



Explosive Growth of Suicide Terrorism Brings Psychological Scientists to the Table

by Geoff Mumford, Director of Science Policy

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Trying to understand and prevent suicidal behavior has been a core goal of mental health researchers for the past one hundred years. For most, self-preservation is deemed so primal that we just can't fathom the depth of despair or depression that would lead an individual to take his own life. But psychopathology is not a necessary precondition or correlate of suicidal behavior and examining that behavior in context is revealing. As PSA goes to press we have just commemorated Veterans Day. In every war there are stories of self-sacrifice involving "suicide" missions in which death was a near certainty because of the risk associated with the battlefield circumstances. But in some wars death was an absolute certainty because it was the goal of the mission. In the latter, suicide was purposely coupled to homicide as a vehicle to inflict massive harm to the enemy. So for example, Kamikaze pilots in World War II inflicted some 15,000 casualties, but whether the pilots were viewed as heroes or villains depended very much on whose side you were on.

For decades the kamikaze campaign appeared to represent an isolated historical epoch and one in which virtually everyone involved was a military combatant. But over the last twenty



plus years we've born witness to a resurgence of suicide coupled to homicide as a terrorist tactic perpetrated by such groups as the Tamil Black Tigers, the Popular Front for the Liberation of Palestine, Chechen "Black Widows," and Al Qaeda. Following the events of 9/11, questions about suicide bombings have continued to mount and now the government is turning to the behavioral science community for answers. Last month, the National Institute of Justice convened a Suicide Terrorism Research Conference in which several prominent APA member scientists examined case studies of suicide bombings and participated in the development of a research agenda.

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Psychology was well represented both in the planning and execution of the conference. Susan Brandon (Assistant Director for Social, Behavioral, and Educational Sciences at the White House Office of Science and Technology Policy) was a co-organizer and helped gain multi-agency endorsements for an effort that began while she was on staff at the National Institute of Mental Health. Robert Kinscherff served as moderator for the general discussions and will help synthesize the collective input into a coherent research agenda (a role Kinscherff had filled with great success at our Intuitive Policing Workshop this past July). Other psychologists who participated included Jim Breckenridge, Naval Post Graduate School; Andrew Silke, University of East London; John Horgan from University College, Cork, Ireland; Ariel Merari, Tel Aviv University; and many more who are on staff with the Department of Homeland Security, Central Intelligence Agency, Federal Bureau of Investigation, and Department of Defense.

Andrew Silke provided a historical chronology on the use of politically motivated suicide ending with Bobby

Sand's suicide by starvation, which eventually led the UK to concede to the demands of Sinn Fein. Allison Smith, a social psychologist who is a AAAS/DHS Fellow, provided an overview of methodological approaches to suicide terrorism research including problems raised by virtue of the fact that, except for failed bombers, the main actor is no longer available for study. Other presentations compared and contrasted three different lines of suicide terrorism perpetrated by different groups separated by geography, ideology, and motivation including examples from Sri Lanka, Israel and Palestine, and the Al Qaeda network. Discussions were spirited on issues related to the validity of "psychological autopsies" of successful bombers and when and how religion played a role in the recruitment and retention of bombers. But there was striking agreement, as alluded to above, that there was little, if any, evidence that bombers were mentally ill or unstable.

Recommendations for research ranged from the theoretical (e.g., understanding why and how people become radicalized) to the practical (e.g., are there

behavioral signs currently being missed to detect would-be bombers at the point of attack). There was consensus in the group that a centralized database including standardized definitions and forensic information about each incident would be very helpful to the research community. Others wondered whether it would be possible for classified data (e.g., wiretap data) to be made available to researchers with security clearances to help examine motivation and social networking retrospectively. There was broad concern about the use of the Internet as the new vehicle for recruitment and suggestions that studying chat room dynamics might inform our understanding of how terrorist social networks evolve.

It is likely that recommendations from this workshop will augment the current National Institute of Justice research solicitation on "Terrorism and Transnational Crime Research": <http://www.ncjrs.org/pdffiles1/nij/sl000681.pdf>. The majority of the presentations are available along with commissioned papers and background readings on the NIJ website: <http://www.nijpcs.org/terror>. ■

Animal Research Under Attack: Break-in at University of Iowa Lab Animal Facilities

by Sangeeta Panicker, Director, Research Ethics Office

Those who do animal research are sensitized to the political nature of their work -- almost each year at convention there are demonstrators at research talks about work using non-human subjects, and there are PETA ads decrying the use of animals in national magazines and newsletters. Most typically, the worst a researcher needs to contend with is disruption.

However, over Veteran's Day weekend, another incident pointed out how vulnerable researchers are and how important it is to raise public awareness

of the value and importance of animal research.

Vandals caused extensive damage to laboratory animal facilities, faculty and graduate student offices at the University of Iowa (UI). According to a news release from UI, it looks as though the damage was in two buildings, both of which are home to the behavioral and cognitive science program, in the Department of Psychology. Vandals released lab rats and mice, spilled hazardous materials, and destroyed computers and other equipment.

The consequences for the researchers affected are substantial -- the University has closed the building while authorities, including the FBI, National Guard, and local HAZMAT officials assess the chemical spills, and to conduct a criminal investigation -- which means that all research work has stopped for an unknown period of time.

APA is monitoring the situation and will issue a statement about the value and importance of animal research. ■

EXECUTIVE DIRECTOR'S COLUMN

STEVEN BRECKLER, Executive Director for Science

The Imbalance of Priorities at NIMH

It seems like everyone is talking about NIMH lately. New leadership and a major re-organization is causing many to believe that NIMH funding of basic research in psychology is going to disappear. By some accounts, grant support has completely evaporated. Others are getting the word that NIMH funding will only be available for “translational” research. Familiar program officers are gone, and their replacements seem to be nowhere in sight. Is this a crisis, or are the scientists of psychology blowing it out of proportion? I think there is a cause for concern, but the real worry is what the changes will mean for our long-term understanding of mental health and mental illness.

New Construction

At the heart of the new organization at NIMH is the idea of utilizing basic behavioral research to answer important clinical questions. The newly focused goal of NIMH is to “facilitate translation of basic science discoveries into new interventions.” This is great news. It is an important development, and we should all feel a sense of pride that our collective research efforts have finally matured to the point of being translatable and put into action in relieving the burden of mental illness. The work of translating basic knowledge into practical solutions is incredibly important, and we have a responsibility as scientists to contribute to that enterprise.

But let's not get carried away. There is plenty of work still to do – the foundation of basic science is only partially completed. This point seems to be lost on NIMH. Its new Director, Thomas Insel, recently told *The Scientist* magazine, “We are looking for areas where people can complete a study and go on – not just add a brick to the wall, but start a new wall and finish it.” At the risk of pushing this metaphor too far, it is worth pointing out that brick

walls are only as good as the foundation on which they rest. I would offer that NIMH has not yet completed its foundation. As it begins to spread its wings and embrace translational research, the Institute must not forget that it still has considerable work to do in finishing what it started – in completing its foundation.

The Forest and the Trees

I like the building metaphor, but I think another one better captures a productive approach. Perhaps NIMH should think of its responsibility in much the same way as the tree farmer. It is appropriate – even expected – that some resources be invested in exploiting the mature trees, the ones that are ready to bring to market. In the case of NIMH, to invest some money in translational research. It would not be prudent, however, to raze the entire crop – for NIMH to invest all of its resources in translational research. I have no doubt that this would produce an enormous short term windfall, but what a terrible price to pay – with little or no investment in future maturing research, there will quickly cease to be any future knowledge to translate.

To be fair, the new organization at NIMH does continue to provide a home for basic behavioral research. Yet, the relative priorities seem to be out of proportion. Most of the resources appear to be destined for translational research, with only meager investments in basic research. I think NIMH is better advised to take a cue from the tree farmer, and devote relatively more of its resources to basic research just as the tree farmer invests most resources in nurturing and protecting future crops. Otherwise, NIMH is pursuing a



strategy of short-term gains that will carry long-term pains.

A Narrowing Mission

The current mission statement of NIMH states that the Institute aims to “reduce the burden of mental illness and behavioral disorders.” This does indeed reflect the legislative mandate to “further the treatment and prevention of mental illness”. But that is only one part of the mandate. NIMH is also charged with responsibility for supporting research aimed at promoting positive mental health, and research on the psychological, social, and legal factors that influence behavior. It would appear that NIMH has elected to focus on only a portion of its legislative mandate – the portion having to do with mental illness. Without diminishing the importance of this facet of the mandate, NIMH should be reminded that its responsibility is much broader.

This is an important point, because I suspect that most (not all) of the psychology research funded in the past by NIMH has focused on understanding psychological and social factors that influence behavior, often with the ultimate goal of learning how to promote positive mental health. It is this facet of the legislative intent that NIMH, through its actions and its re-organization, threatens to diminish or even eliminate.

The changes at NIMH threaten the future vitality of basic research in psychology. But that is not why we need to be vocal and vigorous in expressing our concerns. Rather, it is the long-term cost to society and to science that we need to worry about. Our goal should be to produce the best outcome in support of the NIMH mission. We must continue to pursue our basic research aims, but we must also be prepared to engage in the difficult work of translation. In the end, we will all be winners. ■

What is Open Access?

by Merry Bullock, Associate Executive Director for Science

The “open access” idea and “open access” initiatives have become highly visible over the last couple of years -- in the media, among policy makers and at publisher and professional society board tables. What is “open access”, and why should you care?

4 At the international policy level, open access refers to a global initiative to provide equitable access to technology and information -- to work to lessen the north-south, developed-developing, have-have not separation that threatens to keep much of the world from benefiting from or participating in 21st Century advances in science, technology and information. The goal of open access at this level is to move countries toward becoming “knowledge societies” in which information, science, and communication are easy to come by and are highly valued. This perspective formed the basis of the World Summit on the Information Society (WSIS), as well as other governmental and inter-governmental (e.g., OECD; UNESCO) resolutions and agreements.

In the scientific publishing domain, “open access” refers to a more specific initiative - it is a short hand term for initiatives to make published scientific and technical literature freely available on the web. The impetus for this movement is varied - some is fueled by patient advocate groups who believe that federally funded biomedical research results should be available to the public rapidly and at no cost; some is fueled by a belief that such exchange will enhance scientific productivity and progress; some is fueled by a belief that scientific journal costs are too high. There are currently a little over 1,300 “quality controlled” (peer reviewed) open access journals, 22 of which are listed in Psychology (Directory of Open Access Journals, www.doaj.org). This number has been growing exponentially.



The “open access” issue has recently become even more intensely debated because NIH published a draft policy implementing an open access plan, and allowed 60 days for public comment. The draft policy would require NIH grantees to provide the agency with a copy of their research article when it was accepted for publication in a scientific journal. Six months later (or sooner if the journal allowed), the articles would be made publicly available on PubMed Central, NIH’s free electronic repository of biomedical research literature.

Where does psychology and where does APA fit into the picture? One outcome of such a policy, which would likely expand to cover all federally funded research, not just that funded by NIH, would be to shift who bears the cost of scientific publishing away from publishers and subscribers to authors and funders. Many believe such a shift this would have a host of unintended consequences across science fields on the vitality and quality of science. One consequence would be a decrease in the number of journals, thus reducing the available number of high quality publication outlets. Another is a decrease in

the resources available for the editorial and peer review infrastructure. Reducing the value added by the peer review and editorial processes would take away an important piece of the process that ensures rigorous and high quality science. In addition, shifting to an “author pays” model may undermine attempts to increase diversity in science if easier access to scientific publishing requires access to greater financial resources. At present only about a third of published articles in psychological journals report a source of funding. These concerns are articulated in APA’s comments on the proposed policy.

APA joins other scientific associations in calling for a more collaborative partnership, involving publishers, authors and funders, to support the broad goals of the open access ideal -- making scientific information more broadly available, especially to the public. There are many ways that this might occur, capitalizing on the Internet and on authors’ ability to post their own papers on their own web pages (APA’s Publications and Communications board recently changed its policy to allow researchers to post the final pdf of their articles from APA journals on their own web page). But beyond that, APA calls for attention to more effective public access - through encouragement of abstracts for a lay audience, or development of digests that summarize research for the public..

APA will continue to monitor the open access policy as NIH responds to input received during the public comment period, and will work with others in the scientific publishing and science association communities to encourage a partnership that works to promote diverse and active science publication outlets as well as effective public dissemination. ■

SCIENCE BRIEFS

Emotion and Cognition: The Case of Automatic Vigilance

by Randy J. Larsen



Randy J. Larsen earned his PhD in Personality Psychology from the University of Illinois-Champaign in 1984. He has served on the faculty at Purdue University (1984-1989), the University of Michigan (1989-1998), and Washington University in St. Louis (since 1998), where he is currently the William R. Stuckenberg Professor of Human Values and Chairman of the Psychology Department. His research interests focus on personality and emotion, with particular interests in emotional reactivity and mood regulation, process models of daily mood, and cognitive consequences of affective states. He has published over 80 scientific articles and book chapters and has co-authored (with David Buss) a text in Personality Psychology. Professor Larsen was awarded the 1991 APA Distinguished Scientific Award for Early Career Contribution to Personality Psychology, received a Research Scientist Development Award from the National Institute of Mental Health, and is a past president of the Midwestern Psychological Association.

In St. Louis we are celebrating the bicentennial of the Lewis and Clark expedition. Captain Lewis made an entry in his journal that nicely illustrates the interaction between emotion and cognition. He describes how he was traveling alone one day, well ahead of his corps, to determine the best route. Suddenly he was surprised by an aggressive grizzly bear charging at him from out of the bush. Lewis narrowly escapes by jumping into a river. After the bear withdraws, Lewis makes his way back to his troops, a distance of about 12 miles. Along the way, he notices a variety of other animals, most of which he perceives as threatening and several of which he shoots preemptively. In his journal he describes feeling surrounded by danger: "It now seemed to me that all the beasts of the neighborhood had made a league to destroy me." (Bakless, 2002, p. 187). The editor of the Lewis and Clark journals, in a footnote to this passage, notes that the animals Lewis encountered along the way were not typically considered aggressive or dangerous, and opines that Lewis was probably nervous after his frightening encounter with the grizzly.

Automatic Vigilance Following Threatening Information

The example from Lewis' journal illustrates the phenomenon of automatic vigilance, where emotional cues in the environment bias subsequent information processing. More precisely, the detection of threatening information can interrupt ongoing cognitive activity in ways that tune subsequent perception, attention, judgment, and even memory towards threat-related outcomes. One experimental analog of automatic vigilance is affective priming (Klauer, 2003), particularly priming with threatening stimuli. Here a threatening image or word is briefly presented (the prime) and quickly followed by another stimulus (the target) to which the subject responds (e.g., makes a lexical decision, categorizes as a good or bad object, etc.). Automatic vigilance occurs when a negatively valenced target stimulus (e.g., an image of a COCKROACH) is categorized faster and/or more accurately when it is preceded by a threatening prime stimulus (e.g., the word DISEASE) than a hedonically neutral prime stimulus (e.g., the word DISHPAN) (Hermans, DeHouwer, & Eelen, 2001).

Researchers suggest that the presentation of an evaluative or threatening prime may automatically activate biased perceptions of emotionally-congruent targets (Fazio, Jackson, Dunton & Williams, 1995). The explanation for this effect is that, when confronted with a threatening stimulus, people typically devote increased attentional resources to that stimulus, raising the accessibility of evaluatively-similar information in memory, and biasing subsequent perceptions and judgments toward a threatening evaluation (Klauer, 2003; Wentura & Rothermund, 2003).

Other Examples of Automatic Vigilance Effects

Some researchers have identified the emotional Stroop task as an example of automatic vigilance (e.g., Pratto & John, 1991; Wentura, Rothermund, & Bak, 2000). In this task, subjects are asked to quickly name the colors of various words, some of which are threatening (e.g., DISEASE) and others are neutral (e.g., DISHPAN). In general, people are slower to name the colors of threatening words than the neutral words. However, a crucial

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6 problem with many of these studies is that the two word lists – threat and control words – often differ with respect to critical linguistic parameters known to contribute to reaction time differences in word recognition. For example, Larsen, Mercer, and Balota (2004a) showed that, across 34 emotion Stroop studies, the threatening words used were more infrequent, of greater length, or had a larger orthographic neighborhood than the control words. All of these purely linguistic features contribute to slower recognition of the threatening words, casting doubt on the validity of the emotional Stroop effect being due to automatic vigilance to the threat value of the word.

In a recent paper, Algom, Chajut and Lev (2004) reasoned that automatic vigilance should not be limited to color naming of words but should apply to any cognitive activity. In a series of very carefully done experiments they demonstrated that both color naming and word reading were slower for threatening than control words. Larsen, Mercer, and Balota (2004b) recently analyzed lexical decision time and word reading time for a list of over 1,000 words that had been previously normed for valence (Bradley & Lang, 1996). After controlling for important linguistic parameters (e.g., frequency, length, orthographic neighborhood), Larsen et al. (2004b) found that word negativity was still a significant predictor of longer reaction times, both for lexical decisions and word reading time. Cothran, Larsen, Zelenski, Prizmic, & Chein (2004) demonstrated automatic vigilance effects in the recognition of facial displays of emotion.

There is converging evidence from a number of literatures on the existence of automatic vigilance effects. The general interpretation is that a dedicated preattentive system operates in an automatic fashion to screen the perceptual stream for threatening information (Ohman, 1993). When such information is detected, ongoing cognitive activity is interrupted (accounting for the generic slowing) and reprioritized

to be biased for future threatening information (accounting for the priming effects). Such a system would have obvious evolutionary advantages, in that humans who lacked such a system would be less likely to become ancestors.

Utility of Automatic Vigilance for Studying other Phenomena

As an aspect of psychological functioning, the automatic vigilance effect is interesting in its own right. However, it also has utility for studying other psychological phenomena. In the remainder of this article I describe two areas where the concept of automatic vigilance may contribute to our understanding of other phenomena.

Understanding stereotype activation. In a series of important experiments, Payne (2001; Payne, Lambert, & Jacoby, 2002) tried to clarify what factors contributed to the killing of Amidou Diallo, an unarmed Black immigrant from West Africa who was shot 19 times by several White New York police officers one night as he was retrieving his wallet from his pocket. In Payne's studies he used a priming procedure, where participants were primed for 200 ms with a photo of either a Black face or a White face, then immediately shown a drawing of a handgun or a hand tool for 100 ms. Participants then have 400 ms to decide if the second object they saw was a hand tool or a handgun. Of course they make a lot of errors due to the speeded nature of the response. However, among predominantly White participants the errors are not random. Instead, participants are more likely to confuse the hand tool for a handgun following the Black face prime than the White face prime. The dominant interpretation of this finding is that the prime activates stereotypes beliefs about what is associated with being Black or White (Judd, Blair, & Chapleau, 2004). Consequently, this stereotype makes it more likely to make a "gun" response following the Black prime than the White prime.

Recently, we (Larsen, Chan, & Lambert, 2004) reasoned that automatic

vigilance may have played a role in both Payne's results as well as the shooting of Amidou Diallo. If Blacks (or other outgroup members) are threatening to majority participants, then priming with a Black face may activate automatic vigilance for future threat, making the gun response more likely. In an extension of Payne's gun/tool paradigm, we (Larsen, Chan, & Lambert, 2004) replaced the Black and White primes by photos of threatening animals (snakes, spiders) and non-threatening animals (bunnies, kittens). We found the same pattern of gun/tool bias; after being primed with a threatening animal, participants were more likely to confuse hand tools as handguns compared to being primed with the non-threatening animal.

In a second experiment we put the Black and White faces back in as primes, and moved the good and bad animals to the target position. Participants were given 400 ms to categorize the animals as either good or bad. We again found a bias consistent with an automatic vigilance effect; participants were more likely to confuse a good animal as a bad one following a Black prime than a White prime. Obviously, the animals have nothing to do with stereotype associations to Blacks or Whites. However, they do have threat value and so our subjects' biased processing following Black facial primes is consistent with an automatic vigilance effect. Besides clarifying the underlying mechanism for the gun/tool bias, the results have implications about interventions to counteract such biases. Efforts to change stereotyped beliefs about outgroup members would be a lot different than efforts to change prejudiced emotional reactions toward them.

Understanding why bad is stronger than good. From a number of quite different literatures there is converging evidence that stimuli of equal hedonic weight, but opposite in hedonic sign, will evoke non-equivalent affective reactions (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). For example,

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people are more distressed by the loss of \$50 than they are made happy by finding \$50. A few years ago I applied a psychophysics framework to this issue (Larsen, 2002). After all, emotion is a lot like perception, where some aspect of the outer world (an emotional event, a sensory stimulus) is transformed to an inner representation (an affect, a sensation). Applying this framework to several data sets, I reviewed evidence that unpleasant events or stimuli, compared to equivalently pleasant events or stimuli, evoke larger emotional responses, longer duration responses, and have a broader impact on the cognitive system. Moreover, I estimated the impact of negative stimuli as being about three times that of the impact of positive stimuli.

Why should bad be stronger than good? It seems likely that one function of the automatic vigilance system is to act as a signal gain mechanism for threatening information. The automatic vigilance system functions to amplify threatening information by directing cognitive resources, such as perception and attention, toward such information. There is no specialized counterpart that acts in such an automatic and preattentive fashion for positive stimuli. In fact, in studies of cognitive interference from affective meaning using the affective Simon task, we found that the interference effect size for negative stimuli was approximately three times as large as the interference effect size for positive stimuli (Larsen & Yarkoni, 2004). The automatic vigilance system may be an explanation for the ubiquitous finding that bad is stronger than good.

Summary

Cognition and emotion interact in various ways, and one of the more interesting and increasingly documented ways is the automatic vigilance effect. This phenomenon highlights differences between automatic and controlled psychological processes, in that the effect is purely automatic. Much like a reflex, it occurs very fast, happens without our awareness or effort, and runs to completion without conscious monitoring. And yet the effects may be far-reaching,

as when automatic vigilance impacts on cognitive resources such as attention and memory. And the effects may be especially far-reaching when the elicitors of the vigilance, or the objects of its effect, are other people. ■

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SCIENCE BRIEFS

Simple Pleasures

by Kent Berridge



Kent Berridge is a professor at the University of Michigan in the Department of Psychology (and a member of its Biopsychology program). He studies the psychology and affective neuroscience of reward liking and wanting in motivation and emotion. Berridge and colleagues seek answers to questions such as: How is pleasure produced in the brain? What causes addiction? Can emotions be unconscious? How do brain mechanisms of reward and desire interact with those of stress and fear? More information is on the web at: <http://www-personal.umich.edu/~berridge>.

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Pleasure is one of the simplest phenomena in psychology. It is a basic aspect of mental life, and an important feature of positive emotions. But pleasure is not entirely simple. New findings in hedonic psychology and affective neuroscience are revealing intriguing complexities.

Even mere sensory pleasures can give insight into hedonic psychology. For example, sweetness tastes nice. It is one of the sensations most reliably able to cause pleasure in people. The pleasure of sweetness lies not in the intrinsic sensation itself, but in something done to it. Sweets are not necessarily nice – there are nasty sweet tastes in this world too. For instance, we can easily acquire a learned taste aversion for particular sweet flavors (such as a novel sweet flavor that is associatively paired with visceral illness). Sweet tastes for which we have learned aversions remain sweet afterwards – but their sweetness becomes nasty, instead of nice.

The Pleasure Gloss

In other words, pleasure is a sort of gloss on sensation, a value added. The pleasure gloss is actively painted onto mere sensory representations by limbic brain circuits. The pleasure gloss and our desire for it involve many complexities, both neurobiological and psychological.

Which Brain Systems Paint the Pleasure Gloss?

First it's interesting to ask how the brain paints the pleasure gloss. Pleasures activate brain cerebral cortex (especially medial prefrontal cortex), amygdala, and deep brain structures such as nucleus accumbens and the midbrain dopamine neurons that project to it, the ventral pallidum which accumbens projects to in turn, and even some hindbrain structures. All these can be activated by pleasures. But not all need actually cause pleasure. Instead many brain co-activations are pleasure consequences, not pleasure causes (causing other psychological functions instead). So which brain events actually paint the pleasure gloss onto sensation?

Psychologists and neuroscientists are interested in the causation of all pleasures, of course, but in practice we must study them one at a time. To identify how the brain paints the pleasure gloss we have studied taste pleasure in our laboratory at the University of Michigan. Sweet tastes elicits 'liking' facial expressions that are homologous in human infants and many animals (e.g., tongue protrusions), whereas nasty bitter tastes elicit 'disliking' expressions (e.g., gapes). We have used those expressions in affective neuroscience studies of rats and mice to map brain

systems that cause pleasure. In these studies, we gently tweak a brain system to see if it causes changes in a taste's pleasure gloss (for example, by making a painless microinjection of a tiny drug droplet into a brain structure).

In this way, we've identified several types of brain activation that cause a pleasure gloss on sweet sensation. For instance, we've found that triggering activation of opioid circuits in the nucleus accumbens (e.g., by microinjecting morphine there) causes increased pleasure 'liking'. This is an initial link in a neural chain of pleasure causation. The chain continues in structures that receive signals from accumbens, such as ventral pallidum, forming together a limbic circuit that paints the pleasure gloss.

False 'Liking': Dopamine and Electrical Brain Stimulation

We have also turned up surprising brain failures to cause pleasure. These brain systems were once thought to cause sensory pleasure, but turn out not to. For example, brain dopamine, although often called a pleasure neurotransmitter, fails after all to live up to its pleasure label. To make a long story short, dopamine systems seem unable to cause a pleasure gloss. We've tried both activating and suppressing dopamine in several ways, but it never alters

the pleasure gloss. 'Liking' reactions to sweetness simply persist unchanged and normal, no matter what brain dopamine systems are doing.

So if dopamine is a faux-pleasure, what is its real psychological role? We've suggested that pleasure 'wanting', rather than 'liking', best captures what dopamine does. Usually 'liking' and 'wanting' go together for pleasant incentives, as two sides of the same psychological coin. But our findings indicate 'wanting' may be separable in the brain from 'liking', and that mesolimbic dopamine systems mediate only 'wanting'. My colleagues and I coined the phrase incentive salience for the particular psychological form of 'wanting' we think is mediated by brain dopamine systems.

False Pleasure Electrodes

Another surprising case of false 'liking' may be so-called brain 'pleasure electrodes'. In our animal studies, such electrodes appear to function similarly to dopamine, causing pleasure 'wanting' without 'liking'. In humans, famous cases of intense 'pleasure electrodes' are cited by many textbooks. But if we scrutinize these cases more closely, we may be forced to a surprising conclusion that they did not cause much sensory pleasure after all. For example, a well-known case is "B-19", a young man implanted with stimulation electrodes by Heath and colleagues in the 1960s. B-19 voraciously self-stimulated his electrode, and protested when the stimulation button was taken away. In addition, his electrode caused "feelings of pleasure, alertness, and warmth (goodwill); he had feelings of sexual arousal and described a compulsion to masturbate" (p. 6, Heath, 1972).

But did his electrode really cause a pleasure sensation? Perhaps not. B-19 never was quoted as saying it did; not even an exclamation or anything like "Oh -- that feels nice!". Instead B19's electrode stimulation evoked desire to stimulate again and strong sexual arousal – while never producing sexual orgasm or clear evidence of actual pleasure sensation. Clearly the stimulation

did not serve as a substitute for sexual acts. What it did instead was to make him want to do sexual acts. Similarly, a woman patient, implanted with an electrode decades later, compulsively stimulated her electrode at home. "At its most frequent, the patient self-stimulated throughout the day, neglecting personal hygiene and family commitments" (p. 279, Portenoy et al., 1986).

When her electrode was stimulated in the clinic, it produced a strong desire to drink liquids, and some erotic feelings, as well as a continuing desire to stimulate again. However, "Though sexual arousal was prominent, no orgasm occurred" (p. 279, Portenoy et al., 1986). Doesn't this seem similar to B-19? "She described erotic sensations often intermixed with an undercurrent of anxiety. She also noted extreme thirst, drinking copiously during the session, and alternating generalized hot and cold sensations" (p. 282, Portenoy et al., 1986). Clearly this woman felt a mixture of subjective feelings, but the description's emphasis is on aversive thirst and anxiety -- without evidence of distinct pleasure sensations.

What could these electrodes be doing, if not pleasure? Among other things, they might be activating incentive salience attribution to surroundings and perceived stimuli, especially the act of stimulating the electrode. If the electrodes caused 'wanting', a person might well describe a sudden feeling that life was suddenly more attractive, desirable, and compelling to pursue. They might well 'want' to activate their electrode again, even if it produced no pleasure sensation. That would be mere incentive salience 'wanting' -- without hedonic 'liking'.

Irrational Desires?

The psychology of incentive salience creates the possibility for irrational desire. Defined as a want for something you neither like nor expect to like, strongly irrational desire is rare but may exist (the electrode cases above might be examples). In animal experiments in my laboratory, we can create irrational 'wanting' by tweaking the brain dopa-

mine system into over-activation. My colleague Terry Robinson and I believe something similar may occur in some human drug addicts. In drug addiction, the cause may be a nearly-permanent brain change known as neural sensitization, produced by addictive drugs. Sensitization makes dopamine-related brain systems over-react subsequently to drugs and cues for them. Sensitization can persist years after drug use ends. Sensitized incentive salience may keep drug addicts vulnerable to relapse, via compulsive cue-triggered 'wanting' to take drugs again. This might happen even for drugs that don't give much pleasure, and even after symptoms of withdrawal are long gone.

Unconscious 'Liking' and 'Wanting' for Pleasures

Strongly irrational desire, and dissociations between 'liking' and 'wanting', may seem counter-intuitive. If these occur, why are we not more aware of them? The reason may be precisely because we do not have direct conscious access to core psychological processes that occur within pleasure, such as 'liking' or 'wanting'. For example, in experiments led by my colleague Piotr Winkielman, unconscious 'liking' and 'wanting' has been produced in ordinary people. Their consumption behavior was altered by subliminal exposure to happy/angry facial expressions, which changed their desire to drink a subsequently-encountered beverage even though they felt no conscious emotional reactions at all at the moment the subliminal faces occurred. Such dissociation of emotional reaction from conscious feelings suggests that unconscious dissociations among underlying pleasure 'liking' and 'wanting' components might also occur without being felt.

Conclusion

Simple pleasures are not so simple. Both psychological and neurobiological complexities exist within even the simplest sensory pleasure. Recent surprising insights into the hedonic psychology and affective neuroscience

Continued on next page...

of pleasure have been gained, and new advances seem likely to continue. That might make any psychologist feel pleased. Acknowledgement: I thank colleagues who have participated in our lab's pleasure studies: Terry Robinson, Elliot Valenstein, J. Wayne Aldridge, Susana Peciña, H. Casey Cromwell, Piotr Winkielman, Cindy Wyvell, Sheila Reynolds, Amy Tindell, Kyle Smith, Stephen Mahler, Linda Parker, Xiaoxi Zhuang, Barbara Cagniard, Julie Wilbarger.

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Science Policy Insider News

What is SPIN?

APA's Science Policy staff wants you to know about the important policy issues that affect psychological science and psychological scientists at the national level. The Science Policy staff advocates for psychological science not just with members of Congress, but also the Departments of Defense, Health and Human Services, Transportation, Veterans Affairs, Education and with the National Aeronautics and Space Administration and National Science Foundation. To keep you aware of science policy within these agencies and on Capitol Hill, we have created APA's Science Policy Insider News (SPIN), a monthly email newsletter that will take you inside the Administration and Congress for timely information from your APA staff.

Visit SPIN at <http://www.apa.org/ppo/spin>.

November 2004 Announcements

Grants Available for Scientific Conferences, Proposals Invited

The Science Directorate is currently seeking proposals for research conferences in psychology. The purpose of this program is to promote the exchange of important new contributions and approaches in scientific psychology. The next deadline for applications is December 1, 2004.

Grant money ranging from \$500 to \$20,000 is available for the scientific conference. Proposals will be considered using such formats as "add-a-day" conferences (\$500-\$3,000 available), "stand alone" conferences (\$5,000-\$20,000 available), and festschrifts (\$5,000-\$20,000 available). APA is also open to innovative ways of holding conferences. The conference must be additionally supported by the host institution with direct funds, in-kind support, or a combination of the two. Please note that a detailed budget including institutional support is required for application.

Conference proposals must meet the following eligibility requirements:

- One of the primary organizers must be a member of APA.
- Only academic institutions accredited by a regional body may apply. Independent research institutions must provide evidence of affiliation with an accredited institution. Joint proposals from cooperating institutions are encouraged.
- Conferences may be held only in the United States, its possessions, or Canada.
- APA governance groups, APA Divisions and other related entities are not eligible for funding under this program.

Conference manuscripts shall be submitted to APA after the conference is held for publication in PsycEXTRA, a companion database to the scholarly PsycINFO. PsycEXTRA is designed to link researchers, academics, clinicians, librarians, consumers, and policy-makers to a variety of information sources covering psychology, behavioral science, and health; PsycEXTRA provides the readership with original documents.

Seventy-five percent of funds will be distributed to grantees prior to the conferences, and the remaining twenty-five percent will be released following the conference and after the submission of a final financial report detailing conference expenditures equal to or exceeding Grantee's proposed total budget. Conference review committee members are: Anita Davis; Michael Domjan; Irene Frieze; Keith Humphreys; John Kihlstrom; and Kevin Murphy.

For more information on review criteria, proposal contents, and budget guidelines, please refer to the APA website at <http://www.apa.org/science/confer2.html> or contact Deborah McCall, Science Program Manager, at (202) 218-3590 or via email at dmccall@apa.org.

PROPOSAL DEADLINE: December 1, 2004

Please mail proposals to: APA Science Directorate,
750 First Street, NE
Attn: Scientific Conferences Proposals
Washington, DC 20002-4242
<http://www.apa.org/science/confer2.html>

APF Offers Three \$20,000 Graduate Scholarships in Child Psychology

The American Psychological Foundation (APF) is offering up to three \$20,000 Elizabeth Munsterberg Koppitz Scholarships to support graduate studies in child psychology in 2005.

The purpose of these scholarships is to nurture excellent scholars in the broad area of the psychology of the child, such as developmental, child-clinical, pediatric, school psychology, educational psychology and developmental psychopathology. Support will be from Sept. 1 to Aug. 31 each year. The award includes travel costs to attend the APA pre-conference work

shop for Elizabeth Munsterberg Koppitz Graduate Fellows at the APA Convention and other relevant conferences as funds allow. APF will also award travel stipends of \$4,000 to runners-up to enable their travel to APA's convention and to encourage travel to other conferences as funds allow.

Graduate students who have achieved doctoral candidacy are eligible to apply. Students can apply before having passed their qualifying exams, but proof of having advanced to doctoral candidacy will be required before funds are released. Consideration will be given to psychological research that breaks new ground or creates significant new understandings that facilitate children's and youth's development or functioning.

The deadline to apply is **November 15, 2004**. Recipients will be announced on or after February 15, 2005. For complete application guidelines, please visit APF's website, www.apa.org/apf.

Funding Available to Study LGB Family Psychology

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Proposals Sought for LGB Research The American Psychological Foundation (APF) requests proposals for the 2005 Wayne F. Placek Research Large Research Grants and Small Research Grants. Both large and small grants support scientific research that increases the general public's understanding of homosexuality and aims to alleviate the stress that gay men and lesbians experience in this and future generations. Proposals are especially encouraged for empirical studies that address the following topics:

- Prejudice, discrimination, and violence based on sexual orientation
- Family and workplace issues relevant to lesbians and gay men
- Subgroups of the lesbian and gay population that have historically been underrepresented in scientific research, especially racial and ethnic minorities

Applicants for both awards must have a doctoral-level degree (e.g., PhD, PsyD, M.D.) and must be affiliated with a college, university, or research institution that meets federal requirements for administering research awards. Funds are not available for dissertation research or other pre-doctoral studies.

Wayne F. Placek Large Research Grants

The Wayne F. Placek Large Research Grants are available for empirical research on any topics related to lesbian, gay, or bisexual issues from all fields of the behavioral and social sciences. Applications should propose new studies that can be completed in two years solely with the level of funding provided by the grant.

Grant Amount. Up to \$40,000 may be requested for any expenses legitimately associated with conducting an empirical research project, including salary for the applicant or assistants, equipment (with a \$5,000 limit), supplies, travel, photocopying, postage, and payment of participants. The award does not pay institutional indirect costs. Special preference for one of the two grants to be awarded will be given to applicants who have completed their doctorates within the previous seven years.

Deadline. The deadline for receipt of applications is March 11, 2005. Award recipients will be announced in August, and funding will begin on or after September 15, 2005.

Wayne F. Placek Small Grants

The Wayne F. Placek Small Grants program covers expenses legitimately associated with conducting an empirical research project on lesbian, gay, and bisexual issues.

Grant Amount. The small grants award up to \$5,000. Applications should propose a new study that can be completed in one year solely with the level of funding provided by the grant. Funds are not normally provided for stipends of principal investigators, travel to conventions, or manuscript preparation. The award does not pay institutional indirect costs.

Deadline. All application materials for small grants must be received by January 26, 2005. Awards will be announced in April 2005.

Applications for both awards must conform to the APF Placek Grant Award guidelines. Application guidelines and forms may be downloaded from the Hooker Programs website: www.HookerPrograms.org.

Apply for Gerson Grant for Family, Couple, Multi-Generational Processes

The American Psychological Foundation (APF) announces the Randy Gerson Memorial Grant to be given in 2005. For the 2005 cycle of the grant, graduate students engaged in doctoral studies are invited to apply. The \$5,000 grant has been created to advance the systemic understanding of family and/or couple dynamics and/or multi-generational processes. Work that advances theory, assessment, or clinical practice in these areas shall be considered eligible for grants through the fund.

Preference will be given to projects using or contributing to the development of Bowen family systems. Priority also will be given to those projects that serve to advance Dr. Gerson's work.

Eligibility Requirements

Applicants from a variety of educational settings are encouraged to apply. Awards are given to students and professionals in alternate years. The 2005 grant will go to a graduate student engaged in doctoral studies.

Procedure

Submit the entire application electronically to APF via email (foundation@apa.org) by February 1, 2005. Applicants will be notified on or after April 15, 2005.

Applications must include the following:

- Statement of the proposed project
- Rationale for how the project meets the goals of the fund
- Budget for the project
- Statement about how the results of the project will be disseminated (published paper, report, monograph, etc.)
- Personal reference material (vita and two letters of recommendation)
- Official transcript

For additional information, visit the APF website at www.apa.org/apf, or contact the APF Awards Coordinator/Gerson, 750 First Street, NE, Washington, DC 20002-4242, by telephone: (202) 336-5843 or via email: foundation@apa.org.

The APF encourages applications from individuals that represent diversity in race, ethnicity, gender, age, and sexual orientation.

Nominate a Colleague for a 2005 Gold Medal Award

The APF Board of Trustees invites nominations for its 2005 Gold Medal Awards, which recognize life achievement in and enduring contributions to psychology. The awards are presented in four categories:

- o Life Achievement in the Science of Psychology
- o Life Achievement in the Application of Psychology
- o Life Achievement by a Psychologist in the Public Interest
- o Life Achievement in the Practice of Psychology

All award winners receive a gold medal and an all-expenses-paid trip to APA's 2005 Annual Convention in Washington, DC, August 18-21, where the awards will be presented. APF will also donate \$2,000 to a charitable or nonprofit organization chosen by each winner.

Only psychologists 65 years or older who reside in North America are eligible. Nominations should include which award the nomination is for, a nomination statement that traces the nominee's career, a curriculum vitae, and a bibliography. Letters of support are welcome. All materials should be sent in one package coordinated by a chief nominator. There is no nomination form.

The submission deadline is **December 1, 2004**. Send nominations to Gold Medal Awards Coordinator, American Psychological Foundation, at the APA address. For more information, visit www.apa.org/apf.

Submit Nominations for Brewer Teaching Award

APF invites nominations for its 2005 Charles L. Brewer Distinguished Teaching of Psychology Award. The award recognizes a career contribution to the teaching of psychology and was re-named to honor its 1989 recipient, Charles L. Brewer, PhD, in recognition of his careerlong devotion and contributions to the teaching of psychology. Brewer, a psychology professor at Furman University and editor emeritus of the journal *Teaching of Psychology*, is the 1995 recipient of APA's Distinguished Career Contributions to Education and Training Award.

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The APF Teaching Subcommittee selects a psychologist for the award who has:

- o Demonstrated exemplary performance as a classroom teacher
- o Developed effective teaching methods and materials, as well as innovative curricula and courses
- o Conducted research on teaching
- o Taught advanced research methods and practice in psychology
- o Trained psychology teachers and demonstrated administrative facilitation of teaching
- o Inspired students to become psychologists

The winner receives a plaque, \$2,000, and an all-expenses-paid trip to APA's 2005 Annual Convention in Washington, DC, where the award will be presented.

The deadline to receive materials is December 1, 2004. Nomination materials should include the nomination form, the nominee's curriculum vitae, a bibliography, and a description of how the nominee fulfills the guidelines of the award. APF welcomes letters of support. Nomination forms are available at www.apa.org/apf or write to foundation@apa.org. All materials should be sent in one package coordinated by a chief nominator to the APF Charles L. Brewer Distinguished Teaching Award Coordinator, American Psychological Foundation, at the APA address.

New Positive Psychology Fellows Program: Call For Applications

Are you interested in collaborating with leading Positive Psychology scholars? The Positive Psychology Templeton Fellows Program will gather together the best and brightest scholars by creating and funding collaborations with senior scholars.

We encourage applications from early to mid-career scholars with a doctoral degree and graduate students pursuing a doctoral degree from the disciplines of Psychology, Sociology, Anthropology, Theology, Neuroscience, Economics, History, Public Health and Medicine. Applicants can be from any country and there is no age limit.

The deadline to apply is **December 15, 2004**. Selected Fellows will be expected to live in Philadelphia from May 15 to June 30, 2005. Substantial stipends and living expenses are available. For details visit: www.positivepsychology.org/ppfellows.doc.

Funding for Research on Child Labor

The U.S. Department of Labor wishes to fund research aimed at linking theory and practice to eliminate the worst forms of child labor. Starting November 1, 2004, we invite you to visit <http://www.dtiassociates.com/ilab-iclp> for full details of the solicitation and instructions for submitting a proposal. An initial description of the project, its objectives, and funding have already been posted.

Please pass this information on to your colleagues or advanced doctoral candidates who may be interested in this opportunity.

Promoting Psychological Research and Training on Health Disparities Issues at Ethnic Minority Serving Institutions (PRoDIGS): Request for Proposals (RFP).

A small grants program funded by the American Psychological Association (APA) Science Directorate's "Academic Enhancement Initiative" and administered by the APA Public Interest Directorate's Office of Ethnic Minority Affairs (OEMA) in collaboration with the APA Minority Fellowship Program

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PRoDIGS grants will be awarded to early career faculty for specific, limited, and highly focused activities that are both preliminary and related to the preparation of a federal or foundation funding proposal, and able to be fully implemented during a 12 to 18 month period. The proposed project seeks to increase the capacity of ethnic minority serving post secondary institutions and faculty to engage in health disparities research and to encourage student involvement in health disparities research training at early levels of the educational pipeline. Small grants (\$5,000 to \$6,500) will be awarded to support activities associated with the preparation of an initial research or program/curriculum development application for federal or foundation funding. All program/curriculum development application efforts must incorporate provisions for student research training, and whenever possible, research training applications should include student researchers. All applicants are required to submit a detailed concept paper (2 to 4 pages) of their proposed research or program/curriculum development effort.

Awardees may use their small grants for: course reduction to free up time for grant preparation; conduct of pilot study; consultation with research/curriculum experts; survey/instrument design; data collection; student assistance; faculty mini retreats/workshops, etc. All awardees will be expected to attend a mandatory 5 to 7 day professional development institute in Washington, D.C. during the summer of 2005 at which concept papers will be critiqued, major trends in health disparities research will be discussed, and opportunities to network with federal funding program directors and federal research institute staff will be provided. It is expected that awardees will submit a funding application to a federal agency or private foundation within 24 months after award of the small grant.

Deadline for Applications is February 21, 2005.

Application information and the complete RFP can be found at: <http://www.apa.org/pi/oema/prodigproposal.pdf>. Questions should be directed to Sonja Preston of the APA Office of Ethnic Minority Affairs (OEMA) at 202-336-6029. ■

Julie Milligan and Celia Gonzalez Receive APA Science Student Council Early Research Awards

by Margo Noel Gardner, Temple University and Michael Proulx, Johns Hopkins University

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In 2004, the APA Science Student Council proudly introduced an annual competition for early (i.e., pre-doctoral) research. The purpose of the program is to reward outstanding student research projects completed before the dissertation. The first two awards were given in October: one \$1,000 award was given to Julie Milligan for excellence in applied science and one \$1,000 award was given to Celia Gonzalez for excellence in basic science.

Julie Milligan, a third year graduate student in developmental psychology at the University of Texas at Austin received the award in Applied Science and was selected both for the scientific quality of her work and for the important social implications of her findings. In collaboration with Rebecca Bigler, her advisor and associate professor at the University of Texas at Austin, and Sheri Levy, assistant professor at SUNY Stony Brook, Milligan examined the extent to which attitudes toward African Americans among European American children (6-11 years) are affected by interventions that 1) either do or do not make explicit reference to race, and 2) either do or do not educate students about the racial injustice experienced by African Americans.

Specifically, Milligan and her collaborators compared the effects of three interventions – a race-blind intervention, a race-based intervention, and an intervention that involved lessons about racism. In all three conditions, teachers presented students with photos and positive biographical sketches of important European and African American historical figures. However, in the race-blind condition, teachers made no explicit reference to the race of the historical figures; in the race-based condition, teachers made explicit verbal reference to race; and in the condition involving lessons about racism, teachers made explicit reference to race and discussed the unjust discrimina-

tion experienced by the famous African American figures. Milligan and her colleagues found that children in the condition involving lessons about racism demonstrated attitudes toward African Americans that were more positive and less negative than those demonstrated by children in the other two conditions. According to Milligan, it is also important to note that the positive effects on attitudes toward African Americans did not come at the expense of increased negative feelings toward European Americans. That is, the intervention involving lessons about racism did not result in children's increased negative or decreased positive feelings toward European Americans. Milligan hopes that this finding "encourages some parents and educators of European American children to address matters of racism explicitly with their children or students."

Receiving recognition from the APA Science Student Council seems only have bolstered Milligan's commitment to this area of study. "It's hugely encouraging to know that research in this area is valued by a larger community," she explains. "There's so much to be done still that all the unanswered questions can feel burdensome. But with this recognition, I feel as idealistic as I ever have about my field, and about the progress that I may see in it during my career." With this and other accomplishments under her belt, we can look forward to many more important contributions from Julie Milligan.

Celia Gonzalez received the inaugural APA Science Student Council Early Research Award in Basic Science. Gonzalez is a fourth-year graduate student at New York University studying social psychology and has an interest in how people feel connected to the groups in which they belong. Emotions are one way in which people might reassess their association with a group. Her award-winning project focused on how emotional responses impacted judgments of the fairness of decision-making

procedures in a group.

"People are more concerned about fairness when they receive a negative outcome," she says, "relative to when they receive a positive outcome." A negative outcome might result in concern about one's connection to a social group. For example, if one lost a promotion, then "the feelings provoked by this type of situation could stimulate an interest in fairness," Gonzalez said. This in turn might lead to a reassessment of one's status in a group.

The project was carried out by inducing negative or positive emotions in participants through multiple methods. Then the participants read about academic situations, such as those involving grading procedures. By analyzing the participants' ratings of the fairness of the procedures, they found that those with induced negative affect paid more attention to fairness. The results were extended by using multiple studies. The range of methods included different manners of inducing emotions as well as using both fictional academic situations and having participants think of personal work experiences. This extensive project was conducted with her advisor, Dr. Tom Tyler, and is currently under review for publication.

When asked what sparked her interest in social psychology, Celia noted that, as an undergraduate, she was intrigued by the topics studied by social psychologists. Fueled by this interest, she pursued undergraduate research on group decision-making and finished with a social psychological honors thesis with faculty at the University of Illinois, Urbana-Champaign. Now she continues her study of social psychology in New York, and "luckily," she says, "I still think it is exciting."

For more information about the APA Science Student Council, visit their website at: <http://www.apa.org/science/apassweb.html>.

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Psychological Science Agenda is published monthly by APA's Science Directorate. Dedicated to promoting and serving scientific psychology, *Psychological Science Agenda* provides news about national scientific policy developments, examines policy issues affecting and affected by the behavioral research community, and highlights the advocacy efforts of the Science Directorate on behalf of research and academic psychologists. *Psychological Science Agenda* also features news of APA's governance and program initiatives relating to scientific and academic psychology, and provides valuable, timely information about funding opportunities for research psychologists.

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