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Does Mindfulness Really Work?

Some scientists fear the hype
is outpacing the science

Secrets to a happy life • Nobel's gender problem • The OCD brain



FROM THE EDITOR

Mindfulness: Does it It work?

Strolling along on a crisp fall day last weekend, I found myself completely engaged in the moment: the arresting beauty of the azure sky, the pops of ruddy and lemon hues from the turning leaves, my body’s pleasant feeling of mild exertion. I have always liked to call this feeling “being where you are,” and had long noticed that being aware of the “present now” made me feel content. I didn’t know until much later that this notion is part of what we now call cultivating “mindfulness.”

The idea that being mindful would increase a state of well-being makes such intuitive sense, and it seems many of us have are embraced embracing it. But what do the data show? As Bret Stetka writes in our cover story –“Where’s the Proof that that Mindfulness Meditation Works?”–“many many psycholo gists, neuroscientists and meditation experts are afraid that hype is outpacing the science.” Currently, it’s difficult to compare studies because of a lack of standardization in the data—a challenge that may be difficult to solve given that the experience of mindfulness itself is a personal one and thus richly varied.

Elsewhere in this edition, you’ll find lots of other surprises. R. Douglas Fields relates how cannabis use in teens can hasten the onset of schizophrenia in vulnerable individuals; Scott Barry Kaufman delves into humanistic psychology in “There Is No One Way to Live a Good Life”; Heather A. Butler discusses the difference between critical thinking and intelligence in “Why Do Smart People Do Foolish Things?” Enjoy!

Mariette DiChristina

Editor in Chief

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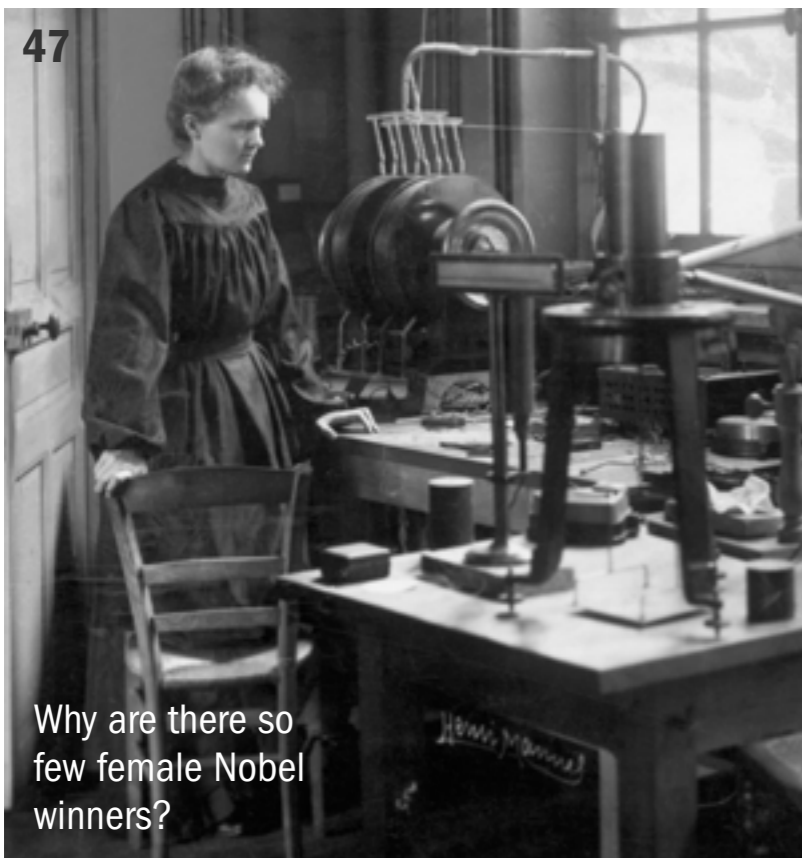
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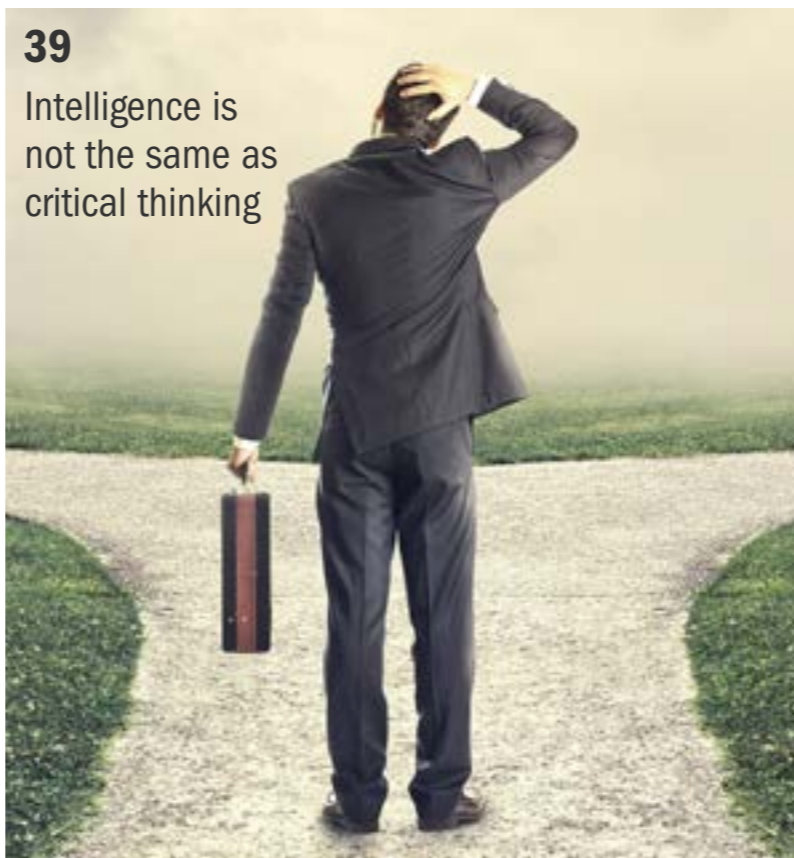
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NEWS

Concussion Recovery Is Slower in Girls, Mounting Evidence Suggests

A new study adds to findings that female children and adolescents are more susceptible to head injuries

Recovering from a concussion typically takes female athletes more than twice as long as males, according to a new study that tracked hundreds of teenagers active in sports. The finding adds to a growing body of evidence that vulnerability to this injury—and aspects of the healing process—may vary by sex.

A handful of studies published since the mid-2000s have suggested that girls in high school and college may sustain a higher rate of these injuries on the playing field than boys do, and investigations over the last few years have indicated they may also take longer to recover. As a result, when sports medicine researchers and experts convened in Berlin last fall for the 5th International Consensus Conference on Concussion in Sport, their subsequent statement cited evidence girls were more likely to suffer concussions that required a more lengthy recovery period than their male counterparts did. “But there wasn’t enough data to [definitively] say that this was the case,” says John Neidecker, a sports medicine physician with the Orthopaedic Specialists of North Carolina. “We thought that we’d take a look back at the athletes that we saw over a three-year period and



Girls in high school and college may sustain a higher rate of injuries on the playing field than boys do.

actually [provide] some objective data.”

Neidecker and his colleagues analyzed the medical records of 212 middle and high school athletes who visited a sports medicine practice in southern New Jersey—110 boys and 102 girls—who had experienced their first concussion while playing an orga-

nized sport such as football, field hockey or wrestling. (Only initial head injuries were considered to rule out the possible effect of prior incidents.) Their analysis revealed the median recovery time for girls was 28 days—more than double that of boys, which was 11 days. The results appeared in the *Journal of*

the American Osteopathic Association.

After a concussion, some individuals experience migraines and mental health issues, such as depression, which can contribute to longer recovery times. Yet researchers have also found evidence suggesting longer bounce back times are associated with suffering from those conditions prior to a head injury—raising some questions for Neidecker’s group. Although previous studies have reported a longer recovery period for girls, “what nobody has brought up is that all these preexisting [conditions] that seem to affect concussion recovery are more prevalent in females,” Neidecker says. “So maybe it’s actually not the concussion that’s still giving them the symptoms but the preexisting problems that were exacerbated [by the injury].”

The research team’s analysis partially supports this hypothesis—he and his colleagues examined the students’ medical histories and found that the girls were more likely to have previously suffered migraines than the boys. They also suggest psychological factors, such as depression or anxiety disorder, may play a role as well. In this new work there was a slightly higher prevalence of mental illness in girls versus boys,



Females' smaller necks give them less strength to absorb shock.

they note, but this difference was not statistically significant. Neidecker says he suspects this effect might be more pronounced in a larger sample, however.

Michael Collins, a concussion scientist at the University of Pittsburgh Medical Center who was not involved in this work, points out that other factors could also contribute to the disparity in recovery times. His prior research has shown, for ex-

ample, that women also tend to experience more eye movement and visual stability issues following a concussion than men, which can require longer recovery times.

Other researchers have proposed potential biological explanations for the gender difference such as women’s smaller necks, which give them less strength to absorb shock, and higher rates of glucose metabolism (a process that generates the body’s

energy). A woman's menstrual cycle may also directly impact recovery—one 2014 study of 144 women reported brain injuries during certain phases of the cycle might take longer to heal, which researchers think might be due to a sudden drop in levels of progesterone, a female sex hormone. And other research suggests menstrual patterns, which are often associated with headaches and other symptoms of discomfort, might also affect self-reports both before and after concussions.

Across the sexes, concussion is common in contact sports such as soccer and hockey, where heads bang and helmets clash. And, over the years, the public has become more aware of the serious health effects associated with repeated blows to the head. The National Football League has publicly acknowledged the link between its sport and degenerative brain disorders such as chronic traumatic encephalopathy. Such head injuries are also prevalent in amateur and recreational athletics. In a study recently published in the *Journal of the American Medical Association*, for example, researchers found that in a sample of 13,088 U.S. teens, around 20 percent reported at least one diagnosed concussion in 2016. Among those who had

“This is one of the most robust studies in terms of the numbers of people involved,” he says, confirming “girls take longer to recover.”

participated in a contact sport recreationally, such as football or wrestling, the prevalence was 31.5 percent.

Overall, this latest study adds to a growing body of literature that shows girls have a higher incidence of concussions than boys and might also experience more persistent symptoms, says Robert Cantu, a neurosurgeon and professor at Boston University who did not take part in the new research. “This is one of the most robust studies in terms of the numbers of people involved,” he says, confirming “girls take longer to recover.”

Yet some concussion experts caution this latest work has some limitations. Mayumi Prins, who studies traumatic brain injury in children at the University of California, Los Angeles, points out that where-

as Neidecker's findings are consistent with what others have reported, a key consideration is that the authors relied on the athletes' self-reports to determine their conditions at baseline (before the injury happened)—measures physicians typically use to determine whether a concussion has resolved. “Self-reporting or parental reporting is often fraught with errors,” Prins says.

More generally, there is also evidence of gender differences in symptom reporting across concussion studies. For example, a study published earlier this year in the *Journal of Athletic Training* found that although high schoolers of both sexes were equally knowledgeable about concussion symptoms, girls were more likely to disclose sports-related injuries to authority figures such as a medical professional or coach.

Ultimately, Prins says, researchers need an objective test to determine whether an individual has had a concussion. Scientists are currently working on developing better neuroimaging measures and identifying biomarkers in blood and other bodily fluids. In the meantime, however, one thing does appear to be clear: Concussion risk factors—and how they may differ by sex—require further scrutiny. Understanding what preinjury conditions are associated with recovery has important implications for treatment, Collins says. “The bottom line here is the injury needs to be recognized, the patient needs to be taken out of play and the [concussed] kids need to go to the clinics where they can get the multidisciplinary care that they need.”

— Diana Kwon



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NEWS

Link between Adolescent Pot Smoking and Psychosis Strengthens

Research presented at a Berlin psychiatric conference shows teenage cannabis use hastens onset of schizophrenia in vulnerable individuals

Society's embrace of cannabis to treat nausea, pain and other conditions proceeds apace with the drive to legalize the plant for recreational use. Pot's seemingly innocuous side effects have helped clear a path toward making it a legal cash crop, with all of the marketing glitz brought to other consumer products. But that clean bill of health only goes so far. Marijuana's potentially detrimental impact on the developing brains of adolescents remains a key focus of research—particularly because of the possibility teenage users could go on to face a higher risk of psychosis.

New findings may fuel those worries. At the World Psychiatric Association's World Congress in Berlin on October 9, 2017, Hannelore Ehrenreich of the Max Planck Institute of Experimental Medicine presented results of a study of 1,200 people with schizophrenia. The investigation analyzed a wide range of genetic and environmental risk factors for developing the debilitating mental illness. The results—being submitted for publication—show people who had consumed cannabis before age 18 developed schizophrenia approximately 10 years earlier than others. The higher the frequen-

cy of use, the data indicated, the earlier the age of schizophrenia onset. In her study neither alcohol use nor genetics predicted an earlier time of inception, but pot did. "Cannabis use during puberty is a major risk factor for schizophrenia," Ehrenreich says.

Other studies, although not all, support the thrust of Ehrenreich's findings. "There is no doubt," concludes Robin Murray, a professor of psychiatry at King's College London, that cannabis use in young people increases the risk of developing schizophrenia as an adult. Speaking at the Berlin conference, Murray—one of the first scientists to research pot's link to the disorder—cited 10 studies that found a significant risk of young cannabis users developing psychosis. He also mentioned three other studies that identified a clear trend but had a sample size that was too small to reach statistical significance. "The more [cannabis] you take—and the higher the potency—the greater the risk," he contends, warning this makes the increasingly potent new strains of marijuana especially concerning.

In an interview Murray said his research with users in London has shown that high-potency cannabis—approximately 16

percent THC (tetrahydrocannabinol)—was involved in 24 percent of all cases of a first episode of psychosis. (New laws permitting recreational pot use do not make it legal for teens to consume cannabis, but that has not impeded access.)

Interpretations of these new findings are hardly likely to receive universal acceptance. Questions about the cannabis-psychosis link have persisted for years. "The available data on this subject are far from definitive—particularly with regard to any potential cause-and-effect relationship," notes Paul Armentano, deputy director of NORML, a U.S. organization that advocates marijuana legalization for adults. "For instance, increased cannabis use by the public has not been followed by a proportional rise in diagnoses of schizophrenia or psychosis."

In 2015 the Toronto-based International Center for Science in Drug Policy issued a report—"State of the Evidence: Cannabis Use and Regulation"—that detailed this discrepancy. It cited a British study that estimated the significant rise in pot use should have produced, between 1990 and 2010, a 29 percent increase in schizophrenia cases among men and 12 percent

among women. But according to other data, during the time when usage was thought to have grown most (1996 to 2005), the number of new schizophrenia cases remained stable or declined. “These findings strongly suggest that cannabis use does not cause schizophrenia,” the center’s report notes.

Another speaker at the Berlin conference—Beat Lutz, a neurochemist at the University of Mainz—described the mechanisms by which the drug might produce deleterious effects in a young person’s brain. The main psychoactive compound in marijuana, THC, disrupts the normal flow of signals among brain cells—a process normally regulated by chemicals called endocannabinoids.

These compounds occur naturally in the body and activate a type of cellular docking site (called the cannabinoid type 1, or CB1, receptor) to “act like a circuit breaker,” Lutz says, keeping the brain’s level of signaling activity or “excitation” within a normal range. Too little endocannabinoid signaling results in excessive excitation of the nervous system, and this can promote anxiety disorders, impulsivity and epilepsy. Too much activity has the opposite effect

Marijuana is increasingly taking a place alongside Johnny Walker and Yellow Tail on the credenza—no longer stashed away in a drawer within.

and can promote depression, for example. Upsetting the information flows regulated by the endocannabinoid system has also been linked to psychosis.

THC acts differently from endocannabinoids. It does not break down rapidly in the body the way natural endocannabinoids do, Lutz says, noting this sustained activation causes serious wide-ranging disturbances in the brain. Low doses of THC may reduce anxiety but high doses can heighten it, and chronic overstimulation of CB1 receptors by THC shuts down the body’s natural endocannabinoid signaling system by eliminating the CB1 receptors from neurons, Lutz adds. In addition, new research reveals mitochondria—the organelles within cells that

generate energy for cellular metabolism—also have CB1 receptors. THC inhibits mitochondrial activity, reducing the cells’ vital energy supply, he says, citing a 2016 paper published in *Nature*. Perhaps most critically, he believes THC’s disruption of endocannabinoid signaling in the early teen brain can hinder key neurodevelopmental processes that involve the CB1 receptors, thereby impairing brain communication permanently.

Recent research on marijuana is starting to address the type of questions that might ordinarily be revealed via lengthy clinical trials during the development of a pharmaceutical. This process is occurring as the legalization bandwagon picks up speed. Marijuana is increasingly taking a place

alongside Johnny Walker and Yellow Tail on the credenza—no longer stashed away in a drawer within. In the U.S. marijuana use among high school seniors is more common than smoking cigarettes. The researchers at the Berlin conference discussed the need to alert the public about worrying new findings. “As physicians, we need to say clearly what is happening and what is not,” says Peter Falkai, a psychiatrist at the Munich Center for Neurosciences at Ludwig Maximilian University. “Looking into the data, clearly yes, the data show increasing risk of psychosis.”

—R. Douglas Fields



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NEWS

The U.S. Is Retreating from Religion

By 2030, say projections, a third of Americans will have no religious preference

Since 1990, the fraction of Americans with no religious affiliation has nearly tripled, from about 8 percent to 22 percent. Over the next 20 years, this trend will accelerate: by 2020, there will be more of these "Nones" than Catholics, and by 2035, they will outnumber Protestants.

The first figure on the right shows changes since 1972 and these predictions, based on data from the General Social Survey (GSS). The GSS, which surveys 1,000–2,000 adults in the U.S. per year, includes questions related to religious beliefs and attitudes. Regarding religious affiliation, it asks "What is your religious preference: is it Protestant, Catholic, Jewish, some other religion, or no religion?"

In the figure, the dark lines show the fraction of respondents in each group for each year of the survey until 2016. The shaded areas show predictions, based on a statistical model of the relationship between year of birth, age, and religion.

Religious beliefs are primarily determined by the environment people grow up in, including their family life and wider social influences. Although some people change religious affiliation later in life, most do not, so changes in the population are

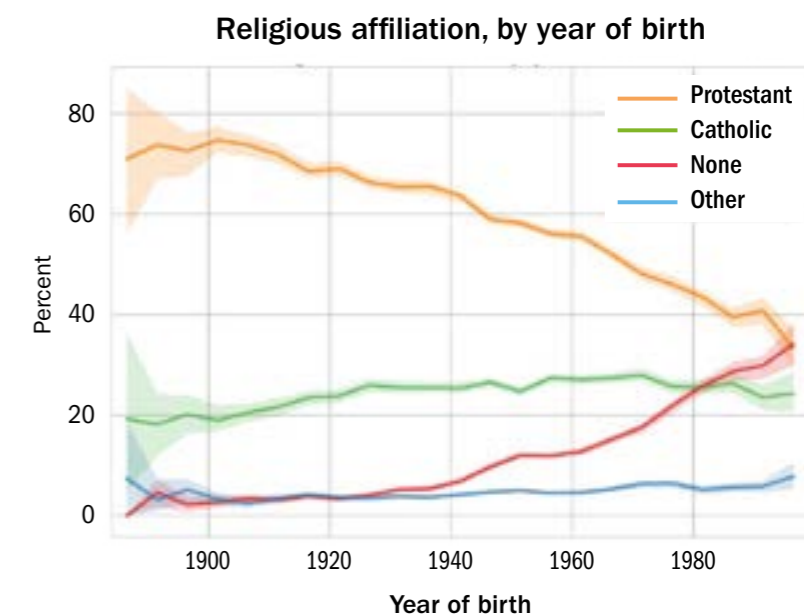
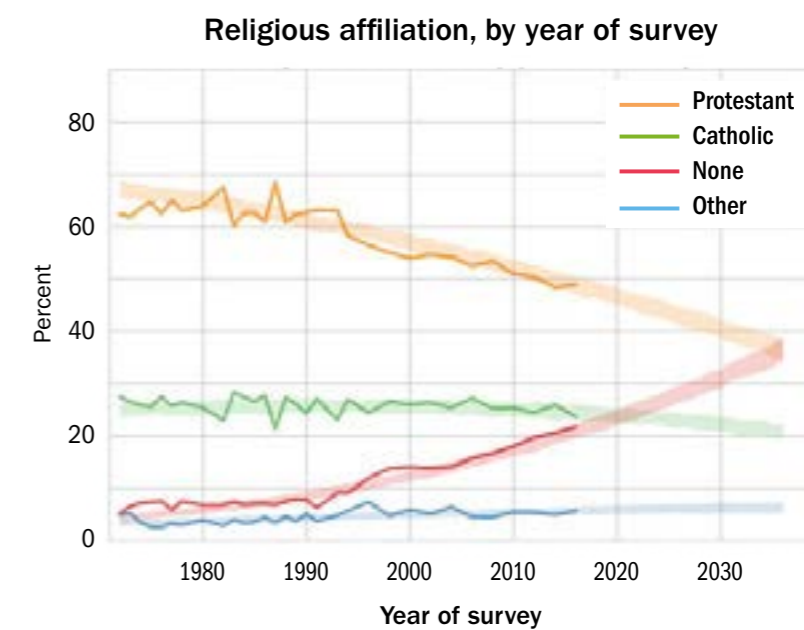
largely due to generational replacement.

We can get a better view of generational changes if we group people by their year of birth, which captures information about the environment they grew up in, including the probability that they were raised in a religious tradition and their likely exposure to people of other religions. The second figure on the right shows the share of people in each religious group, for birth years from 1880 to 1995.

Among people born before 1940, a large majority are Protestant, only 20–25 percent are Catholic, and very few are Nones or Others. But these numbers have changed rapidly in the last few generations: among people born since 1980, there are more Nones than Catholics, and among the youngest adults, there may already be more Nones than Protestants.

However, this view of the data does not show the effect of age. If religious affiliation increases or decreases, on average, as people get older, this figure could be misleading.

Fortunately, with observations over more than 40 years, the design of the GSS makes it possible to build a statistical model that estimates the effects of birth year and age separately. Then we can use the model to



generate predictions, by simulating the results of future surveys. The details of this methodology are in a longer version of this article (see links below).

Are These Predictions Credible?

Social changes are generally unpredict-

able. At any point another “Great Awakening” could reverse these trends. But among social changes, demographic predictions are relatively safe; the events they predict have, in some sense, already happened. The people who will turn 40 years old in 2037 are turning 20 this year, and we already have data about them. The people who will turn 20 in 2037 have been or soon will be born. So these predictions will only be wrong if current teenagers are more religious than people in their 20s, or if current children are being raised in a more religious environment. But in both cases, the opposite is more likely to be true.

In fact, there are reasons to think these predictions are conservative: 1. Survey results like these are subject to social desirability bias, which is the tendency of respondents to shade their answers in the direction they think is more socially acceptable. To the degree that apostasy is stigmatized, we expect these reports to underestimate the number of Nones. As the visibility of nonreligious people increases, they might be more willing to be counted; in that case, the trends would go faster than predicted.

2. The trends for Protestants and Nones have apparent points of inflection near 1990. Predictions that include earlier data are likely to underestimate future trends. If we use only data since 1990 to generate predictions, we expect the fraction of Nones to exceed 40 percent within 20 years.

A longer version of this article is available from my blog, “Probably Overthinking It.” It applies the same methods to predict changes in other aspects of religion: belief in God, interpretation of the Bible, and confidence in the people who run religious organizations.

The data I used and all of my code are available in this Jupyter notebook.

—Allen Downey

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NEWS

The Neuroscience of Paid Parental Leave

Having parents present is crucial during an infant's first weeks of development—but institutions that train physicians don't always seem to care

As a new father, I've learned that the U.S. ranks at the very bottom of industrialized nations for paid parental leave. Denmark offers a year. Italy offers five months. France offers 16 weeks; Mexico, 12 weeks; Afghanistan, 13. According to a 2016 Pew Research Center analysis of 41 countries, the U.S. is the only one to offer zero paid parental leave.

It is easy (and likely accurate) to assume that paid parental leave policies are a nice gesture to help exhausted, stressed-out parents have the time and resources to figure out how to care for an infant. Perhaps this is why it is often bundled with leaves for tending to a sick family member. But the focus should be more directly on the infants themselves, with parental leave being a necessary measure to ensure infant health during a critical period of brain development.

The Neuroscience of Parental Leave

What happens to the infant shortly after birth drastically alters his or her brain. Postnatal brain maturation is enormous in scope. Each day, tens of thousands of new synapses are formed. Genetic programs guide the birth of these synapses, but what

signals the infant's brain receives from the eyes, ears, skin and other senses sculpt how the brain's functional anatomy is ultimately organized and implemented. Frequently used synapses form stronger, more efficient connections that coalesce into networks. Unused synapses die off. This is not an example of "use it or lose it," but rather "use it or it never will be."

The visual system, for example, simply cannot form in the absence of visual input. Ocular dominance columns, the neural centers in the visual cortex that process binocular vision, require visual stimulation from both eyes within a critical period, which is why infant cataracts are aggressively and quickly treated. Emotion and cognitive systems also do not form properly in the absence of specific inputs. Here, a parent's caress, the melody of a mother's voice, the smell of a father's chest is incarnated, engineered into the cognitive foundation that the infant will use to make sense of the world. Brain development is why the parent-child relationship is so important—you can keep an infant warm and nourished without it, but their brain won't develop properly.

Attachment describes what the infants'

brains infer about their parents and how children should behave to get what they need. When parents are consistently present and respond to distress promptly and with reassurance, infants infer a secure and organized attachment. Behaviorally, infants learn that they can express negative emotions and this will bring about comfort from their parents. When parents are not present or become annoyed, ignore or ridicule their needs, infants infer an insecure attachment and organize behaviors that avoid parents in times of need or display extreme negative emotion to draw attention to the inconsistently responsive parent.

Attachment is a powerful predictor of a child's social and emotional growth. As the infant's foundational experience with the world, the relationship with parents predicts later relationships and interactions. During this time of drastic synaptic remodeling, a poor attachment leaves a devastating mark on the infant's sensitive brain. Studies have shown that Romanian orphans who were reared in extreme physical and social isolation have smaller brains and, as a result, are more likely to suffer mental health issues in peri-adolescence. Adopted orphans from Romania and China

have a larger amygdala than their non-adopted counterparts, suggesting grossly and irreversibly altered emotion and fear processing networks.

Paid parental leave (for both parents) is associated with decreased infant mortality, less postpartum depression, more breastfeeding, more follow-up doctor appointments and more involved dads—all things that promote healthy brain development.

State of the Residencies: Physicians, Heal Themselves

As a physician trainee and a dad, I've been surprised that resident leave policies are ironically inconsistent with knowledge of brain development and what the medical profession itself recommends.

In 2013 the American Academy of Pediatrics released a policy statement “Parental Leave for Residents and Pediatric Training Programs” that emphasized “the AAP recommends that regardless of gender, residents who become parents should be guaranteed six to eight weeks, at a minimum, of parental leave with pay after the infant’s birth.” As a resident, Yale allowed me two weeks of paid leave because I am a man fathering a child. Surprisingly, Yale

This period of social and familial isolation was euphemistically referred to as a “monastic” existence.

offers six weeks to men adopting a child and six weeks to women either mothering or adopting a child. While this policy is not equitable or universal (infants of men fathering a child get shortchanged), Yale’s meager leave is sadly among the better for physician trainees.

Demand for parental leave clearly exists: a recent study published in *Academic Medicine* reported that among fathers in residency training, 89 percent cited parental leave as an important benefit. From delivery through the first months of brain development, studies have shown that a father’s presence has a strong impact on child development and attachment behaviors.

Nearly half of male residents, and over a third of female residents are parents. If we estimate that there are over 100,000 residents in the U.S., we can expect at least

25,000 pregnancies (half of residents are women, and more than half will have babies during residency) over the course of their around four-year training, or roughly 6,250 pregnancies each year. Those 6,250 little brains need to form secure attachment. And yet parental leave policies remain inconsistent with our own evidence-based recommendations.

American Med-chismo

Anyone willing to pursue over a decade of postgraduate training to care for strangers in the middle of the night might want more than a few days to welcome their child into the world. At the end of our residencies my wife (also a psychiatry resident) and I will have a combined 27 years of post-high school education (she, 12; me, 15) and four postgraduate degrees in the medical scienc-

es. So why don't highly skilled laborers who work 80-hour weeks in evidence-based medicine not receive an evidence-based parental leave? I think it's rooted in what I call, "American Med-chismo."

American Med-chismo could be best understood by a quote from Sir William Osler, one of the founders of Johns Hopkins: "The practice of medicine ... is a life of self-sacrifice and of countless opportunities to comfort and help the weak-hearted, and to raise up those that fall." No question, it's an idealistic and lovely sentiment. But recall that at this time (1890s) residents (almost entirely men) resided (literally) in the hospital. This period of social and familial isolation was euphemistically referred to as a "monastic" existence.

To a resident of and for the hospital, duty hours would have been a laughable idea. It was not at all uncommon for physicians to lean on cocaine or morphine as fuel. Forget about paid parental leave.

And the Med-chismo culture persists. Physician trainees are criticized for a lack of dedication when they pursue less time-intensive specialties and lifestyles. For example, *JAMA Surgery* reports that women considering motherhood experi-

ence "substantial negative bias" because maternity leave is resented. Many hospitals do not offer leave for parents who are not giving birth, and an uncompensated burden is placed on colleagues who cover for new parents.

Yet Med-chismo is not without comorbidities. Physician burnout—a nebulous phenomenon that involves emotional exhaustion, cynicism, and dehumanization—is on the rise. Unsurprisingly, it's associated with lower patient satisfaction, more medical errors, drug and alcohol use among doctors, even suicide. Over half of doctors, and up to 75 percent of residents, experience it, depending on specialty. But the rates aren't the same for everyone; residents with children have lower rates of burnout and cynicism. Perhaps this is why residents in the U.K. and Europe have more evidence-based paid parental leave policies. Or maybe they just believe the science.

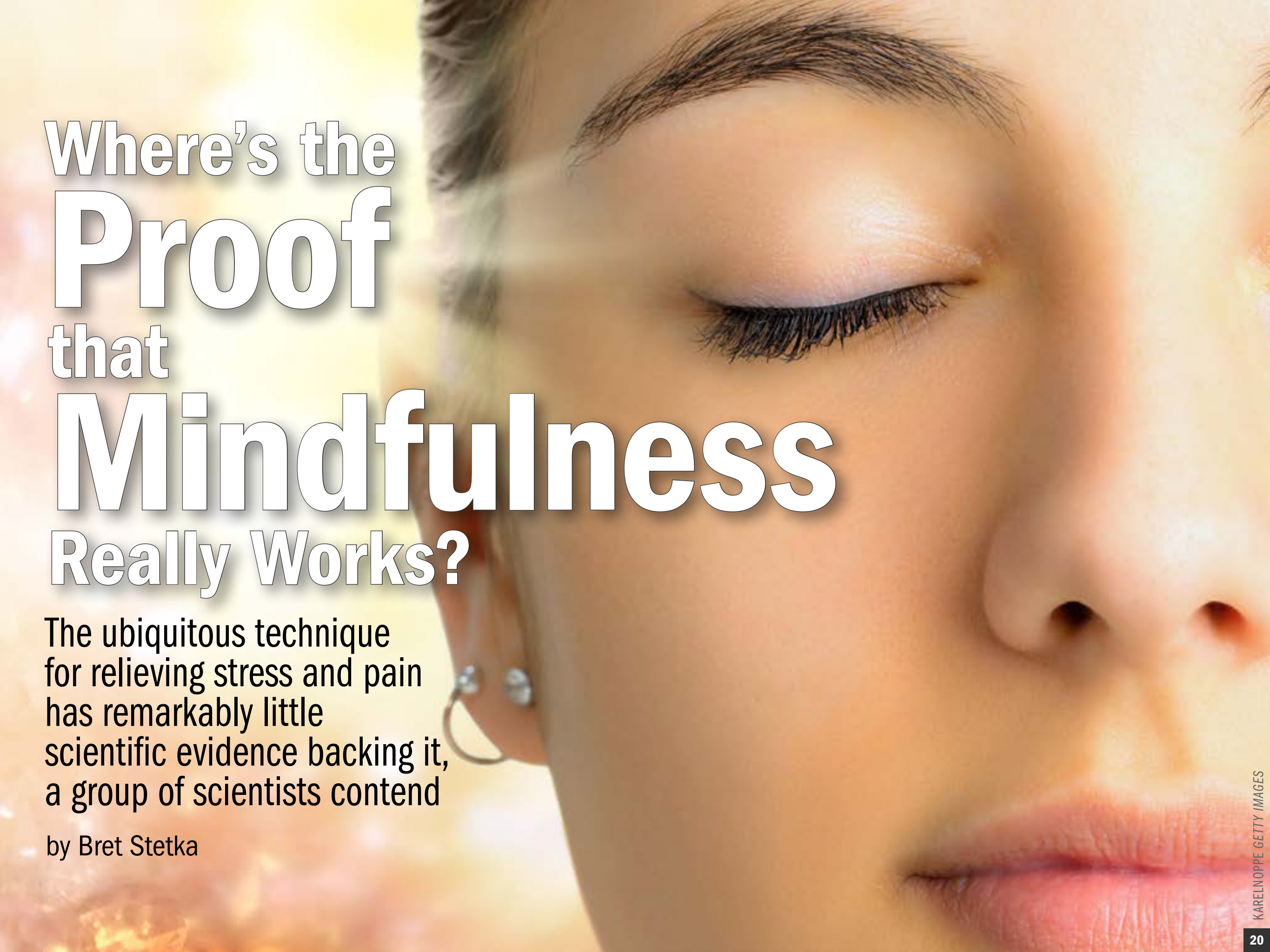
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Where's the
Proof
that
Mindfulness
Really Works?

The ubiquitous technique for relieving stress and pain has remarkably little scientific evidence backing it, a group of scientists contend

by Bret Stetka

The concept of mindfulness involves focusing on your present situation and state of mind. This can mean awareness of your surroundings, emotions and breathing—or, more simply, enjoying each bite of a really good sandwich. Research in recent decades has linked mindfulness practices to a staggering collection of possible health benefits.

Tuning into the world around you may provide a sense of well-being, an array of studies claim. Multiple reports link mindfulness with improved cognitive functioning. One study even suggests it may preserve the tips of our chromosomes, which whither away as we age.

Yet many psychologists, neuroscientists and meditation experts are afraid that hype is outpacing the science. In an [article](#) released in *Perspectives on Psychological Science*, 15 prominent psychologists and cognitive scientists caution that despite its popularity and supposed benefits, scientific

Bret Stetka is a writer based in New York City and an editorial director at Medscape (a subsidiary of WebMD). His work has appeared in *Wired*, NPR and the *Atlantic*. He graduated from the University of Virginia School of Medicine in 2005.



Mindfulness involves focusing on your present situation, your surroundings, emotions and breathing

ic data on mindfulness are woefully lacking. Many of the studies on mindfulness and meditation, the authors wrote, are poorly designed—compromised by inconsistent definitions of what mindfulness actually are, and often void of a control group to rule out the placebo effect.

The new paper cites a 2015 review published in *American Psychologist* reporting that only around 9 percent of research into mindfulness-based interventions has been tested in clinical trials that included a control group. The authors also point to multiple large placebo-controlled meta-analyses

concluding that mindfulness practices have often produced unimpressive results. A 2014 review of 47 meditation trials, collectively including over 3,500 participants, found essentially no evidence for benefits related to enhancing attention, curtailing substance abuse, aiding sleep or controlling weight.

Lead author of the report Nicholas Van Dam, a clinical psychologist and research fellow in psychological sciences at the University of Melbourne, contends potential benefits of mindfulness are being overshadowed by hyperbole and oversold for financial gain. Mindfulness meditation and training is now a \$1.1-billion industry in the U.S. alone. “Our report does not mean that mindfulness meditation is not helpful for some things,” Van Dam says. “But the scientific rigor just isn’t there yet to be making these big claims.” He and his co-authors are also concerned that as of 2015, less than 25 percent of meditation trials included monitoring for potential negative effects of the intervention, a number he would like to see grow as the field moves forward.

Van Dam acknowledges that some good evidence does support mindfulness. The 2014 analysis found meditation and mindfulness may provide modest benefits in

“But the scientific rigor just isn’t there yet to be making these big claims.”

anxiety, depression and pain. He also cites a 2013 review published in *Clinical Psychology Review* for mindfulness-based therapy that found similar results. “The intention and scope of this review is welcome—it is looking to introduce rigor and balance into this emerging new field,” says Willem Kuyken, a professor of psychiatry at the University of Oxford in England, who was not involved in research for the new report. “There are many areas where mindfulness-based programs seem to be acceptable and promising, but larger-scale randomized, rigorous trials are needed.”

Two trials published in *Science Advances* also support mindfulness practices. The first found mindfulness-like attention training reduces self-perceived stress, but not levels of the hormone cortisol, a commonly used biological gauge of stress levels. The other trial links mindfulness-like attention training to increases in thickness

of the prefrontal cortex, a brain region associated with complex behavior, decision-making and shaping personality. The authors called for further research into what these findings could mean clinically.

Van Dam characterizes the research methods used in both of these studies as sound. Yet he points out both also represent the field’s larger problem—a lack of standardization. Varying mindfulness-like approaches have been investigated over the years, making comparisons of different studies difficult.

Mindfulness is rooted in Buddhist thought and theory. In the West it was popularized in the 1970s by University of Massachusetts professor Jon Kabat-Zinn, a cognitive scientist who founded the university’s Stress Reduction Clinic and the Center for Mindfulness in Medicine. Kabat-Zinn developed what he called “mindfulness-based stress reduction,” an alter-

native therapy for a variety of often difficult-to-treat conditions. By the early 2000s, the concept of mindfulness had ballooned in popularity. It soon came to have many differing meanings and varying approaches to treatment. “We specifically commented in our article on the fact that many continue to develop novel interventions without fully evaluating those that are already being implemented,” Van Dam says. “I think these studies, while well-designed, may fit within the category of being just different enough from what we already have to prevent us from really knowing whether we could use these results as evidence for [the effectiveness of] other mindfulness-based practices.”

As Van Dam and his co-authors wrote, “[there is] neither one universally accepted technical definition of ‘mindfulness’ nor any broad agreement about detailed aspects of the underlying concept to which it refers.”

“Overall, I suspect that a large number of the health promises will not be fulfilled, mostly because therapies, phone apps and other interventions are being rushed to market without sufficiently rigorous testing and appropriate implementation,” he

says. “But given what we’ve seen to date, I suspect evidence may accumulate supporting mindfulness practices for anxiety, depression and stress-related conditions.”

Behavioral and social sciences professor and director of Brown University’s Mindfulness Center Eric Loucks, who was not involved in researching the new paper, agrees there are multiple definitions of mindfulness. But it is the trickiness in bringing a rich spiritual concept into a standardized framework for testing and advising patients that he feels might be tough to tackle.

“One element in defining mindfulness, if considering its roots in Buddhism, is... the Buddha’s recommendation that descriptions of concepts like ‘mindfulness’ are like a finger pointing at the moon,” he explains. “It is important not to confuse the finger for the moon. There will always be variations in people’s understanding of mindfulness. It is a personal experience.”



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There Is No One Way to Live a Good Life

Humanistic psychology is an uplifting, compassionate view of humanity

by Scott Barry Kaufman

I'd like to offer you two models of human development.

The first is what you might call the Surrender Yourself model of development. According to this model, the lowest kind of happiness is having your basic food and health needs met. Then there is achievement—the pleasure we get from earned and recognized success. Then there is generativity, the pleasure we get from creative expression and having a large positive impact on the world. Finally, the highest and most noble kind of happiness is complete surrender and the glowing satisfaction we get when we put all of our being toward some noble cause.

The second model we might call the Fully Human model. In this conception, the focus is on helping you find your own unique path

Scott Barry Kaufman is scientific director of the Imagination Institute and a researcher and lecturer at the Positive Psychology Center at the University of Pennsylvania. He conducts research on the measurement and development of imagination, creativity and play and teaches the popular undergraduate course Introduction to Positive Psychology at Pennsylvania. Kaufman is author of *Ungifted: Intelligence Redefined* (Basic Books, 2013) and co-author (with Carolyn Gregoire) of *Wired to Create: Unraveling the Mysteries of the Creative Mind* (Perigee, 2015).

to fulfillment. The hierarchy is not arranged from least noble to most noble, but instead is a hierarchy of *prepotency*. According to this model, our most important needs are food, shelter, and safety. Without these most prepotent needs met, people do not even get an opportunity for further growth as a human. These most prepotent needs include a lack of environmental instability and chaos in the environment, as well as a lack of physical, emotional, or sexual abuse from trusted loved ones. Once those needs are met, it's important to have our love needs met, which include a sense of belonging and connectedness to others. Then, with that foundation, we can pursue authentic and earned forms of mastery, satisfying our need for the esteem from others. Then, with such security as a person and a grounded sense of competence and self-worth, we can try to pursue our most unique purpose, hone our authenticity and core values, and then, with that strong foundation and knowledge of who we are and what makes our own unique life worth living, we can authentically transcend our selves, contributing our full humanness to increase the human condition.

Which model do you prefer—the Surrender Yourself model of human development

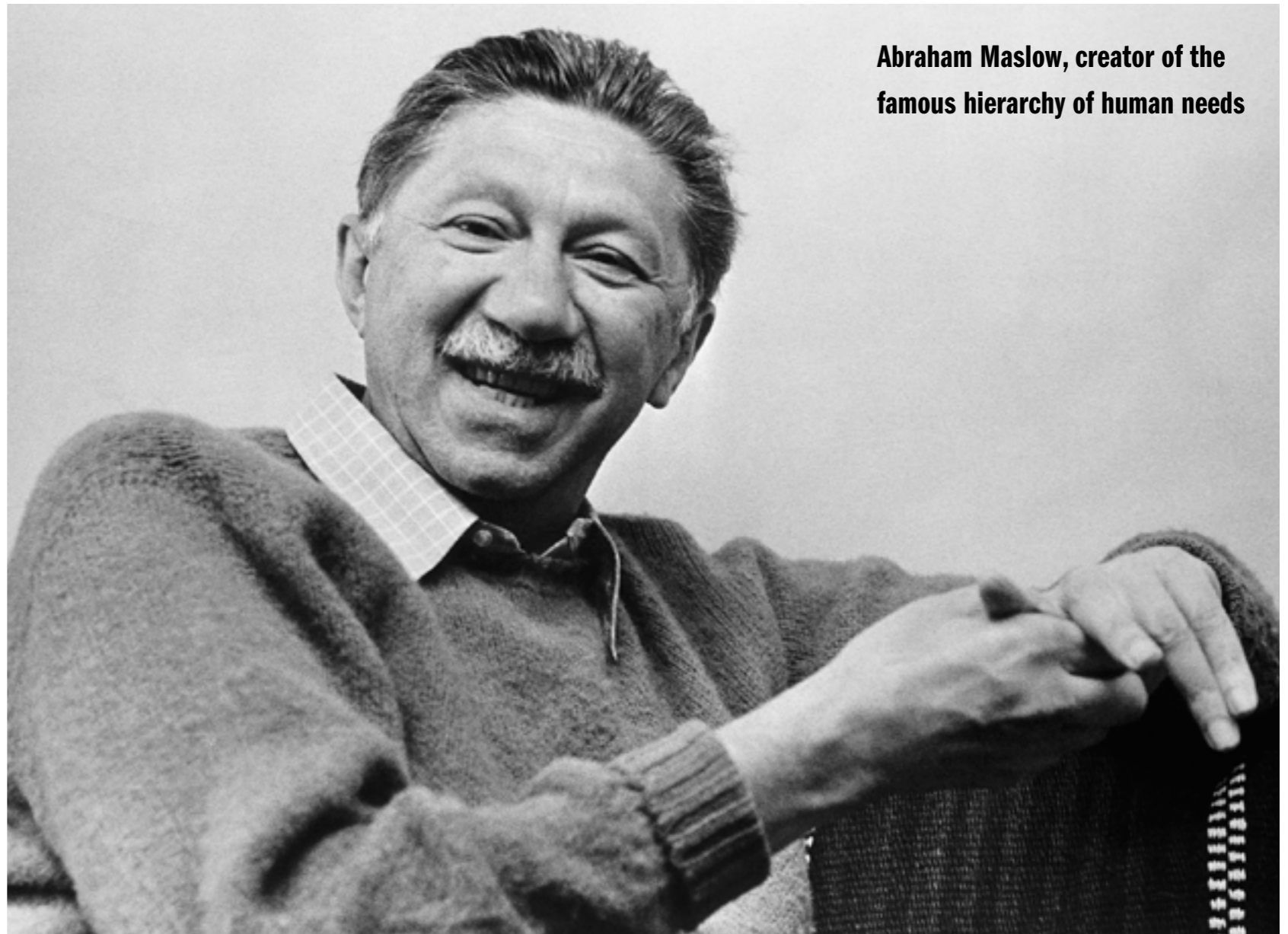
or the Fully Human model of human development? I value and respect whichever model you prefer. My point is not to convince you that there is a single right model that works for you. Instead, I put forward this exercise to argue two other things.

In his recent op-ed, *New York Times* columnist David Brooks puts forward what he calls “The Four Kinds of Happiness.” According to this model, you are having healthy development to the extent to which you are “surrendering” yourself to others. Then, as a straw argument, Brooks misrepresents Abraham Maslow’s famous hierarchy of needs, as well as the theories of fellow humanistic psychologist Carl Rogers. The two models of human development he pits against each other are actually much more similar than he realizes, except that the first one is much more a value judgment of what you *should* become, instead of a hierarchy of prepotency of needs, which is what Maslow proposed. Next, Brooks reviews Eli Finkel’s new book “*The All-or-Nothing Marriage*” (which truly is an excellent book), and criticizes Finkel for placing the framework within the mutual growth model of love put forward by the humanis-

tic psychologists, and argues instead for a complete surrender model of love. I find both of these things highly problematic, and even potentially dangerous.

Let's start with the first point, about the misrepresentation of Maslow's hierarchy of needs. The past few years it has been pure intrinsic joy to attempt to read everything—published or unpublished—that was written by the humanistic psychologists. I read over 1,000 pages of Maslow's personal journal, as well as have visited library archives looking at unpublished notes, correspondences, and the like. I would even go so far to say that I feel a deep friendship with Maslow, even though I fully recognize it's not a very symmetrical relationship.

It's very clear, especially in his later writings, that Maslow strongly believed in the importance of transcending one's self and finding one's unique purpose that best helps others. Here's the truth about what Maslow actually thought about self-actualization, and then later in his life what he actually thought about the importance of self-transcendence. As we'll see, both self-actualization and self-transcendence are not at odds with each other, but they actually *need* each other.



Abraham Maslow, creator of the famous hierarchy of human needs

Self-Actualization

In an unpublished essay written in October 1966 called “Critique of Self-Actualization Theory,” Maslow attempted to make humanistic psychology's tacit assumptions explicit. Among various explicit axioms of self-actualization, he noted that:

“A[n] assumption of self-actualization theory is that it very strongly requires a pluralism of individual differences Such a true acceptance of individual differences has several key implications that should be stated briefly ... it means that we try to make a rose

into a good rose, rather than seek to change roses into lilies. It implies a kind of Taoism, an acceptance of what people really are; it necessitates a pleasure in the self-actualization of a person who may be quite different from yourself. It even implies an ultimate respect and acknowledgment of the sacredness and uniqueness of each kind of person. In short, humanistic psychology involves an acceptance of people as they are at their intrinsic core and regards their therapists as simply Taoist helpers for them. We strive to enable to become healthy and effective in their own style.”

This is the most direct statement of self-actualization I could find in any of Maslow’s writings. He goes on to argue that effective counselors are those who truly respect the other person’s “inner core” and regards the role of psychotherapists as “horticulturists” whose task is to help the other person grow “in his or her own style toward self-fulfillment.”

In this paper he makes two other points worth pointing out. Additionally, he argues that having good values is absolutely essential over “neurotic” values, which tend to de-

velop under conditions of extreme insecurity and unsafety. However, he argues that we must not treat the choice of values as separate from societal influence, arguing that it’s essential to have “good conditions for choosing—which necessitates full access to information, to the truth. Useful information must not be hidden. This notion applies to undemocratic governments that censor the news or give out slanted news. It also applies to the one-newspaper town in our country or to corporations or labor unions that act as monopolies. It also means being able to choose without fear or social pressure.”

Under optimal conditions, Maslow believed (perhaps too optimistically) that people naturally move toward full humanness. Carl Rogers believed the same thing when he spoke of the “self-actualizing tendency” of humans.

Finally, for the purposes of this article, and contrary to Brooks’s depiction, I’d like to point out another statement Maslow made in this paper:

Finally, it must be stated that self-actualization is not enough. Personal salvation and what is good for the person alone cannot be really understood in

isolation. Social psychology is, therefore necessary. The good of other people must be invoked, as well as the good for oneself, even though it must be demonstrated how these are—or may be—synergic. To some extent, the individual’s interests and those of his or her team or organization, culture, or society may be at odds—even though an overall principle of synergy may prevail. But, in any case, it is quite clear that a purely intrapsychic, individualistic psychology, without preference to other people and social conditions, is not adequate.

The humanistic psychologists were deeply interested in “human nature and its heights” and this very much included morality and compassion, but this *also* included authenticity, responsibility, and respect for individual differences. These concepts weren’t pitted against each other in some simplistic and cartoonish way, but were integrated in a mature framework for humanity.

Self-Transcendence

It’s a tragedy that virtually every single psychology textbook in existence presents the incomplete version of Maslow’s hierarchy

of needs. Toward the very end of his life, Maslow was working on an unfinished theory, which included “self-transcendence” at the top of his hierarchy of needs. In his descriptions, self-transcendence involves furthering a cause beyond the self and experiencing a radical shift in perspective, including a communion beyond the boundaries of the self through “peak experience.”

During the last few years of his life, Maslow was enamored by the Buddhist “Bodhisattva Path” to enlightenment. Here is a snippet of an interview with Maslow somewhere between November 23, 1968, and January 24, 1969, just a few years before he suddenly died of a heart attack at the age of 62:

“Well, we can talk about self-actualizing people at different levels much more than I ever thought 10 years ago. For one thing there’s this becoming acquainted with people who had everything. I mean everything in my terms, in psychological terms rather than automobiles, and yet who could be quite unhappy and not know their way and stagger, and stumble around and do all sorts of dopey things, and stupid things.

Then there was another differentiation that I had to make, that of people who were basic-need gratified, neurosis free, and using some capacities well, and yet being “merely healthy” as I call it, the “merely healthy” as over against the transcendents. Well, I think the difference comes from those who have peak experiences and those who don’t, more or less. That’s what I described first for self-actualizing people who are transcendents mostly, people in whom the basic-need gratification would automatically lead to the value system which implies also the Bodhisattva path. That is, the helping service to humanity or the helping of other people . . . and of simply becoming better human beings for others, as well as for themselves, and finally of transcending the ego.

These ideas preoccupied Maslow so much at the latest stages of his life that he made a call for a new psychology beyond humanistic psychology. On September 14, 1967, Maslow delivered a lecture in San Francisco titled “The Farther Reaches of Human Nature,” in which he presented some of these ideas:

*The major emphasis in Humanistic psychology rests on the assumptions regarding “higher needs.” . . . These higher human needs are . . . biological, and I speak here of love, the need of love, for friendship, for dignity, for self-respect, for individuality, for self-fulfillment, and so on. If however, these needs are fulfilled, a different picture emerges. There are people who do feel loved and who are able to love, who do feel safe and secure and who do feel respected and who do have self-respect. If you study these people and ask what motivates them, you find yourself in another realm. This realm is what I have to call transhumanistic, meaning that which motivates, gratifies, and activates the fortunate, developed, i.e., already self-actualizing person. These people are motivated by something beyond the basic needs. The . . . point of departure, into this transhumanistic realm comes when they answer the following kind of questions: **“What are the moments which give you . . . the greatest satisfaction? . . . What are the moments of reward which make your work and your life worthwhile?”** The answers to those questions were in*

terms of ultimate verities. . . . For example, truth, goodness, beauty. . . and so on. What this amounts to is that this third i.e., humanistic psychology is giving rise to a fourth, “transhumanistic psychology” dealing with transcendent experiences and transcendent values. The fully developed (and very fortunate) human being working under the best conditions tends to be motivated by values which transcend his self. They are not selfish anymore in the old sense of that term. Beauty is not within one’s skin nor is justice or order. One can hardly class these desires as selfish in the sense that my desire for food might be. My satisfaction with achieving or allowing justice is not within my own skin. . . . It is equally outside and inside: therefore, it has transcended the geographical limitations of the self. Thus one begins to talk about transhumanistic psychology. (Maslow, 1969a, pp. 3–4)”

I bolded those questions for a reason. I want to make it very clear that humanistic psychology in general, and Maslow’s thinking in particular, is very much about being responsible for choosing and owning your

Under optimal conditions, Maslow believed (perhaps too optimistically) that people naturally move toward full humanness.

own unique path to the good life. Under this framework, there is no single prescription or most “noble” way of being.

Which brings me to something that I think is problematic about Brooks’s op-ed. He clearly is trying to not just *describe* what healthy development looks like, but he is clearly *prescribing* a “noble” path to healthy development. The implication here is that there are less noble paths to healthy development, and if you aren’t overtly, constantly helping people in obviously discernible ways, then something is broken or wrong with you.

I teach a course on positive psychology at the University of Pennsylvania, in which I present various possible routes to the good life, along with activities designed to help students develop various aspects of their being. The goal of the course is *not* to

choose for the student what a life worth living looks like, but for the student to experiment and see what works for them, *according to their own style*. As long as it causes no harm to self or others, who am I to decide what counts as a life worth living?

But there is something even darker going on here, and that’s this notion that whenever we are not helping others, we are by default being selfish and greedy. It would seem that our culture has just as much of a “taboo of selfishness” today as it did when Erich Fromm wrote this passage in his classic article “[Selfishness and Self-Love](#)”:

“People are their own slave drivers; instead of being the slaves of a master outside of themselves, they have put the master within. This master is harsh and cruel. He does not give them

a moment's rest, he forbids them the enjoyment of any pleasure, does not allow them to do what they want. If they do so, they do it furtively and at the expense of a guilty conscience. Even the pursuit of pleasure is as compulsory as is work. It does not lead them away from the continual restlessness which pervades their lives. For the most part, they are not even aware of this."

Maslow was a great admirer of Fromm (as am I), and this essay by Fromm inspired Maslow to write an unpublished essay in which he clearly distinguishes between selfish *behaviors* and selfish *motivations*. Not everything that looks like "helping" is healthy, and not everything that appears "selfish" is unhealthy.

In fact, my colleagues and I have been investigating the implications of individual differences in both pathological altruism (the need to give in a way that causes harm to self and/or others) as well as *healthy selfishness* (engaging in self-care without any damage to others). The data are just starting to come in, and I'm sure I'll write much more about this later, but so far we are seeing that there are *serious unhealthy developmental*

consequences to growing up constantly told that you must put your own needs aside, and "surrender" yourself to others. In fact, we are finding some striking clinical implications, in that high levels of pathological altruism are predicting things like depression and quite vulnerable forms of narcissism very strongly, whereas healthy selfishness is predicting a wide range of growth-related variables, including positive social relationships and greater meaning and purpose in life.

So contrary to Brooks, it appears that the reality is that too much focus on sacrificing your own needs makes it less likely that you will be motivated to help others!

Romantic Relationships

Finally, we arrive at Brooks's last point about romantic relationships. In his latest book, Finkel places his extensive and well-researched work on relationships within Maslow's mutual growth model of romantic love, which states that an ideal partnership is one in which both partners help each other become the best version of themselves (according to their own style). This strikes Brooks as a "cold and detached conception of marriage." Instead, Brooks

argues for a complete melding "into a single unit called marriage."

This might sound pleasant on the surface, but empirically this approach to romance has been shown to be *disastrous*. This leads to all sorts of codependency issues, potential resentments, and even sometimes trauma. While it's certainly true that romantic relationships have the extraordinary power to *expand our selves*, this is not the same thing as *merging our selves*.

Robert Vallerand and his colleagues have shown quite convincingly that those who change in romantic relationships in ways conducive to growth and health are precisely those who engage in relationships that allow the individual to remain engaged in other spheres of life (e.g., friends, family, hobbies) outside the relationship. This is also consistent with the notion that "role engulfment," in which a person's identity is based entirely on one specific role (e.g., helping others) superseding all other roles, sets the stage for *role abandonment*, or detachment from other things that make life worth living. *The same applies to the self*. Self-engulfment will naturally lead to self-abandonment, which is not a healthy state of affairs for one's self or for the world.

As Marianne Williamson put it so beautifully,

Our deepest fear is not that we are inadequate.

Our deepest fear is that we are powerful beyond measure.

*It is our light, not our darkness
That most frightens us.*

We ask ourselves

*Who am I to be brilliant, gorgeous,
talented, fabulous?*

Actually, who are you not to be?

You are a child of God.

Your playing small

Does not serve the world.

*There's nothing enlightened
about shrinking*

*So that other people won't feel
insecure around you.*

*We are all meant to shine,
As children do.*

*We were born to make manifest
The glory of God that is within us.*

It's not just in some of us;

It's in everyone.

And as we let our own light shine,

*We unconsciously give other people
permission to do the same.*

As we're liberated from our own fear,

We find in our subjects a healthy selfishness, a great self-respect, a disinclination to make sacrifices without good reason.

*Our presence automatically liberates
others.*

Maslow makes this very clear in his writings. In his seminal book, *Motivation and Personality*, Maslow has a chapter on “Love in Self-Actualizing People,” in which he outlines what love looks like in those who are most self-actualized. I'll leave the last word to Maslow:

“As we have seen, the tendencies to detachment and to need identification and to profound interrelationships with another person can coexist in healthy people. The fact is that self-actualizing people are simultaneously the most individualistic and the most altruistic and social and loving of all human beings. The fact that we have in our culture put these qualities at oppo-

site ends of a single continuum is apparently a mistake that must now be corrected. These qualities go together and the dichotomy is resolved in self-actualizing people.

We find in our subjects a healthy selfishness, a great self-respect, a disinclination to make sacrifices without good reason.

What we see in the love relationship is a fusion of great ability to love and at the same time great respect for the other and great respect for oneself. This shows itself in the fact that these people cannot be said in the ordinary sense of the word to need each other as do ordinary lovers. They can be extremely close together and yet go apart when necessary without collapsing. They do not cling to each other or have hooks or anchors of

any kind. One has the definite feeling that they enjoy each other tremendously but would take philosophically a long separation or death, that is, would remain strong. Throughout the most intense and ecstatic love affairs, these people remain themselves and remain ultimately masters of themselves as well, living by their own standards even though enjoying each other intensely.

Obviously, this finding, if confirmed, will necessitate a revision or at least an extension in the definition of ideal or healthy love in our culture. We have customarily defined it in terms of a complete merging of egos and a loss of separateness, a giving up of individuality rather than a strengthening of it. While this is true, the fact appears to be at this moment that the individuality is strengthened, that the ego is in one sense merged with another, but yet in another sense remains separate and strong as always. The two tendencies, to transcend individuality and to sharpen and strengthen it, must be seen as partners and not as contradictories. Furthermore, it is implied that the best way to transcend the ego is via having a strong identity.”

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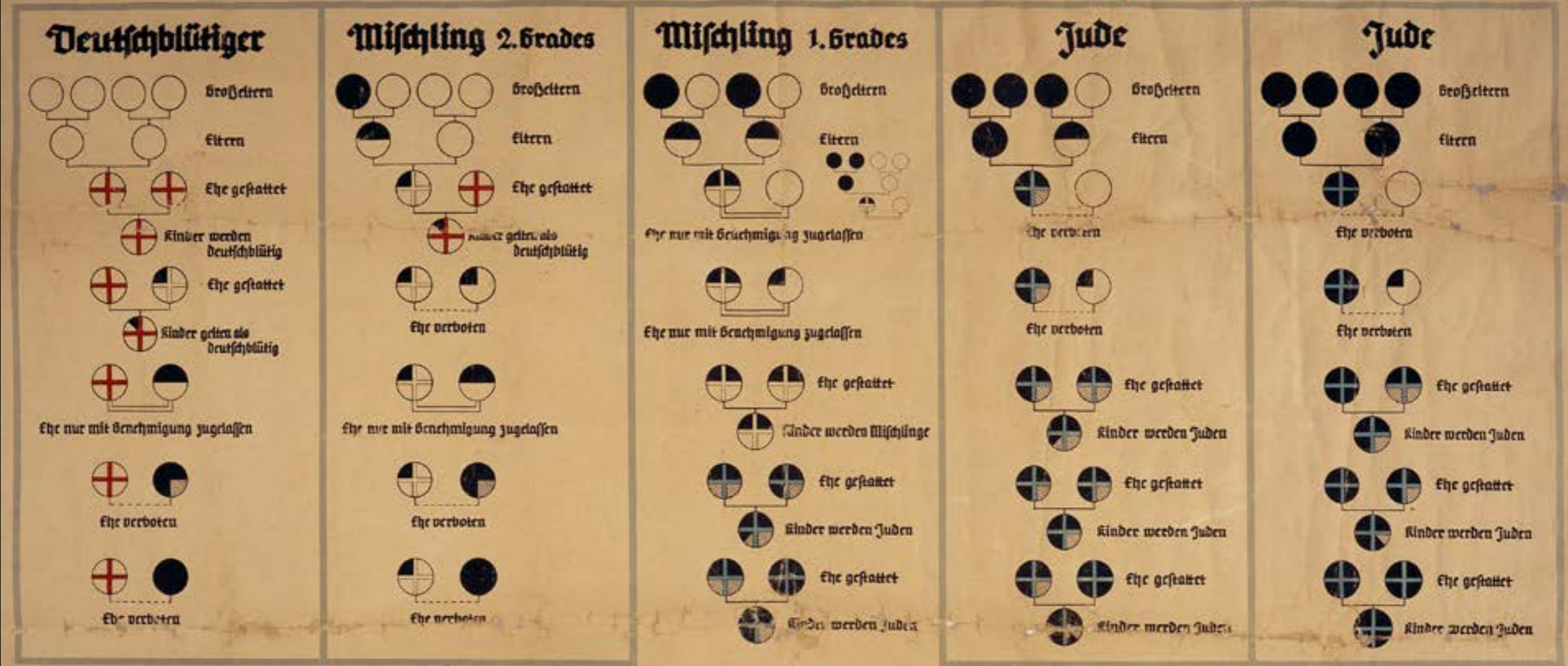
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Die Nürnberger Gesetze

Chart that describes the Nuremberg Laws, 1935. Click on the image to read more.



Neurologists' Role in Euthanasia and "Racial Hygiene" during the Nazi Years

For many years, neurology was not considered to have been heavily implicated in the crimes of the Nazi state.

A recent research project puts the lie to this belief

• By Corinna Hartmann, Andreas Jahn •

The killing and exile of “non-Aryan” members of the profession and collaboration of neurologists in eugenic and euthanasia efforts escaped scrutiny immediately after the war.

Medical historians have recently published accounts that show neurologists were indeed complicit with the Nazis—and became victims if they were classified as non-Aryan. Heiner Fangerau, who teaches the history and ethics of medicine at University Hospital Düsseldorf—along with colleagues Michael Martin at the Heinrich Heine University of Düsseldorf and Axel Karenberg from the University of Cologne—undertook extensive research on neurologists during the Third Reich for the German Society of Neurology. Fangerau discussed new findings with Corinna Hartmann and Andreas Jahn of *Gehirn&Geist*, the psychology and neuroscience specialty publication of *Spektrum der Wissenschaft*, and the German sister publication of *Scientific American*.

An edited transcript of the interview follows.

Professor Fangerau, your research project examines the role played by neurolo-

gists during the Nazi period. Why is this only happening 70 years after the fact?

There were several different phases in which people dealt with National Socialism after World War II. Immediately after 1945 the Allies pursued a policy of denazification. After that German society as a whole attempted to suppress its dark past. Many members of the next generation, however, found it impossible to close their eyes: Students in the 1968 movement were angry that their parents were unwilling to deal openly with the Third Reich. The medical specialties took even longer to begin working through the past. As a result, their reappraisal of the crimes committed began only in the 1980s. Part of the reason why historical research into neurology has only been conducted systematically over the past several years is that neurology and psychiatry were forced into the same disciplinary framework in 1935. Before then neurology had begun to separate from psychiatry. The basic idea was to leave psychological phenomena that are difficult to understand to the psychiatrists and to concentrate on disorders that are anatomically demonstrable. The National Socialists nullified this effort. They believed that they

could control these medical specialties more effectively if they brought them together in the Society of German Neurologists and Psychiatrists, which was dominated by psychiatrists committed to the ideology of racial hygiene. The chairman of the society was Ernst Rüdin, a psychiatrist. As a result, neurology has come to be viewed as less implicated. Historical research conducted since the late 1980s, however, paints a very different picture.

What are the most important findings of your research?

Neurology as a discipline was indeed complicit in the crimes of the Nazis. The ideology of racial hygiene combined with opportunistic arguments about compassion and cost reductions served to justify the systematic killing of more than 70,000 disabled and sick people. The Nazis euphemistically called this policy euthanasia. Both neurologists and psychiatrists were involved, and it is often difficult to distinguish who was a neurologist and who was a psychiatrist. The doctors assessed patients, and whoever they found to be either problematic or incapable of working was transferred to a killing facility and murdered. Neuroscientists then used the brains of these murdered

patients in their research.

What did you find especially shocking?

I found especially frightening the matter-of-factness with which many physicians used the bodies of those who had been killed, and their indifference in carrying out or approving experiments on their patients. After the war these crimes in the name of science were covered up as the acts of individuals. But in fact, these were by no means the acts of sadistic individuals; rather, a large proportion of academic neurologists collaborated with the Nazi system to their mutual benefit. The scientists were the recipients of research projects and state funding, and in return the National Socialists received scientific legitimation for their racial policies. Under the Nazis physicians were to play a major role in the state. And unfortunately, on the whole, physicians were prepared to work with the regime.

What sorts of research did neurologists conduct back then?

For one thing, they studied diseases like epilepsy. Their main concern here was to distinguish between hereditary and non-hereditary forms so that patients with a genetic predisposition could be forcibly sterilized in accordance with Nazi eugenic

principles. The second research focus was brain anatomy. Using samples from those who had been euthanized, neurologists studied the structure, function and pathology of the brain.

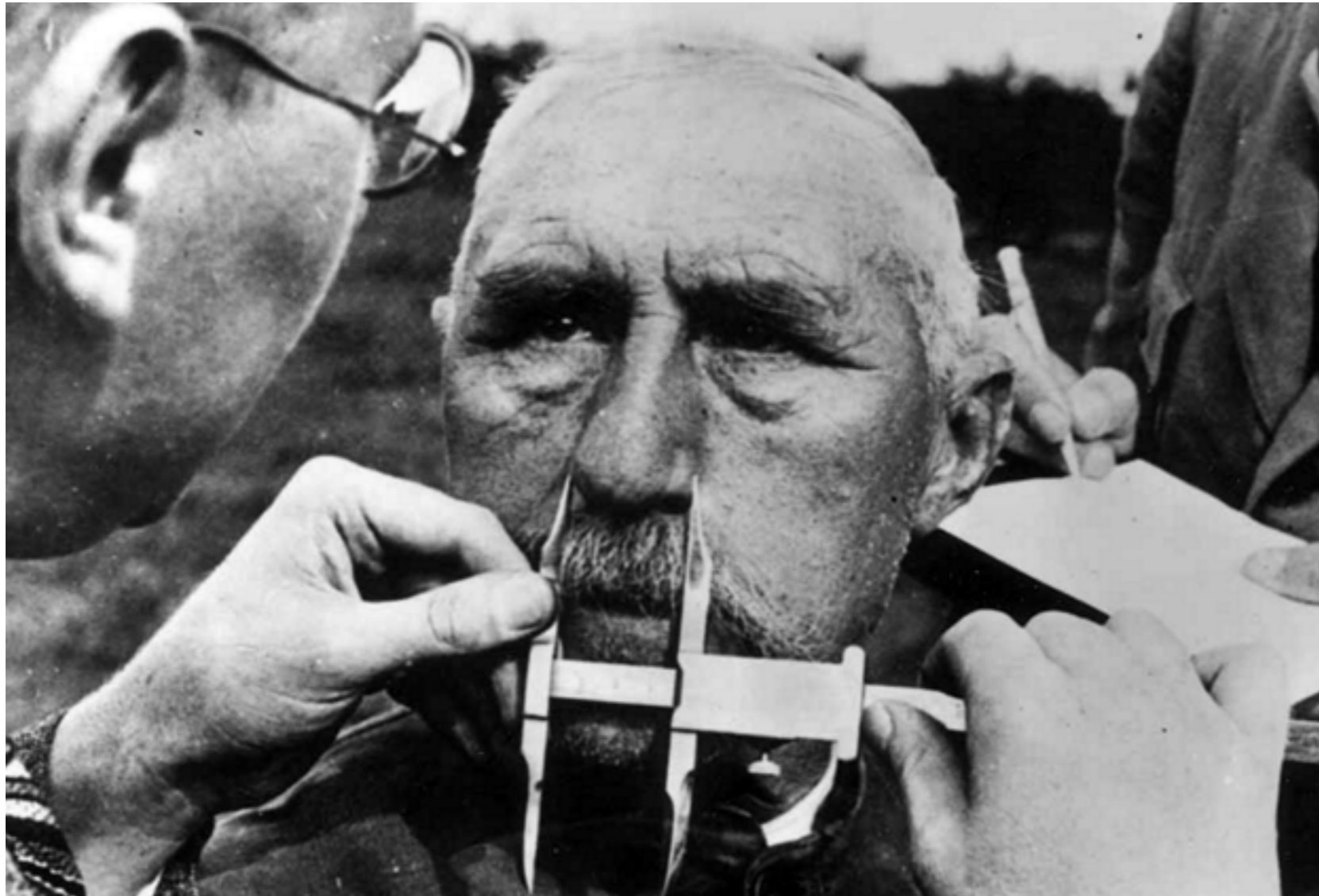
What happened to the samples and the knowledge derived from them after 1945?

The findings of these inhumane studies were simply merged into further research during the postwar era. The brains and preserved tissue such as the brain sections of euthanasia victims largely remained at the institutes where they continued to be used as material for studies. For example, the German Research Institute for Psychiatry, now the Max Planck Institute of Psychiatry in Munich, housed a large anatomical collection. Researchers in the history of medicine are currently doing research on these specimens. Apparently, for many years scientists were unable to resist the lure of working with these ghastly remains. It took persistent pressure from journalists and historians, especially from Israel, before German anatomical collections were systematically examined for incriminated material. In the 1990s many of these samples were removed from the archives and buried. It should be noted, however, that such mass burials are

not unproblematic from today's perspective, because it has made it even more difficult to identify the people who were murdered. It is one of the goals of research into this history to return to victims who were given numbers their true identities.

Which neurologists were especially complicit in the crimes of the National Socialists?

The most prominent were the neuropathologist Hugo Spatz and the brain researcher Julius Hallervorden. Both worked at the Kaiser Wilhelm Institute for Brain Research in Berlin. Under Spatz's leadership the institute became a hotbed of eugenics. As head of the histopathology department, Hallervorden conducted "secondary research" for the euthanasia program on the diseases suffered by the patients who were killed. Among other things, he and his co-workers studied which neurological and psychiatric diseases are hereditary. These determinations formed the basis for the selection of patients to be killed. The Kaiser Wilhelm Institute received large numbers of brains of euthanasia victims for its research. And as we now know, those who took part in that research were well aware of their origin.



A man has his nose measured during Aryan race determination tests under Nazi Germany's Nuremberg Laws that were applied to determine whether a person was considered a "Jew." "Non-Aryan" neurologists were expelled from the country, killed or driven to suicide.

example, did the person join the party before 1933 or after the seizure of power? Or was he or she someone who applied for membership after it stopped accepting members? Other important considerations include personal contacts with Nazi functionaries, appearances at political events, publication in Nazi periodicals and the denunciation of co-workers. Pette took the stage at important Nazi-sponsored events and frequently expressed the racial policies of the day. But it is not yet clear whether he betrayed colleagues—or perhaps may even have protected them.

Prizes awarded by the German Society of Neurology, which was rededicated in 1950, have actually been named in honor of Spatz and Pette. How could this have happened?

After the war the German colleges of physicians concocted a self-protective interpretation. They convinced themselves that only a few doctors had participated in

After the fact, how do you determine who was a true believer in the Nazi cause and who was merely a follower?

In point of fact, it is not always as clear as in the case of Hugo Spatz and Julius Hallervorden. For example, Heinrich Pette, who headed the Neurology Department of the Society of German Neurologists and Psychiatrists, has never been linked to the

euthanasia program. If we want to know whether a particular person was complicit with the Nazi system, we could of course ask: Was he or she a member of a National Socialist organization? But that would be an oversimplification because many people became members of the Nazi Party without acting on its behalf. That is why we also look at the date on which they joined. For

the crimes, and that these few had either been brought to justice during the Nuremberg Trials or been captured during the war. At the time, Spatz and Hallervorden were renowned neurologists whose colleagues and students found difficult to attack for their involvement in the Nazi regime. Questions were raised almost exclusively abroad. In 1953, when Hallervorden was to present a paper at the International Congress of Neurology Lisbon, the Dutch participants protested so vehemently that his presentation was canceled. The Hugo Spatz Prize was renamed only in 1999 after one of its awardees made an issue of it. In contrast to Spatz, Heinrich Pette was a more ambiguous character whose role has yet to be clarified.

After the end of the war were any neurologists forced to answer for their crimes?

Only about 20 physicians were charged at the Nuremberg Doctors' Trial, among them the only woman, Herta Oberheuser, who participated in human experiments in a concentration camp. None of the other physicians involved, even those who had worked at the Kaiser Wilhelm Institute, were prosecuted. There was another wave of trials during the 1960s, but it mainly involved psychiatrists. Important neurologists like Haller-

A few neurologists remained in the country but were unwilling to associate themselves with the Nazi cause.

vorden and Spatz continued in their careers in Germany as if nothing had happened.

A few neurologists remained in the country but were unwilling to associate themselves with the Nazi cause. However, there were many who were exiled, deported, driven to suicide or murdered after being classified as non-Aryan. Medical historians have shown that contemporary documents also reveal differences between neurologists in private practice and those working in university clinics in terms of recommending forced sterilization. In rural areas, where physicians had a personal relationship with their patients and their families, they were less likely to recommend sterilization. Such recommendations were more frequent in urban hospitals in which there was no real physician-patient relationship. But we have heard of no neu-

rologists who opposed the regime more resolutely. That is something that we intend to examine in a future research project.

How are young physicians responding to your findings?

Happily, young physicians are very interested in the history of their field. Many had previously known nothing of the involvement of German neurologists in the crimes of National Socialists, and they now find it all the more important to make this history known. Of course, there are some who disagree, but we want to ensure that we do not forget. That is why we intend to reconstruct histories of persecuted physicians and to shine a light on these physicians, some of whom made important contributions to science—especially since many of their names were expunged from the professional literature. History has shown un-

ambiguously that human beings are prepared to inflict suffering on others in the name of modern medical research. This is a propensity that we must bear in mind at all times. Although knowledge of what happened in the past cannot prevent future horrors, it may at least serve as a warning.

A List of Controversial Nazi-Era Neurologists

Julius Hallervorden (1882–1965) led the histopathology department at the Kaiser Wilhelm Institute for Brain Research in Berlin. He joined the SS in 1933, and Adolf Hitler named him a professor five years later. In addition, he was head of the external department of the Academy for Military Medicine. In collaboration with Hugo Spatz he described a rare neurodegenerative disease called the Hallervorden–Spatz disease.

Heinrich Pette (1887–1964) joined the National Socialist party and other Nazi organizations in 1933. He was one of the signatories of the “Oath of Allegiance of the Professors of the German Universities and High-Schools to Adolf Hitler and the National Socialist State.” In 1950 he founded the German Society of Neurology and remained its chairman until 1952. To this day

the society awards the Heinrich Pette Prize.

Ernst Rüdin (1874–1952) was a Swiss-German psychiatrist and chairman of the Society of German Neurologists and Psychiatrists. In 1933 he chaired the Expert Committee for Population and Race Politics. In 1939 Adolf Hitler awarded him the Goethe Medal for Arts and Sciences. During the denazification era after World War II he was considered a “follower.”

Hugo Spatz (1888–1969) was a neuropathologist and from 1937 director of the Kaiser Wilhelm Institute, where about 700 brains of euthanasia victims were studied. In 1943 he was named a medical staff officer. After the end of the war he directed the Max Planck Institute for Brain Research in Giessen (now in Frankfurt). A prize awarded by the German Society of Neurology was named after him until 1999.

Further Reading

[How Nazi's Defense of “Just Following Orders” Plays Out in the Mind](#)

[The Nazi and the Psychiatrist](#)

[Unearthing the Atrocities of Nazi Death Camps](#)

[Scientific Spy Craft: The Quest to Sabotage Nazi Germany's Atomic Bomb](#)

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Why Do Smart People Do Foolish Things?

Intelligence is not the same as critical thinking and the difference matters

By Heather A. Butler



We all probably know someone who is intelligent, but does surprisingly stupid things. My family delights in pointing out times when I (a professor) make really dumb mistakes. What does it mean to be *smart* or *intelligent*? Our everyday use of the term is meant to describe someone who is knowledgeable and makes wise decisions, but this definition is at odds with how intelligence is traditionally measured. The most widely known measure of intelligence is the *intelligence quotient*, more commonly known as the IQ test, which includes visuospatial puzzles, math problems, pattern recognition, vocabulary questions, and visual searches.

The advantages of being intelligent are undeniable. Intelligent people are more likely to get better grades and go farther in school. They are more likely to be successful at work. And they are less likely to get

Heather A. Butler is an assistant professor in the psychology department at California State University, Dominguez Hills. She has a number of research interests, including critical thinking, advanced learning technologies, and using psychological science to prevent wrongful convictions.

into trouble (e.g., commit crimes) as adolescents. Given all the advantages of intelligence, though, you may be surprised to learn that it does not predict other life outcomes, such as well-being. You might imagine that doing well in school or at work might lead to greater life satisfaction, but several large-scale studies have failed to find evidence that IQ impacts life satisfaction or longevity. University of Waterloo psychologist Igor Grossmann and his colleagues argue that most intelligence tests fail to capture real-world decision-making and our ability to interact well with others. This is, in other words, perhaps why “smart” people, do “dumb” things.

The ability to think critically, on the other hand, *has been associated* with wellness and longevity. Though often confused with intelligence, critical thinking is not intelligence. Critical thinking is a collection of cognitive skills that allow us to think rationally in a goal-orientated fashion, and a disposition to use those skills when appropriate. Critical thinkers are amiable skeptics. They are flexible thinkers who require evidence to support their beliefs and recognize fallacious attempts to persuade them. Critical thinking means overcoming

all sorts of cognitive biases (e.g., hindsight bias, confirmation bias).

Critical thinking predicts a wide range of life events. In a series of studies, conducted in the U.S. and abroad, my colleagues and I have found that critical thinkers experience fewer bad things in life. We asked people to complete an inventory of life events and take a critical thinking assessment (the Halpern Critical Thinking Assessment). The critical thinking assessment measures five components of critical thinking skills including verbal reasoning, argument analysis, hypothesis testing, probability and uncertainty, decision-making, and problem-solving. The inventory of negative life events captures different domains of life such as academic (e.g., I forgot about an exam), health (e.g., I contracted a sexually transmitted infection because I did not wear a condom), legal (e.g., I was arrested for driving under the influence), interpersonal (e.g., I cheated on my romantic partner who I had been with for over a year), financial (e.g., I have over \$5,000 of credit card debt), etc. Repeatedly, we found that critical thinkers experience fewer negative life events. This is an important finding because there is

plenty of evidence that critical thinking can be taught and improved.

Is it better to be a critical thinker or to be intelligent? My latest research pitted critical thinking and intelligence against each other to see which was associated with fewer negative life events. People who were strong on either intelligence or critical thinking experienced fewer negative events, but critical thinkers did better.

Intelligence and improving intelligence are hot topics that receive a lot of attention. It is time for critical thinking to receive a little more of that attention. Keith Stanovich wrote an entire book about *What Intelligence Tests Miss*. Reasoning and rationality more closely resemble what we mean when we say a person is *smart* than spatial skills and math ability. Furthermore, improving intelligence is difficult. Intelligence is largely determined by genetics. Critical thinking, though, can improve with training and the benefits have been shown to persist over time. Anyone can improve their critical thinking skills: Doing so, we can say with certainty, is a smart thing to do.

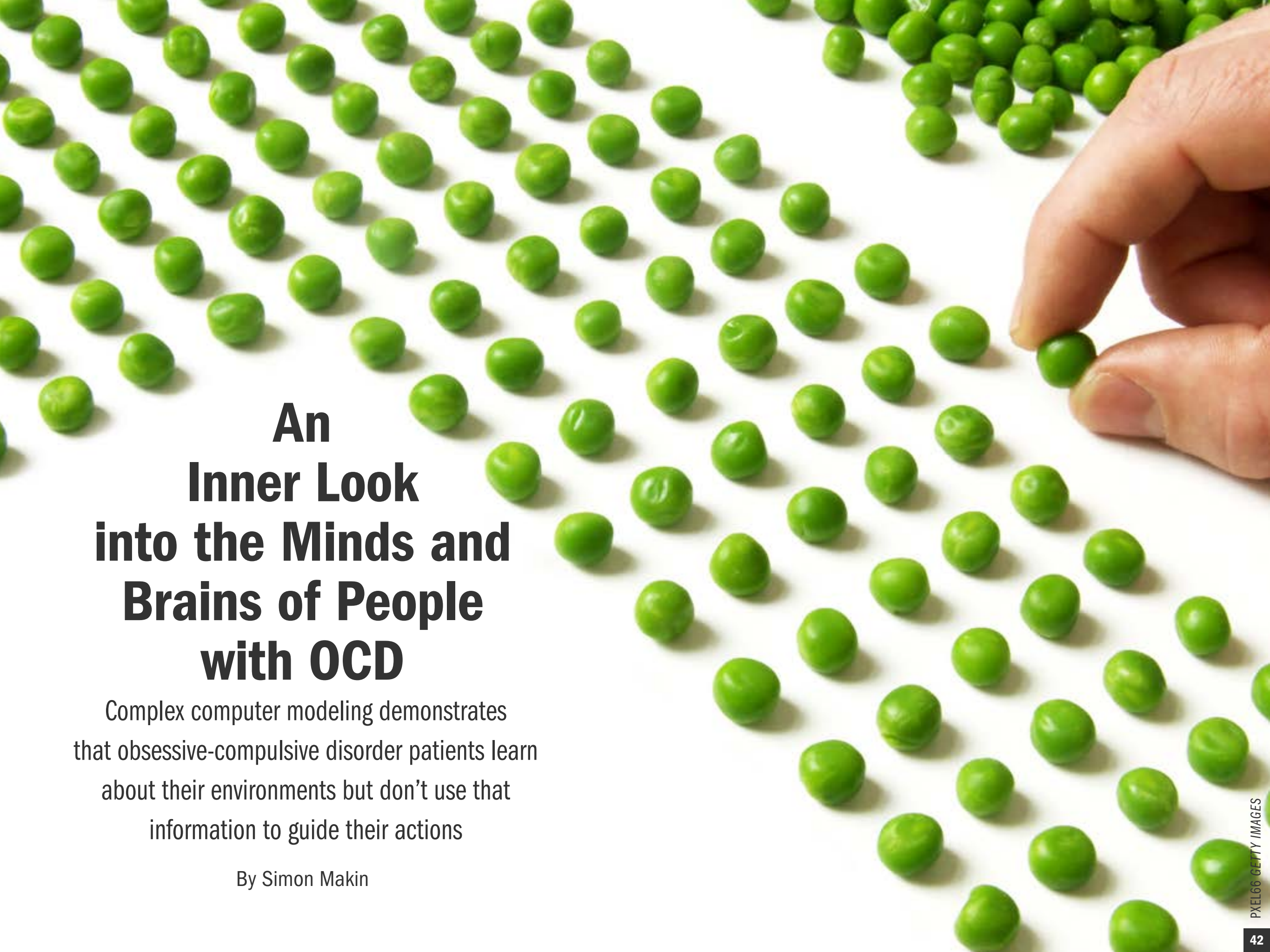
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A close-up photograph of a hand sorting through a large number of bright green peas on a white surface. The hand is positioned on the right side of the frame, with the index and thumb fingers visible, carefully picking up or moving a pea. The peas are scattered across the white background, creating a dense field of small, round objects. The lighting is bright and even, highlighting the texture of the peas and the skin of the hand.

An Inner Look into the Minds and Brains of People with OCD

Complex computer modeling demonstrates that obsessive-compulsive disorder patients learn about their environments but don't use that information to guide their actions

By Simon Makin

About 10 years ago David Adam scratched his finger on a barbed wire fence. The cut was shallow, but drew blood. As a science journalist and author of *The Man Who Couldn't Stop: OCD and the True Story of a Life Lost in Thought*, a book about his own struggles with obsessive-compulsive disorder, Adam had a good idea of what was in store. His OCD involved an obsessive fear of contracting HIV and produced a set of compulsive behaviors revolving around blood.

In this instance he hurried home to get some tissue and returned to check there was not already any blood on the barbed-wire. “I looked and saw there was no blood on the tissue, looked underneath the fence, saw there was no blood, turned to walk away, and had to do it all again, and again

Simon J. Makin is an auditory perception researcher turned science writer and journalist. Originally from Liverpool in the north of England, he has a bachelor's in engineering, a master's in speech and hearing sciences, and a Ph.D. in computational auditory modeling from the University of Sheffield. He spent several years working as a research fellow in the psychology department at the University of Reading before recently branching out and retraining in journalism.

and again,” he says. “You get stuck in this horrific cycle, where all the evidence you use to form judgments in everyday life tells you there's no blood. And if anyone asked, you'd say ‘no.’ Yet, when you ask yourself, you say ‘maybe.’”

Such compulsive behaviors, and the obsessions to which they are typically linked, are what define OCD. Far from merely excessive tidiness, the mental disorder can have a devastating impact on a person's life. Adam's story illustrates a curious feature of the condition. Sufferers are usually well aware their behavior is irrational but cannot stop themselves from doing whatever it is they feel compelled to do.

A new study published September 28 in *Neuron* uses mathematical modeling of decision-making during a simple game to provide insight into what might be going on. The game looked at a critical aspect of the way we perceive the world. Normally, a person's confidence about their knowledge of the surrounding environment guides their actions. “If I think it's going to rain, I'm going to take an umbrella,” says lead author Matilde Vaghi. The study shows this link between belief and action is broken to some extent in people with OCD. As a con-

sequence, what they do conflicts with what they know. This insight suggests compulsive behaviors are a core feature rather than merely a consequence of obsessions or a result of inaccurate beliefs.

The research of Vaghi and colleagues demonstrates the type of research being performed by the relatively new field of computational psychiatry. The work could ultimately lead to tools for early detection of people at risk. The field also may help pave the way for improved diagnosis based on understanding the biological or cognitive mechanisms of mental disorders rather than merely observing symptoms, as psychiatrists currently do. A more mechanistic analysis might also reveal that a tendency to repeat inappropriate actions (a compulsivity “trait”) is shared among multiple disorders such as OCD, substance abuse and eating disorders. And this type of analysis might distinguish among different types of OCDs and give psychiatrists a better idea about who might respond best to particular treatments.

In principle, the fact that beliefs and actions in OCD patients are often at odds could have several explanations. It is possible their ability to learn about the environ-

ment might be impaired in some way or they might lack confidence in things learned, despite their being accurate. Inspired by these questions, Vaghi and colleagues decided to investigate the relationship between belief and action during learning in people with and without OCD with the goal of discerning that connection—and what may go awry in OCD. The team—led by graduate students Vaghi and Fabrice Luyckx at the University of Cambridge, and neuroeconomist and senior author Benedetto De Martino at University College London—used an established task to study how beliefs and actions evolve over time during learning. They recruited 24 volunteers with OCD and 25 people without the disorder and had them play a video game in which they had to move a target (the “bucket”) around a circle to catch colored dots (“coins”) emitted from the center of the circle. The participants had to move the bucket to a position they thought most likely to catch the next coin, and give a rating as a percentage of how confident they were of the choice they had made. Most of the time the average destination of the coins was more or less the same, varying only slightly, but there was a

one-in-eight chance each time that this position would dramatically shift.

The groups did not differ as far as how many coins were caught, but people with OCD tended to move the bucket toward exactly where the last coin landed more than healthy volunteers did. The actions of healthy participants closely mirrored the predictions of a mathematical model of learning whereas the actions of people with OCD deviated substantially from these predictions. Instead, the OCD group overreacted to what neuroscientists call “prediction error,” which in this case is the difference between where they placed the middle of the bucket and where the coin actually made contact with the circle. The healthy volunteers paid less attention to these errors unless a big shift took place in the average direction of the coin. The control group, instead, made a mental calculation concerning the average direction of the coin over the preceding trials. As a consequence, they tended to move the bucket less.

Crucially, though, confidence ratings (which dropped sharply after a shift, then rose as evidence of the new average direction accumulated) were indistinguishable between the two groups, suggesting the pa-

tients developed as accurate a sense of what was going on as the healthy volunteers. But their actual bucket placements showed they were not using this knowledge to guide their actions. “This study shows that [in OCD] actions are dissociated from thoughts, in a sense,” Vaghi says. “It’s very much related to the clinical manifestation, when [sufferers] say: ‘I know it’s unlikely I’m going to get contaminated by touching the door handle, but even so, I will wash my hands.’”

The team also found that the extent to which confidence and action were uncoupled tended to be greater in individuals with more severe symptoms. “The new, exciting thing is the finding of a dissociation between action and belief in OCD that seems critical in this disorder,” De Martino says. “We found a clear correlation between the degree of this dissociation and the severity of symptoms.” These results suggest compulsive behaviors are a core feature of OCD rather than just a response to specific obsessions (washing to relieve anxiety about contamination, for instance). “The orthodox story is it’s all grounded in the obsessions; these drive anxiety and people take compulsive actions to alleviate that,”

says computational neuroscientist Nathaniel Daw of Princeton University, who was not involved in the study. “This study supports the alternative idea that the compulsions themselves are a core deficit, not secondary to obsessions.”

De Martino is interested in the mechanisms underlying decision-making in general, and specifically the relationship between confidence and action. These are normally so tightly tied together, it is difficult to study their relationship. But the team saw that OCD might provide a natural way of disentangling them. A standard view is that confidence is calculated by monitoring our actions; think about how much longer you take to act in uncertain situations. “This is roughly the idea of monitoring your own behavior to build confidence estimates, but this is not the only architecture the brain could use,” De Martino says. If confidence is estimated by monitoring behavior, it should be impossible to separate confidence from actions. But it is also possible that confidence is calculated independently (or “offline”) and can then be used both for guiding action and reporting confidence levels—a form of processing known as a “parallel” architecture. The sec-

ond alternative “is exactly what our data suggest,” De Martino says. “This is the general appeal of this work beyond the specific clinical interest; these patients can help us distinguish between alternative cognitive architectures.”

The results suggest the brain calculates confidence independently of action, but healthy functioning depends on linking them tightly together. They are also consistent with a “dual-systems” view of behavioral control that distinguishes between explicit, conscious reasoning and more implicit, automatic behaviors, Daw says. “A number of issues in psychiatry related to compulsion have to do with a disconnect, or imbalance, between these two types of process.”

A major caveat is the study was a snapshot in time, of people who were already ill, and so cannot settle questions of cause and effect. “We don’t know if this impairment results from illness or caused it,” Daw says. Figuring out how a general impairment like this relates to patients’ specific obsessions and compulsions will require studies of people with OCD over long periods to see how different aspects of the disorder evolve over time. But if the uncoupling of actions

from beliefs is at the root of OCD, it represents a common disease mechanism that potentially unites a wide range of patients with quite different observable symptoms. “The hope is that by understanding the general mechanism, rather than focusing on specific symptoms, we can guide new therapies,” De Martino says. One implication of the current findings is that if compulsive behavior is at the core of the disorder, treatments directly aimed at modifying behavior (like cognitive behavioral therapy) may be more effective than treatments more tailored to obsessive, rumination-style thinking, Vaghi says.

The team next plans to investigate where the mechanism behind this impairment is located in the brain. Researchers already know connections between parts of the frontal cortex, which orchestrates higher functions like planning and problem-solving, and deeper areas, including a region called the ventral striatum, are abnormal in OCD. Further, prediction errors, which are what seemed to determine patients’ abnormal actions, are primarily processed in the ventral striatum. These findings suggest circuits between the frontal and striatal areas may be the critical ones underlying this

dysfunction. Brain imaging people with OCD doing this kind of task should help solidify this hypothesis. “Mental disorders are brain disorders,” Vaghi says “There’s still a lot of stigma because we think psychiatric patients are crazy and making things up, whereas we wouldn’t dare say a person with cancer is inventing it,” she adds. “Linking these kinds of behavior to brain mechanisms should help.”

The study illustrates the potential of computational psychiatry, Vaghi says. “It’s an example of how integrating computational and clinical aspects is a really powerful approach,” she adds. “Without computational modeling we wouldn’t have been able to pin down exactly what this behavior relates to—we were able to understand which component of the model explains the behavior.”

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Marie Curie in her laboratory

OPINION

Once Again, No Female Nobel Winners in Science

Including the zero honored this year, there have been just 17 in the history of the prizes. Why so terribly few?

By Christophe André

About 1,600 years ago, the Egyptian mathematician and philosopher Hypatia was stoned in public—according to some accounts, by order of the Bishop of Alexandria, because she was a woman, a pagan, and in particular much too smart. In human societies, it always seems as if men, from time immemorial, have done everything possible to deny women access to knowledge and power, which are often linked. This hold began to loosen only during the Renaissance, when girls were (very) gradually allowed, and then encouraged, to pursue the same studies as boys. But the road has been long, and there is still quite a way to go.

Consider, for example, the Nobel Prize, a universal symbol of excellence and the subject of *Dix-Sept Femmes Prix Nobel des Sciences* (“Seventeen Women Who Won a Nobel Prize for Science”) by Hélène Merle-Béral, professor of hematology at Pierre and Marie Curie University in Paris. As the title indicates, only 17 women have been awarded a science Nobel Prize since its inception in 1901. That amounts to three

Christophe André is a psychiatrist at Sainte-Anne Hospital, Paris.

percent of all prizewinners. Why should that be?

There are at least three explanations. First, oppression along with objective and official discrimination of women long relegated them to secondary roles and served to deter them from science. In Western Europe, this era is more or less over, but naturally the vestiges of it remain: although girls are reclaiming the world of science little by little, it will take several generations before they accede to positions of power beyond the administrative level.

The second explanation has to do with male stereotypes of women, which are nowhere close to disappearing. A 2015 survey showed that 67 percent of men believe that women lack the capacity to become first-rate scientists. Hence the unconscious temptation of parents and teachers to discourage girls from these careers.

Most worrisome, however, is that the same survey showed that 66 percent of women believe it, too! This is the third, more insidious hurdle: women’s own internalization of stereotypes about themselves leads most of them to self-limit and to voluntarily reject careers connected to science and power.

This phenomenon—the “stereotype threat”—is well known. U.S. researchers demonstrated it in 1995 with respect to African Americans. Given a complex intellectual task to solve, African American subjects performed as well as whites, except when a group composed of both black and white volunteers was reminded that they would be taking a complicated intelligence test. This seemingly innocuous information evoked the racist stereotype about blacks being generally less intellectually endowed than whites. Disconcerted by the racist clichés, a significant number of blacks performed less well. The same phenomenon was subsequently identified in girls with respect to math and technical skills, though the latter is obviously less of a social handicap.

As is often the case, these toxic stereotypes contain what appear to be “kernels of truth” but in fact are distorted and erroneous. Thus, according to one argument, inequalities are justified by taking the actual situation as proof (and not the consequence) of the stereotype. For example, “The fact that there are fewer women scientists proves that women are worse in science.”

A second type of argument may be based

in reality but has nothing to do with the actual situation. For instance, even taking body size into account, women typically have smaller brains than men: 1,130 cubic centimeters for women compared with 1,260 cubic centimeters for men. But it is impossible to conclude anything from that fact, because we also know that large brains are not necessarily more efficient. Einstein had an ordinary-sized brain. And brains, be they large or small, are designed to thrive and find inspiration. In this sense, it is interesting to see how social evolution (giving girls a chance) has affected their scientific scores, such as in math.

In the U.S. in the 1970s, boys and girls performed at the same level in math in primary school. Then, beginning at age 12, boys typically did better. Thirty years later—following the women’s liberation movement and the fight for equality—a new study was conducted involving nearly seven million students: the difference between the sexes had evaporated. Today, talented girls no longer eschew advanced studies, whether scientific or otherwise, although more of them choose life sciences (medicine or biology) over more abstract disciplines (math or physics). Other stud-

ies show that as social equality between and women increases, the level of math achievement for both sexes also becomes more comparable.

Clichés about the intellectual superiority of men are being rejected and fought with ever greater frequency: we are on the right track to improvement. But women need to be aware of their susceptibility to the “stereotype threat.” They can also take heart from the example of pioneering scientist Marie Curie: this extraordinary woman is still the only person to have received Nobel Prizes in two different disciplines (physics in 1903 and chemistry in 1911).

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OPINION

Bizarre Brain-Implant Experiment Sought to “Cure” Homosexuality

In 1970 a psychiatrist at Tulane University electrically stimulated the brain of a gay man while he had sex with a female prostitute

By John Horgan

HOMER SYKES GETTY IMAGES

To help my students appreciate how science reflects cultural prejudices, I often cite examples from psychiatry. The *Diagnostic and Statistical Manual of Mental Disorders*, or *DSM*, which the American Psychiatric Association compiles as a guide to diagnosis and treatment of illness, listed homosexuality as a “sociopathic personality disturbance” in the *DSM-I*, published in 1952, and as a “sexual deviation” in the *DSM-II*, published in 1968 (see *Further Reading*).

Homosexuality has been treated with lobotomies, chemical castration, electrical shocks and nausea-inducing drugs as well as psychotherapy. I then tell my students about a bizarre gay-conversion experiment carried out in 1970 by a leading brain-implant researcher, Dr. Robert G. Heath of Tulane University in New Orleans.

I mentioned Heath in my recent profile of Jose Delgado, a pioneer in the use of brain implants to manipulate patients’ minds and behavior. Heath was arguably even more ambitious than Delgado in his

John Horgan directs the Center for Science Writings at the Stevens Institute of Technology. His books include *The End of Science* and *The End of War*.

experiments, and he was not a fringe figure. He had degrees in psychiatry and neurology from Columbia and the University of Pennsylvania.

In 1949 he founded Tulane’s department of psychiatry and neurology. He oversaw the department until 1980 but continued working into the 1990s. In his 1996 book *Exploring the Mind-Brain Relationship*, he reviews his career and speculates that someday “biological methods” might make it possible “for man to live in harmony with his fellow man.”

I first learned about Heath’s work from *The 3-Pound Universe*, a marvelous 1986 overview of brain research by journalists Judith Hooper and Dick Teresi. Beginning in 1950, they report, Heath implanted electrodes in patients, most of whom “came out of the dimly lit back wards of the state mental hospitals. With dental burrs, Heath and his co-workers drilled through the patients’ skulls, guided the electrodes into specific sites, and then left them there, at first for a few days, later for years at a time.”

Early on Heath recorded signals from the brain to determine which sites were associated with sensations such as rage, fear, pain and pleasure. Eventually he used

electrodes to stimulate the brain with electricity. He claimed that stimulation could induce fear, rage, sexual pleasure, hilarity and other emotions and ameliorate schizophrenia and other severe mental illnesses.

Heath was particularly interested in the septal region, which had been linked to pleasure. Heath claimed stimulation of the septal region “could make homicidal mania, suicide attempts, depressions or delusions go away—sometime for a long time,” Hooper and Teresi stated.

Heath filmed patients as he stimulated their brains. Many observers of the films saw Heath as a disturbing, “Strangelovian figure,” Hooper and Teresi said, but they found him to be “compassionate” and “almost courtly” in interactions with patients. (In 2005 I tried without success to get permission from Tulane to view Heath’s films.

Heath described his homosexuality experiment in two papers published in 1972: “Septal Stimulation for the Initiation of Heterosexual Behavior in a Homosexual Male,” co-written with Charles Moan, in *Journal of Behavior Therapy and Experimental Psychiatry*; and “Pleasure and Brain Activity in Man,” in *Journal of Nervous and Mental Disease*. The following information

and quotes are from the latter paper.

The experiment involved “patient B-19,” a 24-year-old man with a history of epilepsy, depression, drug abuse and homosexuality. He was in police custody for marijuana possession when he agreed to serve as Heath’s subject. For the previous three years, Heath wrote, B-19 had “led the life of a vagrant, experimenting with drugs, engaging in numerous homosexual relationships and being supported financially by his homosexual partners.”

Heath drilled holes in B-19’s skull and inserted electrodes in several brain regions, including the septal area. For limited periods of time, Heath gave B-19 a push-button device that allowed him to electrically stimulate different regions of his own brain. B-19 soon began obsessively zapping his septal region.

“On one occasion he stimulated his septal region 1,200 times” during a three-hour period, Heath wrote, “on another occasional 1,500 times, and on a third occasion 900 times. He protested each time the unit was taken from him.” The patient “reported feelings of pleasure, alertness and warmth (good will)” and “sexual arousal.”

B-19, who had never had heterosexual

Many observers of the films saw Heath as a disturbing, “Strangelovian figure.”

intercourse before and found it “repugnant,” “began showing increasing interest in female ward personnel,” Heath asserted. When Heath showed B-19 a heterosexual “stag film,” he “became increasingly aroused, had an erection, and masturbated to orgasm.”

Later Heath stimulated B-19’s septal region while he had intercourse with a 21-year-old female prostitute supplied by Heath. The patient “achieved successful penetration, which culminated in a highly satisfactory orgiastic response, despite the milieu and the encumbrances of the lead wires to the electrodes,” Heath wrote in *Journal of Nervous and Mental Disease*.

Heath described the B-19 experiment to Hooper and Teresi in more casual language. He told them that he paid a “lady of the evening” \$50 to participate in the experiment. The room where the experiment took place was “blacked out with curtains,” Heath said. “In the next room we had the instruments for recording his brain waves, and he had

enough lead wire running into the electrodes in his brain so he could move about freely. We stimulated him a few times, the young lady was very cooperative, and it was a very successful experience.”

Heath contended that B-19 remained heterosexual after the experiment and had a 10-month affair with a married woman. But a recent review of his work casts doubt on that claim. And in his 1973 book *Brain Control*, neuropsychologist Elliot Valenstein criticized Heath, Delgado and other brain-implant researchers for conducting sloppy research and hyping their results. In a recent interview, Valenstein accused Heath of “lack of controls... reading what he wanted into the data, and other experimental errors.”

The American Psychiatric Association, after a protracted debate, stopped including homosexuality in the *DSM* in 1987. But as *The Guardian* reported last year, groups around the world still practice gay-conversion therapies, including ones involving

electric shocks. [Research on brain implants for treating mental disorders](#) continues, but no one, as far as I know, is using implants to convert homosexuals.

Further Reading

Historical overviews of gay-conversion therapy and the *DSM* categorization of homosexuality can be found in [Wikipedia](#) and in a [2015 article in *Behavioral Sciences*](#), respectively. The latter quotes Edmund Bergler, a prominent psychoanalyst, saying in his 1956 book *Homosexuality: Disease or Way of Life*: “I have no bias against homosexuals; for me they are sick people requiring medical help... Still, though I have no bias, I would say: Homosexuals are essentially disagreeable people, regardless of their pleasant or unpleasant outward manner.”

[The Singularity and the Neural Code](#)

[Return of Electro-Cures Exposes Psychiatry’s Weakness](#)

[Much-Hyped Brain-Implant Treatment for Depression Suffers Setback](#)

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OPINION

Sexual Victimization by Women Is More Common Than Previously Known

A new study gives a portrait
of female perpetrators

By Lara Stemple,
Ilan H. Meyer

JOSIPA BASIC GETTY IMAGES

Take a moment and picture an image of a rapist. Without a doubt, you are thinking about a man. Given our pervasive cultural understanding that perpetrators of sexual violence are nearly always men, this makes sense. But this assumption belies the reality, revealed in our study of large-scale federal agency surveys, that women are also often perpetrators of sexual victimization.

In 2014, we published a study on the sexual victimization of men, finding that men were much more likely to be victims of sexual abuse than was thought. To understand *who* was committing the abuse, we next analyzed four surveys conducted by the Bureau of Justice Statistics (BJS) and the Centers for Disease Control and Prevention (CDC) to glean an overall picture of how frequently women were committing sexual victimization.

Lara Stemple is the assistant dean for Graduate Studies and International Student Programs at UCLA School of Law. She also directs the Health and Human Rights Law Project.

Ilan H. Meyer is a Williams Distinguished Senior Scholar for Public Policy at the Williams Institute for Sexual Orientation Law and Public Policy at UCLA School of Law.

The results were surprising. For example, the CDC's nationally representative data revealed that over one year, men and women were equally likely to experience nonconsensual sex, and most male victims reported female perpetrators. Over their lifetime, 79 percent of men who were "made to penetrate" someone else (a form of rape, in the view of most researchers) reported female perpetrators. Likewise, most men who experienced sexual coercion and unwanted sexual contact had female perpetrators.

We also pooled four years of the National Crime Victimization Survey (NCVS) data and found that 35 percent of male victims who experienced rape or sexual assault reported at least one female perpetrator. Among those who were raped or sexually assaulted by a woman, 58 percent of male victims and 41 percent of female victims reported that the incident involved a violent attack, meaning the female perpetrator hit, knocked down or otherwise attacked the victim, many of whom reported injuries.

And, because we had previously shown that nearly one million incidents of sexual victimization happen in our nation's prisons and jails each year, we knew that no analysis of sexual victimization in the U.S.

would be complete without a look at sexual abuse happening behind bars. We found that, contrary to assumptions, the biggest threat to women serving time does not come from male corrections staff. Instead, female victims are more than three times as likely to experience sexual abuse by other women inmates than by male staff.

Also surprisingly, women inmates are more likely to be abused by other inmates than are male inmates, disrupting the long held view that sexual violence in prison is mainly about men assaulting men. In juvenile corrections facilities, female staff are also a much more significant threat than male staff; more than nine in ten juveniles who reported staff sexual victimization were abused by a woman.

Our findings might be critically viewed as an effort to upend a women's rights agenda that focuses on the sexual threat posed by men. To the contrary, we argue that male-perpetrated sexual victimization remains a chronic problem, from the schoolyard to the White House. In fact, 96 percent of women who report rape or sexual assault in the NCVS were abused by men. In presenting our findings, we argue that a comprehensive look at sexual victimization,

which includes male perpetration and adds female perpetration, is consistent with feminist principles in important ways.

For example, the common one-dimensional portrayal of women as harmless victims reinforces outdated gender stereotypes. This keeps us from seeing women as complex human beings, able to wield power, even in misguided or violent ways. And, the assumption that men are always perpetrators and never victims reinforces unhealthy ideas about men and their supposed invincibility. These hyper-masculine ideals can reinforce aggressive male attitudes and, at the same time, callously stereotype male victims of sexual abuse as “failed men.”

Other gender stereotypes prevent effective responses, such as the trope that men are sexually insatiable. Aware of the popular misconception that, for men, all sex is welcome, male victims often feel too embarrassed to report sexual victimization. If they do report it, they are frequently met with a response that assumes no real harm was done.

Women abused by other women are also an overlooked group; these victims discov-

Researchers also find that female perpetrators have often been previously sexually victimized themselves.

er that most services are designed for women victimized by men. Behind bars, we found that sexual minorities were 2-3 times more likely to be sexually victimized by staff members than straight inmates. This is particularly alarming as our related [research](#) found that sexual minorities, especially lesbian and bisexual women, are much more likely to be incarcerated to begin with.

In addition to the risk faced by sexual minorities, the U.S. disproportionately incarcerates people who are black, Latino/a, low-income, or mentally ill, putting these populations at risk of abuse. Detained juveniles experience particularly high rates of sexual victimization, and young people outside of the system are also at risk. A recent study of youth found, strikingly, that

females comprise 48 percent of those who self-reported committing rape or attempted rape at age 18-19.

Professionals in mental health, social work, public health, and criminal justice often downplay female perpetration. But in fact, victims of female-perpetrated sexual violence suffer emotional and psychological harm, just like victims of male-perpetrated abuse. And when professionals fail to take victimization by women seriously, this only compounds victims’ suffering by minimizing the harm they experience.

Researchers also find that female perpetrators have often been previously sexually victimized themselves. Women who commit sexual victimization are more likely to have an extensive history of sex-

ual abuse, with more perpetrators and at earlier ages than those who commit other crimes. Some women commit sexual victimization alongside abusive male co-perpetrators. These patterns of gender-based violence must be understood in order to reach the troubled women who harm others.

To thoroughly dismantle sexual victimization, we must grapple with its many complexities, which requires attention to all victims and perpetrators, regardless of their sex. This inclusive framing need not and should not come at the expense of gender-sensitive approaches, which take into account the ways in which gender norms influence women and men in different or disproportionate ways.

Male-perpetrated sexual victimization finally came to public attention after centuries of denial and indifference, thanks to women's rights advocates and the anti-rape movement. Attention to sexual victimization perpetrated by women should be understood as a necessary next step in continuing and expanding upon this important legacy.

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Scientific American Mind, 1 New York Plaza, Suite 4500, New York, NY 10004-1562, 212-451-8200 or editors@sciam.com. Letters may be edited for length and clarity. We regret that we cannot answer each one.

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