courses at academic institutions on innovative methodologies in the behavioral and social sciences (more information on the eight courses can be found at *https://obssr.od.nih.gov/training/ training-supported-by-the-obssr/*). This initiative has been recently reissued (RFA-OD-19-012 Short Courses on Innovative Methodologies and Approaches in the Behavioral and Social Sciences) to augment skill development in cross-cutting and state-of-the-art approaches that may not be covered in traditional educational environments.

approximately 50% of all cancer cases could be prevented by eliminating risky behavioral factors like smoking, sedentary lifestyles, and poor nutrition, it's more important than ever to train the next generation of cancer researchers to have expertise in behavioral research.

While in the BRP as an intern, you can be involved in research, perform data analysis, write manuscripts, conduct literature reviews, get project management experience, and provide content and update websites, depending on your background, training, and interests. One thing to note: the BRP does not offer lab-based training opportunities; for those, you should consider NIMH.

So, how do you join the BRP? Many BRP trainees are part of the Cancer Research Training Award (CRTA) mechanism. These full-time trainees are usually here for at least 1 year. Postdocs may be able to extend up to 5 years, while bachelor's and master's trainees can extend up to 2 years and 3 years, respectively. CRTA opportunities are open on a rolling basis and can be found, when available, on the BRP Career and Training page. Those interested in summer internships should sign up through the NIH Summer Internship website at *www.training.nih.gov/programs/sip*. Once registered, applicants can reach out to BRP researchers to inquire about placements. The BRP also hires trainees who are accepted into the NCI Communications Fellowship (NCF, formerly known as the Health Communications Internship Program, HCIP), which provides recent graduate students with training in either health communications or science writing.

Lastly, BRP welcomes fellows from the Cancer Prevention Fellowship Program (CPFP), which is open to those who have obtained a doctoral-level degree (e.g., PhD, MD, JD). and provides 3-4 years of mentored research with a focus on cancer prevention. NCF applications open in January, and CPFP applications in May.

National Institute of Mental Health

NIMH provides an intramural (lab-based) Research Training Program that offers research fellowships at all academic stages. Unique to the NIMH is the Office of Fellowship Training (OFT), which promotes and guides career and professional development offerings to the trainee community. This hybrid approach of emphasizing research and career development prepares the next generation of young scientists for a life in biomedical research.

NIMH investigators conduct research in areas ranging from mechanisms of brain function at the behavioral, cellular, and molecular levels to clinical investigations into diagnosis, treatment, and prevention of mental illness. The program is a great match for those interested in research areas such as neurodevelopment, neurobiology of cognition and affective neuroscience, neural circuits, synaptic function, and neuroimaging. Some of the most common psychiatric illnesses studied at NIMH are schizophrenia/psychosis, major depressive disorder, obsessive-compulsive disorder, and bipolar disorder.

Trainees are hired using the NIH Intramural Research Training Award (IRTA) and Visiting Fellows Program (VFP, for foreign nationals) mechanisms. These trainees work a full-time schedule and receive practical hands-on training in a laboratory setting with a Principal Investigator (PI). Above and beyond basic lab skills, trainees are exposed to technologies such as fMRI and MEG, and techniques such as electrophysiology, optogenetics, and cognitive/behavioral testing paradigms. IRTA training can take the form of a summer fellowship for high school to graduate level students, a postbaccalaureate fellowship (of 1-2 years for BS/BA degree recipient), or predoctoral and postdoc fellowships lasting up to 5 years and open to US citizens, permanent residents, and foreign nationals. Candidates interested in any of these programs should contact NIMH PIs of interest directly to find out about position openings. Additionally, candidates will need to make sure an application is submitted for the desired fellowship experience (only summer, postbaccalaureate and predoctoral experiences require a formal application).

NIMH uses the central IRTA application systems administered by the Office of Intramural Training & Education (OITE) for summer, postbaccalaureate and predoctoral fellowships. For postdoctoral fellowships, candidates are encouraged to contact investigators directly and check job openings at OITE Postdoc Positions at NIH or *Neuroscience@NIH*. For help navigating the NIMH program site or understanding the training opportunities, contact OFT at *NIMHfellowships@intra.nimh.nih.gov*. ◗

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Follow the NCI Behavioral Research Program (BRP) Twitter account, *@NCIBehaviors*, to stay in the loop on the latest publications, resources, career and training opportunities, and much more.

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A Theory of Ontogeny**

Michael Tomasello
Duke University and the Max Planck Institute
for Evolutionary Anthropology, Germany

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**How to Change Norms,
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Princeton University

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The Importance of Cultural Context

Expanding Interpretive Power in Psychological Science

By Laura M. Brady, Stephanie A. Fryberg, and Yuichi Shoda

Psychological research relies heavily on homogenous samples and settings, but there are many ways that the field can include more cultural considerations in the exploration of human emotions, cognition, and behavior.

In 1995, psychological scientists Betty Hart and Todd R. Risley made a splash with their influential book *Meaningful Differences in the Everyday Experience of Young American Children,* in which they estimated that by age 4, poor children heard 32 million fewer words than wealthy children did. Furthermore, they argued that the number of words children hear early in life predicts later academic outcomes, potentially contributing to socioeconomic educational disparities. Interventions encouraging low-income parents to talk to their children gained traction even at the highest levels of US government. The Obama administration, for example, launched a campaign to raise awareness about the "30-million word gap."

Twenty-three years after Hart and Risley's book appeared, however, Douglas E. Sperry (Saint Mary-of-the-Woods College), Linda L. Sperry (Indiana State University), and Peggy J Miller (University of Illinois at Urbana-Champaign) published analyses of five studies that called in question the existence and magnitude of a "word gap". Using Hart and Risley's measurement of words spoken to a child by a primary caregiver, Sperry and colleagues found inconsistent support for a word gap among a more diverse sample of wealthy and poor families.

This publication incited widespread debate. Some critiqued Sperry and colleagues' measurement and conclusions, while others focused on the initial study's limitations. Many suggested Hart and Risley conflated race and social class, as a majority of the poor families were Black while a majority of the wealthy families were White. Others questioned their methodology, speculating that the anxiety of being observed by educated White researchers could cause poor Black parents to speak less to their children than they normally would. Others argued Hart and Risley's narrow focus on words spoken by a primary caregiver to a child reflected White, middle-class cultural norms. Children in other cultural contexts hear a great deal of language from other caregivers (e.g., siblings, extended family) and their ambient environments, but Hart and Risley excluded this language. Thus, in cultural contexts in which extended family plays a large role in child rearing, focusing on the primary caregiver's language may result in an incomplete representation of the richness of a child's linguistic environment. In fact, using more expansive measurements of words children heard at home, Sperry and colleagues found that children in some lower-income communities heard *more* words than wealthy children did.

While psychological scientists surely have something to learn from both iterations of the "word gap" study, we have equally as much to learn from the debate itself. The criticisms raised illustrate a problem that we suggest results from a lack of *interpretive power* in psychological science. Interpretive power refers to the ability to understand individuals' experiences and behaviors in relation to their cultural contexts. It requires understanding that cognition, motivation, emotion, and behavior are shaped by individuals' cultural values and norms. The same behavior takes on different meanings in diverse cultural contexts, and different cultural contexts promote divergent normative responses to the same event.

To accurately understand human behavior, psychological scientists must understand the cultural context in which the behavior occurs and measure the behavior in culturally relevant ways. When they lack this interpretive power, they risk drawing inaccurate conclusions about psychological processes and thus building incomplete or misguided theories.

Failures of interpretive power take many forms, including:

- failing to acknowledge that culture shapes psychological processes, even if scientists do not fully understand how;

- failing to consider whether a measure or methodology captures a psychological process as it unfolds for the population studied;

- assuming findings generalize to other cultural contexts unless otherwise demonstrated; and

- not understanding how researchers' own cultural experiences shape their assumptions, decisions, and conclusions.

To build stronger theories, psychological scientists can leverage interpretive power. The burden rests not just on individual researchers, but on the field as a whole to implement practices that attend to cultural influences. Using the culture cycle framework (*see Figure on page 26*), we describe changes at four key levels of psychological science — ideas, institutions, interactions, and individuals — that can help the field build interpretive power

Developing Culture-Conscious Research Questions

One of the key problems underlying psychology's lack of interpretive power is the fact that a majority of research is conducted by people from WEIRD (Western, Educated, Industrialized, Rich, Democratic) contexts and relies on WEIRD samples. Developing interpretive power involves recognizing that many psychological theories describe human behavior in these particular cultural contexts, and that we know less about processes in non-WEIRD contexts. We must embrace the idea that culture shapes human experiences and reject the notion that any one group or context represents "normative" human functioning.

Scientific institutions (e.g., journals, universities, professional organizations) can play a powerful role in promoting attention to culture. For example, journals can showcase research with non-WEIRD samples to communicate the possibilities and importance of conducting research with diverse populations. Journals can also encourage greater transparency regarding studies' cultural limitations by requiring researchers to specify the cultural contexts from which they recruited subjects and to which they expect findings to generalize. Critically, generalizability should not determine whether research is published. Studies that include small, difficult to recruit, or culturally specific samples should be considered potentially informative so long as they use sound methodologies.

Laura Brady, Stephanie Fryberg, and *APS Fellow* **Yuichi Shioda** *are all research scientists at the University of Washington. They can be reached by contacting* laurab33@uw.edu.

Figure: The Culture Cycle Framework (adapted from Markus & Conner, 2013)

Ideas
what are "good" research questions, methodologies and practices.

Institutions
universities, journals, funders, professional organizations.

Interactions
with scientists, subjects, scientific institutions.

Individuals
psychologists' own beliefs, attitudes, and behaviors.
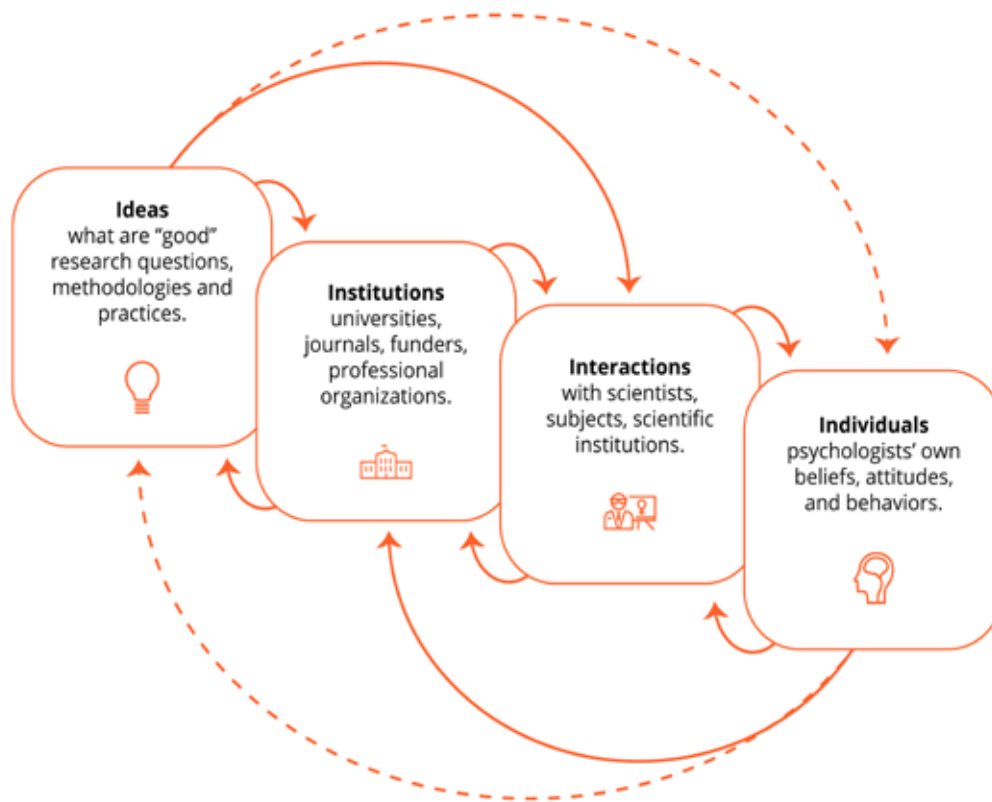
Given that research with non-WEIRD populations is often more expensive and time consuming than research with WEIRD samples, institutions also have a responsibility to support and incentivize non-WEIRD research. Universities can account for the time, expense, and potential impact of non-WEIRD research when making tenure decisions, and professional organizations can create competitive awards to support this work. Perhaps most critically, universities can recruit psychological scientists from diverse backgrounds to join and lead departments.

Cross-cultural interactions also provide an avenue for increasing interpretive power. Both psychological institutions and individual scientists can build trusting, mutually beneficial relationships with diverse communities, many of which the field has historically mistreated, misunderstood, or ignored. In building these relationships, psychological scientists can work to reserve judgment and design research to address the communities' concerns and needs.

On an individual level, building interpretive power requires exposure to different cultures and perspectives. Seeking diverse collaborators can render more nuanced and informed research questions. APS William James Fellow Hazel Markus and APS Fellow Shinobu Kitayama, for example, generated their influential theory of cultural models of self by comparing their own cultural experiences. Psychological scientists can also engage with the theoretical frameworks and knowledge about non-WEIRD cultures that are abundant in other academic disciplines (e.g., sociology, history, anthropology) to generate more culturally-informed research questions.

Using Culture-Conscious Research Design

In psychological science, hypothesis testing is the gold standard, yet many of our research designs are developed by and tested among people from WEIRD cultural contexts. Furthermore, a priori hypotheses often stem from researchers' own experiences and thus often regard WEIRD processes. Embracing hypothesis generating methodologies can reduce WEIRD bias in research design. Ethnographic observations, focus groups, case studies, content analyses, and archival analyses all provide means of gaining insight about non-WEIRD cultural contexts that can inspire further experimental work. Leveraging interpretive

power in research design means placing greater value on such methodologies.

To a great extent, scientific institutions serve as gatekeepers of "high-quality" research design. Journals, for instance, dictate which methodologies are acceptable for publication, with the most prestigious journals valuing — or even requiring —hypothesis testing. Because WEIRD samples are often most feasible for these designs, non-WEIRD populations and processes remain underrepresented in high-impact journals. To build interpretive power, journals can make space for a wider range of methodologies. They can recognize that, given the dearth of non-WEIRD research, exploratory work is often most helpful in advancing understanding of these cultural contexts. Journals can also make space for non-WEIRD findings that diverge from previous research with WEIRD populations. These findings can be considered not as "failures to replicate", but as information about how psychological processes might differ cross-culturally.

Interactions with experts inside and outside of the field can also expand psychological scientists' methodological repertoires and lead to more culture-conscious research design. Disciplines that use information-rich methodologies provide examples of how to thoroughly document qualitative and quantitative non-experimental findings. By drawing inspiration from research that probes different levels of society and uses diverse means of gathering and integrating data, we will find more generative methodologies to build interpretive power in our own field.

Finally, just as psychological scientists conduct a priori statistical power analyses, they can also conduct a priori interpretive power analyses. They can examine whether their methodology has been tested with non-WEIRD populations and learn about the cultural influences likely to shape the processes they study. Simultaneously, researchers can reflect on how their own cultural values and assumptions shape their empirical approach. Many fields encourage positionality statements, wherein researchers describe their own experiences in relation to their subject. This practice can help psychological scientists identify how cultural biases or misunderstandings might enter their research.

Implementing Culture-Conscious Analysis and Interpretation

Many of the statistical analyses psychological scientists use to test hypotheses treat unexplained variance as noise. Some of these variations reflect divergent cultural processes, but they are often averaged out by the majority or dismissed as outliers. Psychological researchers can commit to supplementing these analyses with practices that better illustrate variations and provide opportunities to explore potential cultural influences.

Journals can encourage psychological scientists to explore and report cultural variations. Journals can also encourage researchers to use online supplements to identify outliers and report information that may explain their variation.

Increased cross-lab communication also provides opportunities for better understanding cultural variation. Although any given dataset may include only a handful of participants from a particular culture, researchers exploring similar phenomena can pool data to create larger, more diverse samples for testing hypotheses about how and why psychological phenomena manifest differently across cultures.

Finally, psychological scientists can make a concerted effort to explore variation in their own data. Scatterplots, histograms, and spaghetti plots, for example, illustrate the diversity of effects across subjects. Rather than focusing on average effects, researchers can examine the percentage of participants for whom the hypothesized effect occurred and the percentage for which no effect or an opposite effect occurred. These small changes can elucidate cultural variation.

Stronger Theories, Better Understanding

Debates over "failed replications" such as the "30-million word gap" research can leave psychological scientists feeling anxious and unmotivated. However, they also point to the truth that our science has room for improvement, and they offer important critiques that can help our field grow. By leveraging interpretive power to understand a diversity of human experiences, psychology can build stronger theories and a more comprehensive understanding of human behavior. Perhaps more importantly, we will be better positioned to contribute our expertise to alleviate problems facing communities across the globe. ◉

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Studying People in Their Local Environments

Using a Mobile Research Lab to Study Person-by-Situation Interactions

By Neil A. Lewis, Jr.

A mobile lab is allowing Cornell University researchers from different disciplines to study hard-to-reach populations in their home settings.

P sychological science is ostensibly interested in the behavior and mental processes of a variety of people, not just processes related to college students and Mechanical Turk workers responding to surveys over the internet. Gaining the generalizable knowledge we seek requires studying a variety of people in a variety of contexts; it is the only way to know whether and how generalizable our findings really are.

And if we want our research to inform social policies, then it should include a broader composition of people and situations. Only then can we understand how policies that are generated from our findings might differentially affect individuals and subgroups.

Vehicles to Move Us Forward

The implications I've just outlined are the main reasons my colleagues and I have been shifting our scientific work to include more mobile research methods. In the Department of Communication at Cornell University, we have a mobile research lab that allows us to diversify both the samples and settings in which we conduct social scientific research. The lab was originally funded by the National Institutes of Health, specifically for the purposes of including diverse and hard-to-reach populations in research on health messaging.

The lab is the size of a small RV and is fully equipped with five private data collection stations. It enables us to recruit and study people in their own environments. To date, my colleagues and I have used it to study youth and adults from rural and urban settings throughout the Northeast region of the United States. For one set of studies, my colleagues wanted to examine how socioeconomically disadvantaged youth and adult smokers respond to different kinds of warning labels on cigarette packages. So they took the lab to a variety of urban and rural communities to recruit participants. They not only learned about how individuals attended to and processed the labels (via eye-tracking and surveys), but also how living in those different environments affects people's smoking decisions. These lessons are important for both the science and any policies that result from it.

My own ongoing research with the mobile lab is combining a variety of methodological techniques including geographic air-quality mapping, eye-tracking, and surveys to examine how people make sense of, and are motivated to respond to, information about the environmental health hazards in their surroundings. My collaborator in systems engineering used transportation data to develop fine-grained maps depicting levels of air pollution in different neighborhoods of the greater New York City

In his ongoing research with the mobile lab, **Neil Lewis, Jr.**, is combining air-quality mapping, eye-tracking, surveys, and other techniques to examine how people make sense of, and are motivated to respond to, information about the environmental health hazards in their surroundings.

area. Since we have rich information about people's differential exposure to pollutants, as well as data about the demographic composition of neighborhoods, we have been taking the lab to neighborhoods of differential exposure and composition to examine how residents of those neighborhoods respond to the information as functions of both their individual characteristics and features of their local environments. Conducting the study in this way allows us to learn about relevant psychological processes in an ecologically valid way.

As researchers, the mobile lab has had several benefits. First, it has forced us to think more critically about factors that influence participants, and their implications for both the theories we can advance and any practical knowledge generated from our work. It provides vivid reminders that people are embedded in broader ecological systems and that we must think carefully about how multiple dimensions of those systems interact with individuals when developing our models. That modeling and theorizing inevitably leads to important discussions about measurement, construct validity, and generalizability across samples and settings.

Human Rights Considerations

Using the mobile lab has also reminded us of another important lesson. In the 1948 Universal Declaration of Human Rights, the United Nations General Assembly declared that "everyone has the right freely to...share in scientific advancement and its benefits" (UNESCO, 2005). When we take the mobile lab into

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(particularly underserved) communities, it provides opportunities for people to exercise that human right — to have their perspectives reflected in the scientific record … a record that often influences the policies and practices that govern their society. That reality is not lost on our participants. I have been deeply moved by people's gratitude for being allowed to participate in our study because, to use their words, "no one usually cares what [they] think." It is as if they have learned from scientists that, to borrow from The Op-Ed Project (2017), "some people narrate the world; other people have their world narrated for them;" that there are some people who get to be part of the scientific record and others who do not.

To quote Audrey Squire (2015), "historical exclusivity often has a way of turning into present and institutionalized tragedy. Whose story gets told matters." What I've learned from using the mobile lab is that when we make decisions about who to include in our studies, and which environments to study, we are (implicitly) making decisions about whose psychological processes matter to us. And those decisions have important implications for the knowledge we create, and the policies and practices that are developed as a result of that knowledge. ⊙

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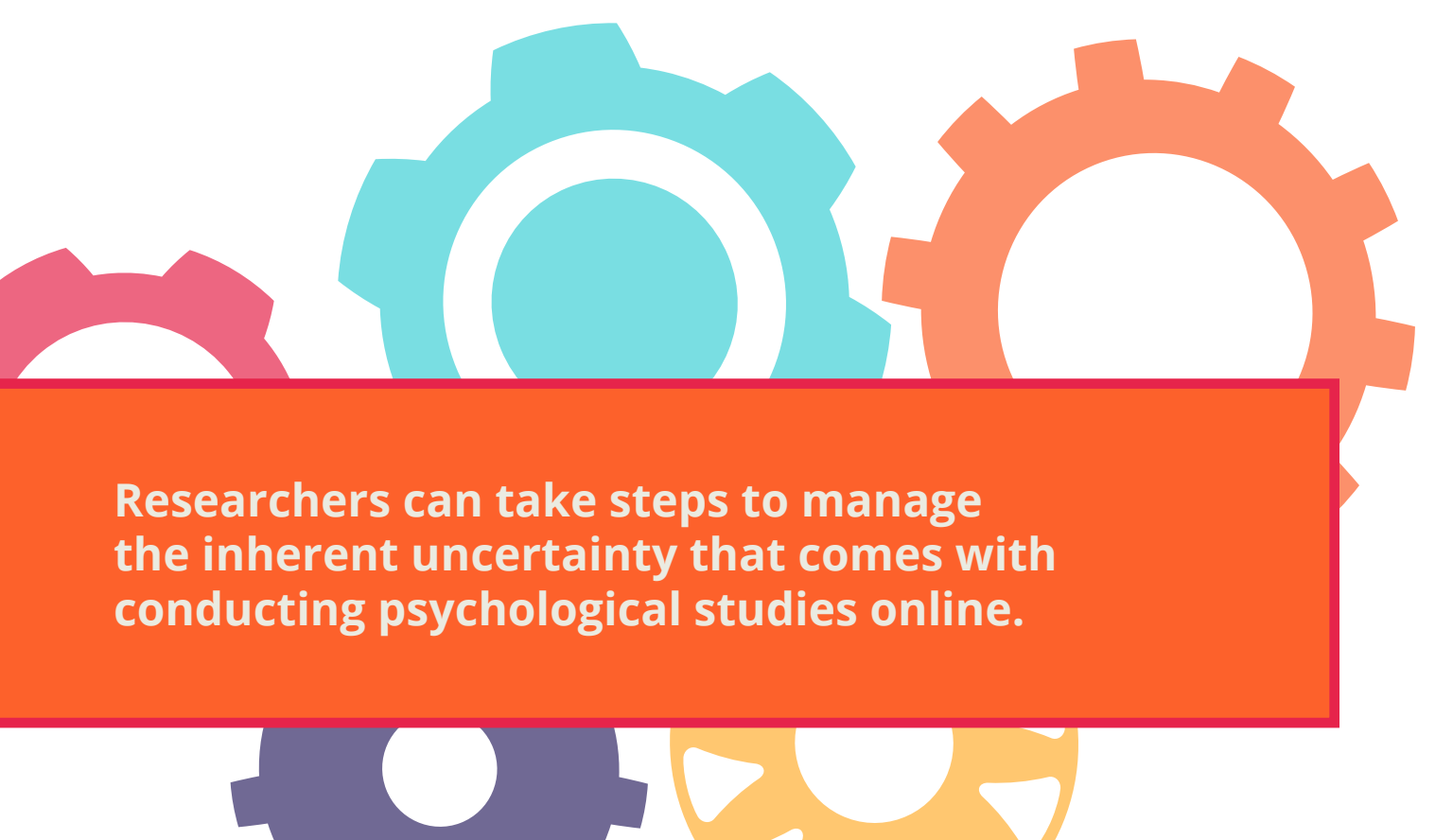
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How to Maintain Data Quality When You Can't See Your Participants

By Jennifer Rodd

Researchers can take steps to manage the inherent uncertainty that comes with conducting psychological studies online.

Collecting your first dataset using online recruitment can be fabulous and disconcerting in equal measure. After weeks (or months, or years) of careful experimental design and stimulus prep you click the "begin data collection" button and then head off for lunch. Or, if you are like me, you sit obsessively watching the 'number of complete datasets' counter click inexorably upwards. In contrast to the many hours of waiting for participants that are usually associated with lab-based experiments, this new form of remote experimentation can seem magically wonderful.

And yet it also feels, at least to me, that something is just not quite right. As an experimental psychologist, behavioural data is the cornerstone of our research and it can feel deeply disconcerting for our data to arrive onto our computer without us being able to directly observe its creation: We have no virtual spyhole on the door of the testing cubicle with which to monitor our participants' performance.

Broadly speaking, the many advantages of online data collection fall into two categories. First, it reduces the time that researchers must spend recruiting and testing participants: Crowdsourcing platforms such as Prolific Academic (www.prolific.ac) and Mechanical Turk (www.mturk.com) allow large numbers of participants to be recruited at the click of a button. Second, and in my view more importantly, this approach allows us to move away from testing the relatively restricted populations of university undergraduates who are most easily recruited for lab-based experiments. It is now much easier to recruit more demographically balanced samples, and to target specific populations that might be difficult to find or recruit via more conventional means.
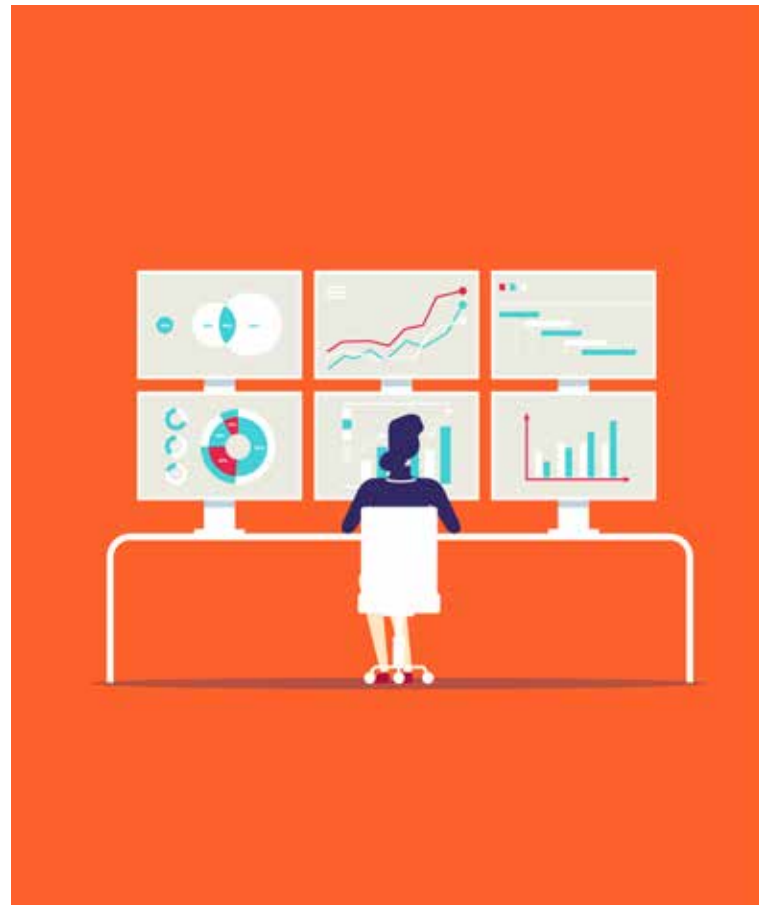
But these clear advantages come at a price. Many researchers are deeply concerned about the methodological consequences of remote testing where we cannot directly observe our participants. In conventional experiments, the researcher typically meets each participant and has a face-to-face (albeit brief) chat before the experiment begins. This allows us to verify some of their basic demographic information. We can confirm that they have not already participated in our experiment and can speak our chosen language fluently. The experiment then typically takes place in a quiet room where all participants complete the experiment free from distraction using the same carefully selected equipment.

In contrast, when we run our experiments online we necessarily give up much of this experimental control and must accept a much higher degree of uncertainty about (i) who our participants are and (ii) the conditions under which the experiment is being conducted.

New Possibilities

Despite this apparent lack of control, my experiences with online data collection have been overwhelmingly positive. This approach has allowed us to run experiments that could not possibly have been implemented within the lab, either because they required an unfeasibly large number of participants, or because we wanted to recruit very specific participants who did not all live in central London (see *https://jennirodd.com/publications/*). And despite the magical method by which our data arrived, our data in most cases have turned out to be highly informative.

Additionally, over the last 5 years we have developed methods that have greatly improved our data quality. There are several important steps that experimenters can take to maximise their data quality. First and foremost, you should take great care when selecting the source of participants — when using a crowdsourcing platform, it is important to check their processes for recruiting and screening participants. And if recruiting via more informal social media routes, think very carefully about how these participants might differ from those recruited by more conventional approaches.

Second, make sure you reward your participants appropriately. If they feel you do not really value their time, then they will, in turn, not value your experiment and your data quality will likely suffer.

While these two general pieces of advice are a good starting place, I suggest that to really be able to trust the data quality for any online experiment, we must explicitly adapt our experimental paradigms to fit the online world.

Importantly, I've learned that there are no magic bullets that can be applied across the board to safeguard every online experi-

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ment that we might want to run. Each experiment is different and we need to tailor the safeguards that we include according to our specific experimental method and the particular hypotheses being tested. I therefore suggest that researchers step through the following five-stage process *prior* to collecting data in any specific online experiment.

1. Specify your data quality concerns

The first, and perhaps most critical step, is to explicitly specify any concerns that you might have about how moving to online data collection could potentially ruin your experiment. What could possibly go wrong? In general, these concerns tend to fit into three categories.

- Where are participants doing the experiment?

You will almost certainly worry that participants may be working in a noisy, distracting environment in which they may not properly attend to your (dull?) experiment. They may, for example, be "multiscreening" to check their social media. Also participants may be using low-quality hardware (slow internet connections, small screen, poor-quality headphones, etc.).
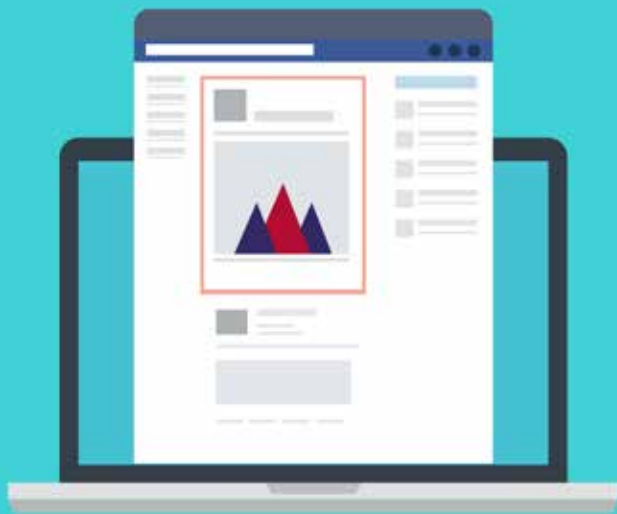
- Are participants who they say they are?

You may be concerned that participants might lie about their age, language proficiency, background, or some other important demographic factor. Think carefully about the likelihood of these problems, paying particular attention to any reward systems that might exacerbate them. If you are paying participants relatively well, for example, then people who are ineligible to take part may lie to gain access. Alternatively, if your experiment is a super-fun online game but only open to people 18-years-old and above, then children may lie about their age to gain access.

- Are they cheating on the task?

Finally, you may be concerned about participants' behaviour during the experiment itself. They may, for example, look up the answers to your questions on Google — something they couldn't do if you were watching them in the lab. Memory experiments can be particularly problematic: It can be difficult to ensure that participants are not writing down or screen-grabbing the information they are supposed to remember. Again, think carefully about the incentives that might drive participants to cheat — is their payment or their ability to stay on the participant database in some way contingent on their performance?

2. Specify the worst case scenario

For all the above concerns, it is critical to think through the worst case scenario *for your particular experiment*. While some of the issues you have identified in Stage 1 might simply add a bit of noise to your data — and can be counteracted by collecting sufficient data or by careful analysis — other issues could potentially be catastrophic. No journal is going to publish your working-memory experiment if it seems likely that participants were writing down the correct answers. And no journal will publish your experiment showing that monolinguals and bilinguals perform equally on some critical test of language processing unless you can securely demonstrate that participants were correctly assigned to these two groups. In some cases, this might be the point where you abandon your plan to collect data online and return to your lab-based protocol. But in my experience the vast majority of issues are fixable.

3. Add new within-experiment safeguards

At this point, you should make every effort to tweak your existing experimental design to improve your data quality. To be honest, there is often not much that can be done. But imposing sensible time limits for the different stages of your task can help increase the likelihood that participants (i) stay on task and (ii) refrain from cheating. It is now also relatively straightforward on most experimental platforms to screen out participants on the basis of their hardware/software — this can be particularly important for auditory experiments in which you want to ensure that they are using headphones as instructed.

4. Design experiment-specific exclusion criteria

The next, critical step is accepting that you will inevitably collect some data that will be unusable — you simply cannot ensure that *all* participants will behave as instructed. It is therefore necessary to devise a set of experiment-specific criteria for excluding participants' datasets from your analyses. Each of these should relate directly to a specific concern that was set out in stage 1 — it is vital to keep in mind exactly *why* you are including each criterion.

- Set performance criteria for existing tasks

In many cases, you can set these criteria using the data that you already plan to collect. For example, if your priority is to ensure that participants are adequately attending to your key task, then it is often sufficient to collect accurate reaction times and exclude participants with long or variable responses. You may also wish to ensure that adequate time was spent reading the instructions. Other more sophisticated methods that check for expected patterns of variance or entropy in the data are also feasible. For new tasks, pilot data can allow you to characterise the typical range of participant performance — this is often best collected in the lab where you can observe participants and obtain more detailed feedback.

- Set criteria for additional tasks/measures

In some cases, you will need to collect additional data to know who you should reasonably include in your analysis. For example, if you want to verify participants' proficiency in different languages then you may need to add a short, timed vocabulary test and specify the minimum requirements needed for a participant's data set to be included. Sometimes, it can be worth testing or questioning a key demographic more than once and excluding participants that give inconsistent responses.

5. Pre-register your exclusion criteria

Finally, I believe it is really important to preregister these (sometimes complex) exclusion criteria prior to data collection. In some cases, such as studies that involve lengthy and boring experiments, you may need to exclude significant numbers of participants and if you haven't preregistered these criteria then the scientific community has no way to confirm that you didn't "cherry-pick" the participants that contribute to a nice statistical outcome.

But of course, even the best preregistration documents cannot possibly foresee all the possible ways in which participants can mess up your experiment. We sometimes end up with data from participants who meet all our criteria but who most reasonable researchers would agree should be excluded from the analysis (e.g., a participant who performs reasonably well on the task but then tells you that he was drunk and had not slept for 3 days). In such cases, it is reasonable to deviate from your preregistration document as long as you are completely transparent about your actions and reasoning.

Moving Back to the Lab

It is important to note that nothing in the process is specific to online experiments. Indeed, this approach could also help us improve the quality of our lab-based experiments. Although some of the issues (e.g., quality of hardware) don't arise in this context, the vast majority can — especially when participants are left unsupervised. Can we really be certain that our lab participants are not looking at pictures of cute cats on their phone at the same time they're completing our tasks?

The move to online experiments has improved the quality of my lab-based experiments, as I now consider in far greater detail than before the process by which I reassure myself, and my peers, about the quality of the data that I have collected. ◉

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To watch a video of Rodd's recent presentation on this topic, visit *bit.ly/2S3GH8d*

Edited by C. Nathan DeWall and David G. Myers

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:
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Getting Wise About Wise Interventions

By C. Nathan DeWall

Moreau, D., Macnamara, B. N., Hambrick, D. Z. (2019). Overstating the role of environmental factors in success: A cautionary note. *Current Directions in Psychological Science, 28*(1), 28–33. doi.org/10.1177/0963721418797300

Think of a challenging goal you dream of achieving. You may fantasize about running a marathon, writing a book, or playing a musical instrument. Or if you're even more ambitious, you might imagine winning the Boston Marathon, writing a best-selling book, or selling out arenas with your rock 'n' roll band. If you achieved your dream goal, how would you explain your success?

According to David Moreau, Brooke Macnamara, and David Hambrick (2019), don't rush to thank your parents, siblings, coaches, teachers, friends, or participation in so-called wise psychological interventions (Walton, 2014). Your surroundings do not drastically improve your chances of success — they inch you toward achievement rather than giving you a mile-long head start.

Moreau and colleagues focus on four popular areas of research — brain training, grit, deliberate practice, and the bilingual advantage—that they argue have overstated how much people can change their innate abilities. Drawing on meta-analyses, the authors argue that brain-training programs fail to produce general cognitive improvement (Simons, Boot, Charness, Gathercole, et al., 2016); grit offers little or no additional variance beyond similar personality traits when predicting academic outcomes (Cred, Tynan, & Harms, 2017); deliberate practice contributes a small amount to understanding elite performance, including athletics

(Macnamara, Moreau, & Hambrick, 2016); and the bilingual advantage literature suffers from a publication bias, in which researchers only publish statistically significant effects (de Bruin, Treccani, & Della, Sala, 2015).

Scientific progress thrives on spirited, constructive debate. Indeed, the scientific attitude includes skepticism, curiosity, and humility (Myers & DeWall, 2019). Moreau and colleagues' skepticism urges researchers to think critically about these areas of study and the general notion that small environmental changes produce large achievement outcomes. At the same time, recent comprehensive reviews of wise interventions have shown some consistent and meaningful effects (Walton & Wilson, 2018; Walton & Crum, 2019). With curiosity and humility, psychological scientists can become wise about wise interventions.

To bring critical thinking into the classroom, instructors can complete the following activity. The learning objective is to teach students critical thinking and scientific literacy skills. The activity focuses on brain training because it offers the clearest and most engaging example of researchers overstating their findings.

Part One

Ask students to form pairs and answer the following questions:

1. Using your smartphone, laptop, or other electronic device, search for so-called brain-training programs. What are some that you found?

2. Now ask students to focus on the program Lumosity. After looking at this program, ask:

   a. How much would you be willing to pay to use Lumosity for 1 month?

   b. How likely do you think that Lumosity would improve your performance on specific activities that are similar to the ones you completed in the program? (1=*not at all* to 10=*extremely*)

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c. How likely do you think it is that the brain-training program Lumosity would improve your performance on general activities that are not similar to the ones you completed in the program (1=*not at all* to 10=*extremely*)

Instructors will then ask the students to share their responses with the class. Which programs did students find? Why would students be willing to pay anything to use a brain-training program? What does a willingness to spend money on Lumosity say about our belief that features of our environment (parents, programs) can influence our thoughts, feelings, and actions? How much did students believe that Lumosity would offer specific benefits related the program's activities? How likely did students believe it to be that Lumosity would offer general, psychological benefits unrelated to the program's activities?

Part Two

Instructors can show students the following Lumosity customer review published on the Google store:
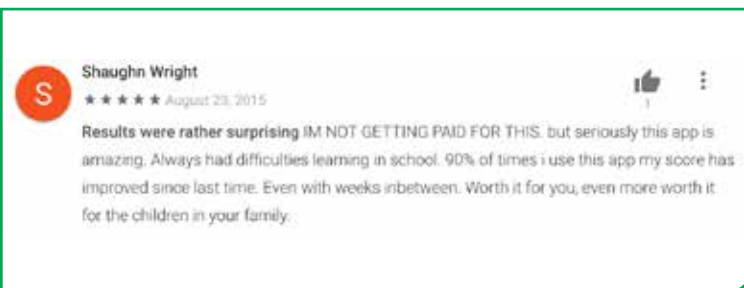
After reading the review, have students answer the following questions again based on how they feel RIGHT NOW, that is, at the present moment, about the questions above.

Students can then discuss with their partner why consumers and companies value client testimonials.

Part Three

Finally, instructors can share with students a statement from the Federal Trade Commission, which used psychological research to show that Lumosity was incorrect in claiming that its effects would translate to improved cognitive functioning in other tasks that were unrelated to the ones Lumosity customers completed (e.g., Simons et al., 2016). Drawing on this and other research, the FTC fined Lumosity $2 million, saying:

"Lumosity preyed on consumers' fears about age-related cognitive decline. But Lumosity simply did not have the science to back up its ads." (FTC, 2016).

Now have students answer the same questions as last time, based on how they feel RIGHT NOW — that is, at the present moment.

Did students' attitudes toward Lumosity change more in response to the customer testimonial or the skeptical research that brought about the FTC fine? How can people become more motivated to use psychological science to think critically about

the strength of the evidence regarding programs that claim they can change their thoughts, feelings, and actions? In what ways might students use this type of critical thinking in other areas of their life?

People pursue goals because they believe that change is possible. We can shift aspects of our lives to become runners, writers, or rock 'n' rollers. But we would do well to temper our expectations — and explanations — for our success. Keep in mind that our unique and stable characteristics often impact our chances at least as much as any coach, training partner, or performance improvement program. The key to success involves fitting your traits to situations that shift you toward goal achievement. Nature and nurture interact.

You probably won't win Olympic gold, write a best-selling book, or become a famous musician. You probably will end up in a spot significantly better than where you started, however. And for that, you can thank yourself, your fellows, and your environment for helping you live a happier and more meaningful life. ◉

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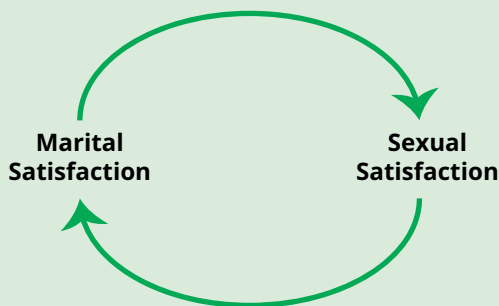
The Two-Way Traffic Between Sexual and Relationship Satisfaction

By David G. Myers

Sexual relations have social significance. We can know all about the physiology of sex — that the spasms of orgasm come at 0.8-second intervals, with blood pressure up 40 or so points and respiration at 40 breaths per minute — yet miss the human bonding that both enables and grows from sexual intimacy. Good sex enhances a loving relationship, and a loving relationship enhances sex.

This "bidirectional" relationship between sexual and relationship satisfaction is the first lesson of research reviewed by Florida State University psychologists Jessica Maxwell and James McNulty (2019). Two longitudinal studies from their lab revealed — consistent with earlier studies — that "higher sexual satisfaction at one time-point predicted increased marital satisfaction 6–8 months later," and that (albeit with lesser support) "higher marital satisfaction at one time-point predicted increased sexual satisfaction 6–8 months later." Moreover, the bidirectionality occurs among both women and men, and newlyweds and longer-term couples (Fallis, Rehman, Woody, & Purdon, 2016; McNulty, Wenner, & Fisher, 2016).

At this point, instructors could pause to ask: Why might this be? What might explain each arrow in this simple summary?

Sexual satisfaction → relationship satisfaction. Maxwell and McNulty note that sex helps bond partners by causing them to associate each other with a rewarding experience. "We come to like people who make us feel good, or who are present when we feel good." Such includes a lingering "afterglow" that predicts enhanced relationship satisfaction (Meltzer et al., 2017). Making love — self-giving, sensitive, joyful, pleasureful love — means more than mere recreation or procreation. It is to know one's partner intimately and then to link that partner with gratification.

Relationship satisfaction → sexual satisfaction. Marital satisfaction offers a comfortable context for sex. When a romantic relationship is sealed with a secure commitment — when there is minimal anxiety about performance, and when there is an experience-rooted sensitivity to one another's desires and responses — intimacy can flourish. "Satisfying relationships [infuse] positive affect into sexual experiences," say Maxwell and McNulty. And when confident of a partner's acceptance, low body self-esteem is a diminished barrier to sexual frequency and satisfaction (Meltzer & McNulty, 2010). Couples are freer to replicate the story of Eden's utopia, where the partners "were both naked, and were not ashamed" and delighted in becoming "one flesh" (Genesis 2:24–25).

Maxwell and McNulty also discuss the interaction of personality traits with sexual and relationship satisfaction. And they offer a model that incorporates both automatic (associative) and controlled processing. Even without exploring these workings, an instructor could invite students to respond with clickers, or to anonymously write their answers to two additional discussion questions . . . which (to respect privacy) the instructor might collect and read:

1. The researchers explored the bidirectional sex ← → love association in committed relationships. Would you guess the same reciprocal influence applies to casual sexual relationships? For example, would you expect the sexual afterglow affect to occur equally after 1-night hook-ups? Some pertinent evidence:

- Some studies indicate that when sex begins after a relationship progresses to a commitment such as marriage, couples experience both greater relationship stability and better sex (Busby, Carroll, & Willoughby, 2010; Galinsky & Sonenstein, 2013).

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

- Although casual sex is, for some, pleasureful and positive (de Jong, Adams & Reis, 2018; Vrangalova, 2014), other research indicates that orgasm occurs more often, and with fewer morning-after regrets, when sex happens in a committed relationship (Garcia, Massey & Merriwether, 2012, 2013).

2. Would you expect the reciprocal influence of sex and love to differ for heterosexual and LGBTQ relationships?

- Rosenfeld (2014) reports that the benefits of commitment — of "vow power" — apply regardless of sexual orientation. If they had married or entered into a civil union, gay and straight couples experienced almost identical stability in their relationships — and, if they had not committed, almost identical instability.

Students surely will welcome psychological insights into sex, love, and relationships. Psychological science confirms the interplay of sex and love. And it reminds us — as we can remind students — that we humans have a "need to belong" (Baumeister & Leary, 1995). We flourish when supported by enduring, close, committed, secure, intimate attachments. ⊙

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QUOTE OF NOTE

"Describing science as actions, by saying 'let's do science,' leads to more science engagement than does describing science in terms of identities, by asking them to 'be scientists.' These effects particularly hold for children who are the target of stereotypes suggesting that they might not be the kind of person who succeeds in science — in this case, girls."

-**Marjorie Rhodes**, New York University, on a study she led showing how identity-focused language can influence children's persistence in science activities. Results of the study appear in *Psychological Science* (doi.org/10.1177/0956797618823670).

Making the Most of Academic Conventions

By Lia J. Smith

Academic conventions represent important parts of academic life. Going to an academic convention is an exciting opportunity to connect with colleagues and exchange stimulating ideas; however, conventions can easily feel overwhelming and intimidating. That, in combination with the stress of leaving behind classes, labs, and ongoing projects to fly across the country and navigate a new city, can leave many attendees feeling anxious, distracted, and stressed.

The first national academic convention that I attended was the 26th Annual APS Convention in San Francisco, as a middle author on a poster. I attended several symposia and explored poster sessions, but I felt unsure of where I fit in or what I was supposed to be doing at the event. Now, after attending many other conventions, I have gained insight into how to make the most of the academic convention. Here are some tips that I learned along the way.

Develop Community

Conventions help you build your academic community by connecting with people in your field that you may not normally have the opportunity to meet. Take advantage of this time to hear fresh perspectives, debate important topics, and understand how research is conducted in different settings. This is also a time to meet senior members of the field that you may like to collaborate with in the future, or program officers from major grant organizations. Take a chance and introduce yourself. They may remember you in the future when your CV is on their desk.

Keep in mind that many of the opportunities to connect with people may be embedded in preconference events, post-symposia windows, and gatherings after the day's sessions are over. Rather than pack your day with sessions where you sit quietly and then rush out, seek opportunities to genuinely connect with other members in your field. I recommend planning a smaller set of key sessions and events where like-minded individuals and senior members of the field are likely to attend, leaving yourself time before and after to make meaningful connections through more in-depth conversations.

Finally, when you get back from a conference, send a follow up email to the new people that you met, especially potential collaborators, and connect with fellow students on social media.

Lia J. Smith *is a third-year doctoral student in the clinical psychology program at the University of Houston. Her research examines biopsychosocial factors and transdiagnostic mechanisms with significant impact on treatment outcomes for individuals with co-occurring post-traumatic stress disorder and substance use disorders.*

There's no reason someone you meet at a convention should be a one-time contact. Reach out to congratulate them on a recent publication, see if they're going to another popular convention in your specialty or to the next APS convention. Over time, these individuals may become an integral part of your community.

Get Feedback on Your Research

Academic conventions are also an important venue to gain feedback on your research. Presenting your work gives others in your specialty the opportunity to ask challenging questions on areas that you may not have thought of yet. These discussions, when taken seriously, may lead to deeper and more thoughtful research. Furthermore, feedback may bring up important points that you may see from reviewers down the line, giving you a chance to address concerns or prepare rebuttals.

Find Inspiration

Sometimes, we get bogged down by the minutia of our everyday lives in academia. Be it coursework, department politics, or challenges in data collection, we can occasionally feel discouraged about our work. Academic conventions have a way of combating these feelings with a surge of new ideas, fresh perspectives, and contagious energy. Take advantage of these opportunities as great speakers, interesting symposia, and diverse convention attendees can leave you refreshed and ready to take on your challenges anew.

Recently, I came away from a specialty convention in my field feeling inspired. I attended the meeting in the middle of November, with upcoming finals, manuscript submission deadlines, and a myriad of other responsibilities on my mind. I had been especially bogged down by a grant proposal that I was writing, trying to figure out how to express my desire to study the interaction of PTSD, alcohol use disorder, and sleep disturbance. While at the conference, I had the opportunity to speak with trauma researchers from around the world, attend special interest group meetings, and hear about novel and emerging work in my field. I also had the opportunity to specifically discuss my grant ideas over a meal with colleagues from a previous institution. At the end of the convention, I came away with fresh perspectives and renewed inspiration to finish my projects and meet my deadlines.

Awards

Conventions are a great way to get recognition for all your hard work. Many conventions, including APS, honor members in the earliest stages of their careers as well as accomplished leaders within the field of psychology. These awards can be a great way

to build your CV and to gain some positive reinforcement for your time and effort in the lab.

APS gives several awards specifically to students. The Student Research Award, for instance, promotes outstanding research conducted by student members. The RISE Research Award acknowledges outstanding research related to under-represented populations or conducted by students from diverse backgrounds. More information on APS student awards and grants may be found at *www.psychologicalscience.org/members/grants-awards-and-symposia*.

Treat Yourself

An important reminder for all graduate students is to have fun. We often find ourselves feeling overworked, overwhelmed by deadlines, and anxious about the future of our careers. Take advantage of academic conventions to explore a new, or familiar, city. Travel disrupts your routine and creates a sense of novelty. Suddenly, instead of being buried in the reference section of an upcoming manuscript, you get to think about navigating new neighborhoods, different transportation patterns, and diverse social norms. These novel activities may help to stimulate neuroplasticity (Kempermann, Gast, & Gage, 2002; Vemuri et al., 2014), which may carry positive indirect effects on the work waiting for you back on your laptop.

This may also be a great opportunity to connect with old colleagues and friends whom you may not be able to see often. Take time to reminisce, reconnect, and revel in each other's company. In addition to being healthy sources of relaxation and fun, these reunions may trigger renewed opportunities for collaboration and development, or they may spark a unique line of inquiry based on your shared interests. Overall, it's important that graduate students build in some positive experiences that help you to reduce stress and feel refreshed. ◉

Learn what opportunities await you at the 31st APS Annual Convention in Washington, DC.

Visit www.psychologicalscience.org/conventions/annual

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SSCP Announces 2018 Outstanding Student Diversity Research Award Recipients

Craig Rodriguez-Seijas has received the 2018 Society for a Science of Clinical Psychology (SSCP) Outstanding Student Diversity Research Award for his research on health disparities in minority populations.

Rodriguez-Seijas, a graduate student at Stony Brook University, studies the transdiagnostic psychopathological processes linking discrimination and mental health issues, including substance use disorders, in the LGBT community and other populations. His research has focused on how expectations of rejection may contribute to the heightened risk of substance abuse, depression, and anxiety in gay and bisexual people; the comorbidity of substance abuse and other mental health conditions; and on how to best integrate existing diagnostic models for autism spectrum disorder.

Alayna Park of the University of California, Los Angeles, received an honorable mention for her work on evidence-based strategies for improving community mental health services. She has studied the long-term benefits of cognitive behavioral therapy in youth populations as well as how providers select and implement evidence-based treatments.

The SSCP Outstanding Student Diversity Research Award is designed to acknowledge students who have made unusually advanced theoretical or clinical contributions to psychological science. Applicants may be a member of a diverse group (broadly defined), engage in diversity related research, or both.

For more information about the award, go to *www.sscpweb.org/DivAward*.

Michael C. Anderson, University of Cambridge, United Kingdom, *The Wall Street Journal*, January 22, 2019: Why Forgetfulness Might Actually Help You.

Elliot Aronson, University of California, Santa Cruz, *The Atlantic*, January 9, 2019: Your Flaws Are Probably More Attractive Than You Think They Are.

Lisa Feldman Barrett, Northeastern University, *Popular Science*, January 17, 2019: Artificial Intelligence Thinks Your Face Is Full of Data. Could it Actually Unmask You?; NPR, January 28, 2019: Got Anger? Try Naming It To Tame It.

Herbert Bless, University of Mannheim, Germany, *The Atlantic*, January 9, 2019: Your Flaws Are Probably More Attractive Than You Think They Are.

Stephanie Cacioppo, University of Chicago Pritzker School of Medicine, *The Guardian*, January 26, 2019: Scientists Are Working on a Pill for Loneliness.

C. Daryl Cameron, The Pennsylvania State University, *Scientific American*, January 22, 2019: Can Outrage Be a Good Thing?

Mina Cikara, Harvard University, *Scientific American*, January 22, 2019: Can Outrage Be a Good Thing?

David DeSteno, Northeastern University, *The New York Times*, February 1, 2019: What Science Can Learn From Religion.

David Dunning, University of Michigan, *Vox*, January 31, 2019: An Expert On Human Blind Spots Gives Advice on How to Think.

Joseph Ferrari, DePaul University, BBC, January 17, 2019: Marie Kondo - Does Tidiness Really Equal a Clean Mind?

Eli Finkel, Northwestern University, *The Atlantic*, January 8, 2019: Educated Americans Paved the Way for Divorce—Then Embraced Marriage.

Lauren C. Howe, Stanford University, *The New York Times*, January 22, 2019: Can a Nice Doctor Make Treatments More Effective?

Benjamin Karney, University of California, Los Angeles, *The Atlantic*, January 8, 2019: Educated Americans Paved the Way for Divorce—Then Embraced Marriage.

Roger Kreuz, University of Memphis, *The Cut*, January 25, 2019: Is It Just Me, or Does Duolingo Not Work?

Ethan Kross, University of Michigan, *The New York Times*, January 30, 2019: This Is Your Brain Off Facebook.

Kari Leibowitz, Stanford University, *The New York Times*, January 22, 2019: Can a Nice Doctor Make Treatments More Effective?

Kristina Olson, University of Washington, *The Atlantic*, January 15, 2019: Young Trans Children Know Who They Are.

Bedside Manner Matters

Your doctor's personality may not seem as important as their training and experience, but research by **Lauren C. Howe** and **Kari Leibowitz** suggests that warm words from a physician may help patients wring relief out of placebos and give even the most cutting-edge treatments a boost.

New York Times

January 22, 2019

Ken Paller, Northwestern University, *The Washington Post*, January 24, 2019: Go to Bed! Brain Researchers Warn that Lack of Sleep Is a Public Health Crisis.

Sabine G. Scholl, University of Mannheim, Germany, *The Atlantic*, January 9, 2019: Your Flaws Are Probably More Attractive Than You Think They Are.

Christopher J. Soto, Colby College, *FiveThirtyEight*, January 16, 2019: Most Personality Quizzes Are Junk Science. Take One That Isn't.

Benjamin Storm, University of California, Santa Cruz, *The Wall Street Journal*, January 22, 2019: Why Forgetfulness Might Actually Help You.

Charlotte Tate, San Francisco State University, *The Atlantic*, January 15, 2019: Young Trans Children Know Who They Are.

Philip Tetlock, University of Pennsylvania, *Vox*, January 31, 2019: An Expert On Human Blind Spots Gives Advice on How to Think.

Michael Tomasello, Duke University, *The Wall Street Journal*, January 11, 2019: 'Becoming Human' Review: The Defining Neediness of Humans.

A. Janet Tomiyama, University of California, Los Angeles, *FiveThirtyEight*, January 23, 2019: How The Stigma Against Obesity Harms People's Health.

Transgender Kids' "Consistent, Persistent, and Insistent" Identity

APS Fellow **Kristina Olson's** work with transgender and gender-nonconforming children suggests that those with the strongest sense of their own identity are also the most likely to socially transition. These findings further affirm transgender kids' experience of self-knowledge, says psychological scientist **Charlotte Tate**.

The Atlantic

January 15, 2019

More APS Members in the news online at

www.psychologicalscience.org/
MembersInTheNews

Thomas Trail, RAND Corporation, *The Atlantic*, January 8, 2019: Educated Americans Paved the Way for Divorce—Then Embraced Marriage.

Jay J. Van Bavel, New York University, *Science*, February 4, 2019: To Ace Your Ph.D. Program Interviews, Prepare to Answer—And Ask—These Key Questions.

A New Framework of Sociocultural Development

Evolution may have brought humans down from the trees, but, as APS Fellow **Michael Tomasello** writes in *Becoming Human*, you can't explain what makes us unique as a species without looking at the social and cultural forces that shape us in the first few years of life.

Tomasello will speak about the factors that distinguish humans from other primates during his Fred Kavli Keynote Address at the 31st APS Annual Convention May 23-26 in Washington, D.C.

Wall Street Journal

February 14, 2019

aps **Coverage of research from an APS journal**

🎧 **Podcast included in coverage**

🎬 **Video included in coverage**

aps **2019 APS Convention Speaker**
Washington, DC, USA, May 23–26, 2019

icps **ICPS Speaker**

ANNOUNCEMENTS

Send items to apsobserver@psychologicalscience.org

GRANTS

2019 RAND Summer Institute

The 26th Annual RAND Summer Institute (RSI) will take place July 8-11, 2019, in Santa Monica, CA. The application deadline is March 15, 2019.

The RSI will consist of two conferences addressing critical issues facing our aging population: the Mini-Medical School for Social Scientists on July 8-9 and the Demography, Economics, Psychology, and Epidemiology of Aging conference on July 10-11. Interested researchers can apply for financial support covering travel and accommodations.

Visit RAND's website for more information and the application form at *http://www.rand.org/labor/aging/rsi.html*.

9th Annual Varda Shoham Clinical Scientist Training Initiative Grant Applications Open

The Society for a Science of Clinical Psychology (SSCP) has announced the 9th annual Varda Shoham Clinical Scientist Training Initiative grant program.

Applications are invited for small (up to $1500), non-renewable grants for training programs at the predoctoral, internship, or postdoctoral levels to launch new projects or support ongoing initiatives that are designed to more effectively integrate science and practice into their training program.

We offer three different tracks for applicants: 1) conducting science in/on applied settings, 2) innovation in clinical science training or resources, or 3) value-added to the program. These tracks are aimed at maximizing the diversity of applications and awards given.

Applications are due by March 31, 2019, and funds will be distributed during the summer of 2019. Application instructions are available at: *http://www.sscpweb.org/page-18087*.

NIH HEAL Initiative

The National Institutes of Health (NIH) has released a series of new funding opportunity announcements focused on the opioid crisis which may be of interest to the psychological science community. These opportunities, which are connected to the NIH HEAL (Helping to End Addiction Long-term) Initiative, will fund projects aimed at preventing opioid use disorder, improving opioid use disorder care, determining treatment for opioid use disorder, and helping determine how to manage opioid use disorder.

"NIH leadership from across the agency has been working diligently over the past several months to identify areas of greatest opportunity for research to address the national opioid crisis. The result is more than 30 new funding opportunity announcements … to solicit the best and brightest research ideas," said NIH Director Francis S. Collins, announcing the opportunities.

NIH has set aside over $850 million in 2019 to fund scientists studying opioid use disorder. To see the funding opportunity—many of which have deadlines in March 2019, visit *www.nih.gov/research-training/medical-research-initiatives/heal-initiative/funding-opportunities*.

MEETINGS

3rd International Convention of Psychological Science
7–9 March 2019
Paris, France
icps2019.org

Society of Australasian Social Psychologists (SASP) Conference
April 25 – 27, 2019
Sydney, Australia
https://sasp.org.au/

31st APS Annual Convention
May 23–26, 2019
Washington, DC
psychologicalscience.org/convention

13th Biennial SARMAC Meeting
June 6–9, 2019
Brewster, Cape Cod, Massachusetts, USA
www.sarmac.org

Conference on Children and Youth 2019
July 4–5, 2019
Columbo, Sri Lanka
youthstudies.co

2019 Behavior, Energy & Climate Change Conference
November 17 – 20, 2019
Sacramento, CA
http://beccconference.org

EXPERIMENTS IN DIFFERENT 'WORLDS'

Using virtual reality as an experimental tool, APS Fellow **Alan Kingstone** *(left) and psychological scientist* **Andrew C. Gallup** *are exploring how basic human behaviors differ between the real world and simulated environments.*

What prompted your idea to examine people's behavioral responses in virtual environments compared to real life?

Both of us are tremendously committed to conducting research that has a clear and direct relevance to everyday life. As people expect virtual reality (VR) experiences to mimic actual reality, and so to induce similar forms of thought and behaviour, introducing VR into our research programs was a natural step.

Why pick contagious yawning as the behavioral phenomenon to study?

It's a highly reproducible behavioural response in the laboratory, and our prior research has shown that this type of yawning is significantly reduced when people feel they are being watched or recorded. So it represented a behavior that can reliably be triggered, yet is highly sensitive to social presence in real-world contexts. We also wanted to test whether this response could be induced within virtual environments. By demonstrating that yawning is just as contagious within VR as it is in traditional laboratory settings, we show that people are indeed responsive to imbedded social cues in VR.

Describe the experimental approach you used, and what you found.

We performed five experiments in which participants were exposed to scenes of people yawning in VR under both low and high social-presence conditions. For the first study, participants viewed the yawning stimulus in VR with and without a researcher sitting in the room with them. Despite the fact that participants wore headsets, and so were unable to see any outside social cues during the study, the mere knowledge that another person was present in the room was sufficient to eliminate contagious yawning within VR. However, in the low social-presence condition where the researcher left the room prior to testing, participants yawned at a rate that was comparable with previous studies (38%). The next four experiments all manipulated the degree of social presence experienced in the virtual environment itself. Across all of these experiments, we found that contagious yawning was unaffected by social presence within VR.

What do you think these findings suggest about the use of VR in psychological research?

This study shows that social factors are perceived quite differently in real world and virtual environments. While people appear quite sensitive to some social stimuli in VR, as evidenced by rates of contagious yawning, our study shows that social presence manipulations in the virtual environment fail to induce changes in human behaviour that are observed in real-world contexts. Moreover, the findings from the first experiment suggest that the social context of actual reality dominates and supersedes that of VR. The fact that the mere presence of another person in real-life can dramatically alter behavioural responses in VR has profound implications for the use of this technology in psychological and cognitive science. We expect human behaviour in VR simulations to match what is observed in the real world, yet this study suggests that subtle features of the testing environment can have a big impact on even simple and reflexive responses such as contagious yawning.

Do you immerse yourself in virtual environments yourselves, for leisure activities or professional interest?

For now it's primarily professional. But hopefully in the near future we can chat about our work with one another using VR rather than the phone or a webcam! ⬤

To read the full text of this interview, go to
www.psychologicalscience.org/vr.

Time-Sensitive Material