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PSYCHOLOGICAL SCIENCE AGENDA

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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How Experience Shapes Vision

by Michael J. Tarr

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The study of human visual object recognition has a relatively short and somewhat controversial history. My interest in how experience shapes both object representations and the processes applied to such representations has involved me in two spirited debates concerning: i) how we recognize objects across changes in viewpoint or other sources of variation; and, ii) the functional interpretation of category selectivity in the primate visual cortex. In both cases our work has successfully challenged appealing, widely held theories, prompting reinterpretation of how the human visual system accomplishes the task of recognizing objects.

Invariance

My 20-month old son is fond of pointing to two similar objects and declaring "same thing!" So-called "basic-level" recognition involves categorizing visually-similar, yet distinct objects as members of the same class. Thus, one form of invariance requires our visual systems to perform a many-to-one mapping between individual exemplars and object categories. At the same time, individual exemplars of three-dimensional objects rarely appear the same from one moment to the next. Variation in the two-dimensional images falling on our retinæ arises from almost any change in viewing conditions, including changes in position, changes in object pose, changes in lighting, or changes in object configuration.

Thus, a second form of invariance requires our visual systems to perform a many-to-one mapping between individual "views" of objects and their unique identities. Theories of object recognition have often addressed these twin challenges by positing three-dimensional, volumetric representations that are invariant over both class and viewing variation (Marr & Nishihara, 1978; Biederman, 1987). One of the most salient characteristics of such models is that they are viewpoint invariant. That is, the same three-dimensional representation is derived over a wide range of viewing orientations. The behavioral implication of this is that recognition performance should be independent of the particular viewpoint from which the object is seen. This prediction is also consistent with our intuitions – our recognition of familiar objects from unfamiliar viewpoints feels effortless. However, psychophysical tests of this prediction by me (Tarr & Pinker, 1989; Tarr, 1995) and my colleagues (e.g., Bühlhoff & Edelman, 1992) suggest otherwise. Using a wide range of stimuli, we have found that experience with particular views is a critical factor in achieving invariance. Several studies have found that if observers learn to recognize novel objects from specific viewpoints, they are both faster and more accurate at recognizing these same objects from those familiar viewpoints relative to unfamiliar viewpoints (Tarr & Pinker, 1989; Bühlhoff & Edelman, 1992; Tarr, 1995).

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Moreover, recognition performance at unfamiliar viewpoints is systematically related to those views that are familiar, observers taking progressively more time and being progressively less accurate as the distance between the unfamiliar and the familiar increases. These and related results (e.g., Hayward & Tarr, 1997; Lawson & Humphreys, 1996; Tarr et al., 1998b) suggest that human object recognition relies on multiple “views,” where each view encodes the appearance of an object under specific viewing conditions, including viewpoint, pose, configuration, and lighting (Tarr et al., 1998a) and a collection of such views constitutes the mental representation of a given object.

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“View-Based” Models

Given that we represent three-dimensional objects as collections of viewpoint-specific representations, how do we manage to attain both class and view invariance? One clue may be found in the systematic pattern of performance seen for the recognition of familiar objects in unfamiliar viewpoints. Steven Pinker and I (1989) believed that this pattern arose due to the use of mental rotation (Shepard & Metzler, 1971) or a continuous alignment process (Ullman, 1989) to transform unfamiliar viewpoints to familiar views encoded in visual memory (with familiar viewpoints being recognized with the need for a transformation). The strongest evidence favoring this interpretation is the nearly identical linear reaction time pattern across viewpoint obtained for the same objects in naming and left-right handedness discrimination tasks (Tarr & Pinker, 1989). However, in a nice example of how neuroimaging can inform us regarding cognitive processes, Gauthier et al. (2002) found that entirely different brain systems exhibited viewpoint-dependent activity for recognition and mental rotation tasks (i.e., Pinker and I were wrong). Consistent with current thinking on the “division of labor” in the primate visual system (Goodale & Milner, 1992), the recognition of objects in unfamiliar viewpoints preferentially recruited the

fusiform region along the ventral pathway, while handedness discriminations recruited the superior parietal lobe along the dorsal pathway (Gauthier et al., 2002). Thus, the computational mechanism underlying viewpoint-dependent recognition behavior is not the continuous transformation process of mental rotation.

Accumulation of Evidence

How then do we explain the fact that it takes more time to recognize objects in unfamiliar views? Perrett, Oram, and



photograph by James Anderson

Ashbridge (1998) presented a novel solution to this problem based on the well-established finding that individual object-selective neurons tend to preferentially respond to particular object views (Perrett et al., 1985; Logothetis & Pauls, 1995). This sort of “view-tuning” appears puzzling when considered at the single neuron level – if objects are represented by individual neurons tuned to specific views, how can any sort of invariance be achieved? The answer may lie in considering populations of neurons as the actual neural code for objects. In this context, individual neurons may be considered as coding – from a familiar viewpoint – the complex features or parts of which objects are composed. Recognition then takes the form of an “accumulation of evidence” across all neurons selective for some aspect of a given object. During

recognition the particular rate of accumulation will depend on the similarity between visible features/parts in the present viewpoint and the view-specific features/parts to which individual neurons are tuned (Perrett et al., 1998). Across a population of object-selective neurons, sufficient neural “evidence” (summed neuron activity) will accumulate more slowly when the current appearance of an object is dissimilar from its learned appearance. In contrast, when an object’s appearance is close to previously-experienced views, evidence across the appropriate neural population will accumulate more rapidly. Thus, systematic behavioral changes in recognition performance with changes in viewpoint may be explained as a consequence of how similarity is computed between new object percepts and their previously-learned neural representations. Returning to the question raised above, one appealing element of the accumulation of evidence approach is that class invariance may be achieved using the same mechanism as view invariance. In this model, recognition amounts to reaching a threshold of sufficient evidence across a neural population. One consequence of this is that unfamiliar views of objects will require more time to reach threshold, but will be successfully recognized given some similarity between input and known viewpoints. A second consequence is that unfamiliar exemplars within a familiar class will be likewise recognized given some similarity (e.g., similar configurations and viewpoints) with known exemplars from within that class. One behavioral implication is that familiarity with individual objects should facilitate the viewpoint-dependent recognition of other, visually-similar objects; a prediction borne out by several studies (Edelman, 1995; Tarr & Gauthier, 1998). A second implication is that object viewpoints or class exemplars that are significantly different from known views or objects should be instantiated as distinct representations; again, a prediction that seems to be supported (Jolicoeur, Gluck, & Kosslyn, 1984).

Whether the same mechanism can account for all forms of object invariance remains unknown, although it seems likely that configuration and lighting variation present unique challenges that may require the inclusion of structural information (e.g., Biederman, 1987; Bienenstock & Geman, 1995).

Category Selectivity in Visual Cortex

While the question of invariance has often dominated thinking on object recognition, recent neuroimaging results have focused more on subordinate, rather than basic, level recognition (e.g., face recognition). In this vein, a third challenge to the human visual system is discriminating between individuals within a homogeneous object class, the most salient example being face recognition. Rather than exploring the computational principles underlying this ability, the specific question addressed within this domain is often whether faces are “special” or not (Farah et al., 1998). Although the form of this debate has varied, neuroimaging studies logically speak to the issue of neural specialization, that is, whether there are distinct regions of the visual system specialized for and exclusive to face recognition.

Neuroimaging studies using both PET (Sergent, Ohta, & MacDonald, 1992) and fMRI (Kanwisher, McDermott, & Chun, 1997) reveal a small region in the fusiform gyrus of the ventral-temporal lobe that is more active when we view faces as compared to other objects. One interpretation of this finding is that this brain area, dubbed the “fusiform face area” or FFA (Kanwisher et al., 1997), is a face-specific neural module (Fodor, 1983); that is, its function is to process and/or recognize faces and only faces. An alternative explanation is that this and other forms of putatively face-specific processing (e.g., Farah, 1990; Yin, 1969) are actually by-products of our extensive experience which makes us face experts (Diamond & Carey, 1986). Thus, the recognition of individual faces exhibits qualities that should be true for any domain of visual expertise for a homogeneous object class; if faces are being processed this

way by default due to their social importance, but not as a result of anything intrinsic to them as visual objects.



Greebles, Cars, and Birds, Oh My!

Isabel Gauthier and I have collaborated with others (Gauthier & Brown, 2004) to explore these competing accounts using several different approaches. In the laboratory we have created experts for novel objects called “Greebles” and observed the behavioral (Gauthier & Tarr, 1997) and neural (Gauthier et al., 1999; Rossion et al., 2000) changes that occur with the onset of expertise. We have also examined the neural bases of expert-level recognition in extant experts (Gauthier et al., 2000; Righi & Tarr, 2004; Tanaka & Curran, 2001).

Several of our findings speak directly to the question “Are faces special?” First, Greeble experts, but not Greeble novices, show behavioral effects – notably configural processing – that are often taken as markers for specialized face processing (Gauthier & Tarr, 1997; Gauthier et al., 1998). Second, Greeble experts, but not Greeble novices, show category-selectivity for Greebles in the right fusiform gyrus (Gauthier et al., 1999). Similarly, bird experts show category-selectivity for birds, but not cars, in the right fusiform, while car experts show category-selectivity for cars, but not birds (Gauthier et al., 2000). Reinforcing the generality of this result, chess experts, but not chess novices, likewise show category-selectivity in right fusiform for valid, but not invalid, chess game boards (Righi & Tarr, 2004). Third, across Greeble expertise training, subjects show a significant positive correlation between a behavioral measure of holistic processing (sensitivity to the presence of the correct parts for that

object) and neural activity in the right fusiform (Gauthier & Tarr, 2002). Similarly, bird and car experts show a significant correlation between their relative expertise measured behaviorally (birds minus cars) and neural activity in the right fusiform (Gauthier et al., 2000). Behaviorally measured chess playing ability also shows a significant correlation with right fusiform response (Righi & Tarr, 2004). Fourth, the N170 potential (as measured by event-related potentials) shows face-like modulation in Greeble (Rossion et al., 2000), bird and dog experts (Tanaka & Curran, 2001), but only for a given expert’s domain of expertise.

These and other findings (e.g., Gauthier, in press; Tarr & Gauthier, 2000) suggest that putatively face-specific effects may be obtained with non-face objects, but only when subjects are experts for the non-face object domain. Thus, our answer to the question “Are faces special?” is yes and no. There is no doubt that faces are special in terms of their centrality to social interaction, yet our data suggest that this is a characteristic of our environment and not an intrinsic property of our brains. This argument is based on studies using both Greeble and extant experts in domains as diverse as cars, birds, and chess.

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EXECUTIVE DIRECTOR'S COLUMN

STEVEN BRECKLER, Executive Director for Science

Again the Target

Starting in the mid-1970s, and continuing for 14 years, Senator William Proxmire commanded the headlines with his Golden Fleece Awards. The Senator used these awards to spotlight what he felt to be the waste and abuse of taxpayer money. The Golden Fleece Awards had the intended effect. The media soaked it up, and hard questions were indeed asked of government agencies and their funding choices.

Psychological science was one of the popular targets. The very first Golden Fleece Award was bestowed upon NSF for its funding of a study to find out why people fall in love. One year later, NSF was again ridiculed for funding a study on human aggression. To be fair, NSF was not the only target. Indeed, it was rarely the target. Nor was psychological science the only target – but it was the one that produced some of the more sensational and memorable headlines.

The Golden Fleece era did eventually pass, but not without causing enduring changes in how the public thinks about the funding of science and how funding agencies manage their public images. Nor was the Golden Fleece era the last time that social and behavioral science was caught in the political cross-fire. In the early 1990s, Senator Robert Byrd drew social and behavioral science funding into a budget battle with the White House by proposing that 32 NSF grants be rescinded. This was my first personal encounter with federal budget politics – my own NSF grant was among those 32.

Now, for the second year in a row, Representative Randy Neugebauer (R-TX) has introduced an amendment to the NIH appropriation bill to rescind the funding of two active NIMH peer-reviewed grants. Both grants were



awarded to psychologists. One is Sandra Murray at the State University of New York at Buffalo. The other is Edward Wasserman at the University of Iowa. Both investigators are highly respected scientists, whose research contributions appear in the top journals and are influential. These grants were funded because dozens of other scientists judged them to be of the highest scientific caliber, and because NIMH judged them as supporting its mission to further the treatment and prevention of mental illness and to promote mental health.

When the same thing happened last year, the amendment passed on a voice vote. The language was eventually removed in the process of reconciling the House and Senate funding bills. But a dangerous precedent was set. This year, the amendment again passed on a voice vote. Science advocates will continue to press for the language to be removed. The immediate fear is that the proposed rescissions will survive. The longer-term fear is that such action represents only the tip of the iceberg.

Why is psychological science the target? Why do politicians pick on us so? At one level, it does not have much to do with the science. This is politics. It is a vehicle for congressional representatives to get some media attention, to show their constituents that they are hard at work, and to gain the

upper hand on other issues pending before Congress.

Yet, at another level, it is all about our science and its vulnerability to public ridicule. We are good at convincing ourselves that psychological science is important, relevant to societal needs, and deserving of public support. We are not very good at convincing others of these truths that we tend to take for granted. If we had a better handle on this, congressional representatives would not dare attack psychological science. If we had deep public appreciation for our science, constituents would be demanding an increase in funding for psychological science.

We need to draw on these episodes as learning experiences. One lesson is that our advocacy efforts need to be expanded. We are getting better, but we still have considerable room for improvement. Another lesson is that we need to devote more attention and energy to the public image of psychology. As a long-term strategy, we will achieve greater success by making our case with the masses.

This is a call to action. We all need to stand up – right now – and engage the advocacy process. We all need to rally behind these two scientists. Next year it could be you. We also need to take a hard look at the public image of psychology, and devote ourselves to improving it. We need to put the same energy and passion into this as we put into our own research. The result will be a better and stronger psychological science.

Congratulations to All our Student Travel Award Winners!!

The Science Directorate sponsors an annual competition for graduate student travel awards, the purpose of which is to help psychology graduate students travel to the annual APA Convention to present their research. This year, 80 students received \$300 to support their travel to the 2005 APA Convention in Washington, DC. Congratulations to all of our Student Travel Award winners!

Jacqueline Baron, Temi Bidjerano, Kerstin Blomquist, Julie Blundon, Jenny Carrillo, Phuong Chau, Hsui-Lan Cheng, YoonJung Cho, Jill Chrisman, Erica Chu, Joyce Chu, Christie Chung, Suzannah Creech, Kristen Dams-O'Connor, Eric Deemer, Courtney DeThomas, Katherine Fiori, Frank Gallo, Michele Garber, Ravi Gatha, Jennifer Gianico, Erin Goforth, Felicia Griffin-Fennell, Paul Heideman, Paul Hommersen, Anita Hund, Daniel Jimenez, Sherlyn Jimenez, Jennifer Jordan, Marid Kaewchinda, Nina Kaiser, Lara Kassoff, Sara Kim, Espen Klausen, Sara Konrath, Brittany Lakin, Jung Lee, Mariela Leon-Velazquez, Sara Lindberg, Adriana Lopez, Kelly Love, Tara Mahoney, Caitlin McEntarfer, Christina Meade, Masum Momaya, Wendy Morua, Vani Murugesan, Michelle Niemeier, Lizette Ojeda, David Pantalone, Meredith Patterson, Jennifer Perry, Angela Pfaffenberger, Laura Phillips, Caryanne Pope, Paul Poteat, Anthony Puliafico, Tatsiana Razzhavaikina, Reuben Robbins, Ariadne Schemm, Rebecca Schlafer, Nicholas Scull, Matthew Shake, Mun-Yi Shea, Frances Shen, Michelle Sherrill, Ray Shiraishi, Angela Soth, Sarah Tartar, Melissa Tester, Diana Tyson, Shannon Wald, Mei-Chuan Wang, Cortney Warren, Trisha Weeks, Candace White, Charmeka Whitehead, Naomi Wiesenthal, Todd Wilkinson, Sara Wright, Satoris Youngcourt

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Nominations Needed for Distinguished Service Award

By Suzanne Wandersman

Scientists who serve the discipline can be honored with a new award created by the APA Board of Scientific Affairs (BSA). The Distinguished Service to Psychological Science Award recognizes individuals who are committed to serving the discipline in a variety of ways. This award aims to encourage a culture of service among scientists. A culture of service is one of the themes included in the Science Directorate's and BSA's new initiative, Psychological Science for the 21st Century (PSY21).

This new award will be granted to individuals who have made outstanding contributions to psychological science through their commitment to a culture of service. Award recipients will receive a prize of \$1,000. The deadline for nominations is August 25, 2005.

Nominees will have demonstrated their service to the discipline by aiding in the governance of various psychological associations (e.g., as a member of boards, committees, task forces, officer roles); editing journals; reviewing grant proposals; mentoring students and colleagues; advocating for psychological science's best interests with state and federal lawmakers; and promoting the value of psychological science in the public eye. Nominees may be involved in one service area, many of the areas, or all of the service areas noted above. An individual's service to the discipline and not a person's scholarly achievements will be the focus of this award.

When submitting a nomination please provide the following:

- **A letter of nomination that describes and supports the individual's contributions (e.g., nature of the individual's service to psychological science, positions held). The nomination letter should be no more than two pages in length.**
- **A curriculum vitae.**
- **Three letters of support from individuals familiar with the nominee's service to the discipline. These letters can be from colleagues who have served with the nominee, a Dean familiar with the nominee's service, former students, or colleagues.**

Nominations will be accepted only as electronic submissions to cultureofservice@apa.org. Please be sure to submit the nomination as a package that includes the letter of nomination, vita, and three letters of support. If you have any questions about your nomination, please send an email to cultureofservice@apa.org

SCIENCE BRIEFS

Personality/Social Psychologist at ETS

by Lawrence J. Stricker



I guess I was destined for a career at a testing organization. When I was in high school, faced with the familiar quandary of not knowing what to do when I grew up, I went to CUNY's City College counseling center, took a battery of tests, and was interviewed. The verdict wasn't very helpful, "you can be whatever you want to be," but I was fascinated by the tests themselves. I came across a paperback by Johnson O'Connor, an early proponent of aptitude testing, and devoured its anecdotes about tests and their real life value. I went on to NYU's business school to study personnel management (now called human resources) but became more interested in the psychology courses I took. I eventually ended up in NYU's doctoral program in social psychology, which I chose in part because of its strong methodological focus. I had no interest in teaching after graduate school, looked into research positions with the Army, Navy, and other outfits, and was hired by Samuel Messick at ETS, then a leading researcher on response styles on personality inventories, the subject of my dissertation.

Although ETS had a strong and well-funded program of basic research in personality and social psychology at the time, I was initially asked to evaluate the Myers-Briggs Type Indicator, which intrigued the ETS administration, though not its psychologists. I did so and published a series of skeptical articles in the early 1960s. (This is so long ago that a few weeks ago I got an e-mail from an educational researcher, who had read the recent book, "The Cult of Personality," that recounts the early history of the Myers-Briggs, asking if the "Stricker" mentioned there was my father or some other older relative.)

Over the years, ETS's priorities have shifted from basic research to applied research and development. This change and the wide variety of research needs require the research staff to stretch its skills to the utmost and be extremely flexible. It is something like being a marine, who must be able to do everything, from cooking or clerking to skirmishing. Besides work in personality and social psychology (personality assessment, conformity,

social perception, stereotype threat), I have worked in educational measurement (grade comparability), psychometrics (measuring item bias), developmental psychology (life span changes in ability structure), industrial/organizational psychology (personnel selection), and sociology (social stratification). And I have done everything from laboratory experiments to household surveys to multivariate analyses of massive data bases. In all of this, my graduate school training in methodology and statistics has been invaluable, and I have learned a lot about all kinds of things in the process (perhaps more than I care to know about educational measurement).

I have also learned a lot from my colleagues at ETS. It is only a slight exaggeration to say that I picked up more psychology at coffee breaks and lunch than I did in graduate school. Besides Samuel Messick, the staff has included such other world-class psychologists as Frederick Lord, Nathan Kogan, and Irving Sigel, and our postdoctoral training program included visiting scholars like Douglas

Jackson and Salvatore Maddi, and postdocs like Peter Bentler and Anthony Greenwald.

An important asset at an organization like ETS is the availability of resources that magnify a psychologist's productivity: funding to do research; help from full-time, professional research assistants, programmers, and administrative assistants; access to statisticians and psychometricians for consultation; and use of large data bases (unfortunately, unlike universities, there are no subject pools, and procuring participants for small scale studies can be arduous). I felt like I was in a Head Start program, when I was given these resources on arriving at ETS, after my solitary and meagerly supported dissertation research.

A critical survival skill for a psychologist in this setting is the ability to frame research questions in a way that has scientific value and importance. Frequently, the ETS administration or a client has a pressing need to answer a question for important practical

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7 reasons, but it may not be of much scientific interest. Oftentimes, the question and the attack on it can be reframed to be relevant to the scientific enterprise, but still responsive to the needs of the administration or client, a valuable lesson I learned from Isidor Chein in graduate school. For example, the GRE program was concerned about the validity of the GRE General Test for older students. I recast this issue as a test of the classic differentiation hypothesis in developmental psychology: the structure of ability changes over the life span from undifferentiated in early childhood to differentiated in adolescence to undifferentiated again in middle or late adulthood. Similarly, the Test of English as a Foreign Language program was interested in practical ways of interpreting scores on this test. I turned this question into an application of Just Noticeable Differences to test scores.

Another key survival skill is participating in professional activities by publishing, attending meetings, being active in professional organizations, and teaching. Besides publishing, I'm a meeting junkie, I'm active in APA and a slew of other groups, and, despite my initial lack of interest in teaching, I was an adjunct at the New School University graduate school for over two decades. These activities are an effective way of keeping connected with mainstream psychology and an antidote to the insularity that can befall psychologists in nonacademic organizations. ETS can be a lonely place for a personality/social psychologist, for it is rare in recent years for another personality/social psychologist to be on the staff.

In short, working at ETS has been a challenging and gratifying experience that has allowed me to make a contribution to education, testing, and—most important to me—psychological science.



Summer Research is a Hit!

By: Amy Test

During the month of June, the Science Directorate offered three different Advanced Training Institutes, the first of which was held from June 7-10 at the University of North Carolina at Chapel Hill. Through a grant from NICHD and in affiliation with the Research Triangle Institute, the course centered on longitudinal data from the NICHD's Study of Early Child Care (SECC), and instructors were SECC investigators and data managers. Topics included the conceptual framework of the study, its methodological design, description and psychometric properties of a large subset of variables included in the analytical data sets, and introduction to the raw data sets. Workshops included lecture, discussion, and hands-on computer sessions.

Due to the continued success of the program, APA's Science Directorate again sponsored a weeklong series of lectures and computer workshops on longitudinal methods, modeling, and measurement in contemporary psychological research. Held from June 13-17, 2005 at the University of Virginia in Charlottesville, faculty members John McArdle, Karen Schmidt, and John Nesselroade led the course.

Through a grant from the National Institutes of Mental Health (NIMH), the Science Directorate again offered an ATI on functional Magnetic Resonance Imaging (fMRI), from June 19-24, 2005 at Massachusetts General Hospital in Charlestown, Massachusetts. The course provides training and hands-on experience in experimental design and data analysis, and also covers some of the necessary background in physics, biology, and biophysics. Directed by Robert L. Savoy, head of fMRI Education at Massachusetts General Hospital, the course is designed for active researchers who are new to the field of fMRI.

The Science Directorate is also pleased to be offering a new course on Performing Web-Based Experiments from July 19-23 at California State University, Fullerton. Led by Michael Birnbaum, this ATI will prepare participants to design, execute, and analyze on-line experiments. In addition, there will be instruction on methods of recruitment, ethics reviews, methodological problems and issues such as drop out and multiple submission, recruitment and retention of Online Panels, and techniques for implementation and control of Web surveys and experiments. Opportunities to interact with the instructors and receive individual attention will be provided.

The Science Directorate will continue to expand ATI offerings, and welcomes suggestions for topic areas. Please send a message to the [ATI mailbox](#) with your comments.

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Students Blaze New Paths of Learning

by Jennifer Webb

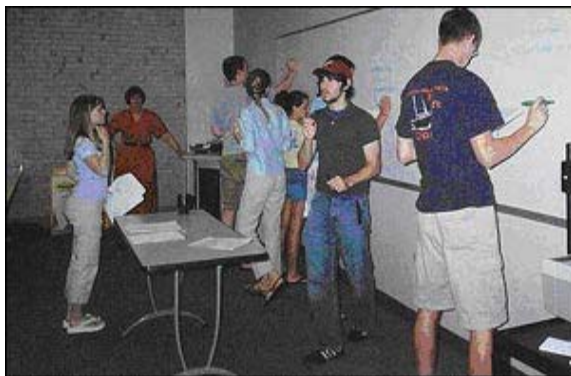
Learning and research were stimulating components of this summer for 44 talented undergraduate students who participated in APA's summer programs. Vanderbilt University hosted the 10th annual Summer Science Institute in friendly music city, Nashville, TN where 32 undergraduate students were welcomed by Camilla Benbow (Dean of Psychology and Human Development at Peabody College), Randolph Blake (Chair of Department of Psychology), Kathleen Hoover-Dempsey, (Chair of Psychology and Human Development at Peabody College), and Richardd McCarty (Dean, College of Arts & Sciences). The remarkable students gained knowledge and research experience in scientific psychology under the wing of eleven distinguished faculty members, Joanne Bachorowski, Bruce Compas, Joe Lappin, Dan Levin, Timothy McNamara, Julia



Dr. Julia Nolan guides 2005 SSI participants conducting a child development experiment

Noland, Andrew Rossi, Meg Saylor, Jeff Schall, Adriane Seiffert, and Georgene Troseth whose labs and lectures ranged from selection and control of action to laughter. The students were assigned to labs where they conducted research, giving presentations of their experiments and results at the end of the week.

They were guided through their nine day learning journey by APA institute leaders Virginia Holt, Brett Pelham, and Jennifer Webb, as well as two intrepid Vanderbilt graduate students, Kerstin Blomquist and Matthew Morris, who served as friends and mentors. These leaders not only assisted through research and discussion but also challenged them to games of Texas Hold'em, Apples to Apples and dancing on the General Jackson Showboat cruise.



SSI 2005 students were eager to contribute to Georgene Troseth's lecture, Young Children's Understanding of Symbolic Artifacts

One month later and one time zone east, University of Maryland – College Park was the home of ASTP 2005 where fifteen gifted students were led through an exciting nine days of psychological statistics and research methods by Brett Pelham (SUNY-Buffalo), Keith Maddox (Tufts University), and Maurico Carvallo, (SUNY-Buffalo). The students were stimulated with lectures, SPSS activities, hands-on activities, and discussions of grad school. After a day of t-tests, multiple regression, linear correlation, ANOVA, and repeated measures design, the students had blackjack/ juggling workshops, played Charades, Texas Hold'em, and took a twilight tour of Washington DC.

2005 SSI students were: **Callie Beck**, Brigham Young University; **Sarah Bhagat**, Franklin & Marshall College; **Marina Bontkowski**, Harvard University; **Drew Bromfield**, University of Puget Sound; **Lauren Burch**, Harverford College; **Shannon Calhoun**, Bradley University; **Lynne Clure**, Rockhurst University; **Roberto Colon**, University of Miami; **Nathan DeYoung**, Hope College; **Gus Diggs**, Christopher Newport University; **Pat Doyle**, Rhode Island College; **Jenna Farmer**, University of Notre Dame; **Samantha Feldman**, Colgate University; **Steven Frankland**, College of Wooster; **Allison Gioia**, Dickinson College; **Ryan Griffin**, Bates College; **Katie Jankowski**, University of Virginia; **Erin Jones**, University of Richmond;



ASTP 2005 participants learn how to complete statistical analysis with SPSS

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Claire Keultijes, Hillside College;
Sarah Konfirst, Augusta College;
Susanne Long, Southwest Missouri
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Goali Saedi, Portland State University;
Giulia Suro, University of Southern
 California; **John Thurston**, University
 of Miami; **Carrie Wheeler**, Providence
 College; **Deron Wirt**, Gettysburg
 College; **Vincent Woo**, University of
 California – Los Angeles

ASTP 2005 students included: **Maria
 Barth**, Harvard University; **Karla
 Batres**, Saint Peters College; **Candice
 Beckner**, Providence College; **Danielle
 Burchett**, Cal Poly; **Shamell Brandon**,
 Albright College; **Jeremiah Ford**,
 University of North Florida; **Robyn
 Grimes**, Wesleyan College; **Meredith
 Hope**, John Hopkins University; **Jackie
 Nguyen**, George Mason University;
Itzel Ramos, University of North
 Florida; **Dominique Scali**, College of
 Mount Saint Vincent; **Leroy Scott**,
 Livingstone College; **Sokhan Sdoeung**,
 University of Rhode Island, **Jorge
 Urbina**, San Diego State University;
Brett Wells, Augustana College
 Planning has begun for SSI and ASTP
 2005. Announcements and program
 information will be available on the
 Science Directorate Website in
 November.

This issue of PSA covers
 July and August. Our next
 publishing date will be in
 September. Have a great
 summer!

Hot Summer + Hot Science = 2005 APA Convention

Following is a sample of some of the excellent science programming that will occur at the 2005 Annual APA Convention. The Convention will be held August 18-21 in Washington, DC at the stunning new Washington Convention Center. Please visit www.apa.org/Convention for information about the Convention, including registration, housing, and program information. Please check the Science Directorate website (www.apa.org/science) at the end of this month for "A Scientist's Guide to the APA Convention," a compilation of highlighted science programming from



APA divisions. Paper copies will be available at the Convention at the Science Directorate's booth in the Convention Center. Among the featured speakers are: Elizabeth Capaldi, Lynne Cooper, Deborah Boehm-Davis, Randy Engle, Sheena Iyengar, Geoffrey Maruyama, Karen Matthews, Lynn Nadel, Denise Park, Steve Pinker, Judy Rodin, Paul Sackett, Robert Siegler, June Tangney, and Shelley Taylor.

Don't forget to stop by our booth to check out current information on science policy, funding opportunities, student grants, and much more. Be sure to take time to have your photo taken with William James, who will be our special on-site visitor!

Those of you who are grantees (or would like to be grantees) of NIAAA or NIDA won't want to miss the presentation of APA presidential citations to NIAAA Director T. K. Li and NIDA Director Nora Volkow. This special event will occur at the Divisions 28 and 50 Poster Session and Social Hour on Friday, August 19, 4:00 pm to 6:50 pm. In addition to feeding your brain, you will also enjoy complimentary hors d'oeuvres at this reception! Please plan to attend.

Science Directorate 2005 APA Convention Programs

The Board of Scientific Affairs (BSA) will sponsor a number of exciting programs at the APA Convention in Washington, DC, August 18-21, 2005. For more information, visit: <http://www.apa.org/science/convention05.html>.

Amendment Targets NIMH Research Again

by Karen Studwell



For the second year in a row, Rep. Randy Neugebauer (R-TX) has succeeded in his efforts to pass an amendment that would rescind funding for peer-reviewed behavioral research projects supported by the National Institutes of Health (NIH). The amendment was attached to the FY 2006 Labor, Health and Human Services, Education appropriations bill that the House of Representatives passed on June 24th. The amendment would prevent the National Institute of Mental Health (NIMH) from continuing to fund two psychological scientists working on quite different areas of behavioral research.

Ed Wasserman, from the University of Iowa, conducts research that seeks to increase understanding of vision and perception using pigeons as models. Sandra Murray, from the University of Buffalo, State University of New York, is investigating factors that contribute to successful marriages and how personal feelings of self-esteem influence the capacity to sustain satisfying close relationships. They now join the ranks of other esteemed scientists who have been targeted in recent years by policymakers concerned about how the NIH is prioritizing its research portfolio after its budget nearly doubled in the past five years.

While being singled out among the tens of thousands of other scientists would be alarming for any scientist, leaders in the administration and Congress offered their support for scientific integrity. Calling the amendment a form of

“unjustified scientific censorship,” NIH Director Elias Zerhouni further stated that “it undermines the historical strength of American science which based on our world renowned, apolitical and transparent peer review process.”

Speaking on the House floor against the amendment, Rep. Jim Leach (R-IA) said that “the Neugebauer amendment... represents a philosophical assault on the peer review process that serves as a hallowed barrier to scientific censorship... This is a slippery slope that I hope conferees will not slide down.”

In a letter to each member of the House of Representatives, APA CEO Norman Anderson also stated, “For Congress to defund any grants in violation of NIH’s exacting process is a blow to science, to scientists, and ultimately, to public health.”

The result in the House debate illustrates the uphill battle that scientists and organizations like APA face in educating policymakers about the importance of preserving the integrity of the peer review process. Since 2003, Karen Studwell of APA’s science policy office has co-chaired the Coalition to Protect Research (CPR) with Angela Sharpe of the Consortium of Social Science Associations (COSSA). The coalition was formed after a similar amendment was narrowly defeated in 2003. CPR’s sixty member organizations alerted their members days before the Neugebauer amendment was introduced urging their members to contact their Representatives and request that they vote no on the Neugebauer amendment. Unfortunately, the amendment was accepted with minimal debate and without a recorded vote as part of a group of amendments, so no members had a chance to record a vote. The funding bill was later approved by a vote of 250-151.

Not all hope is lost, however, as the Senate will begin marking up its version of the appropriations bill this week. Once the Senate approves its bill, likely without a similar amendment attached, it will be sent to a conference committee where any differences with the House bill will be reconciled. It is in that process where the Neugebauer amendment language is expected to be removed by those Members of Congress who have more experience with the scientific peer review system.

On July 20th, APA has arranged for Wasserman and Murray to meet with the New York and Iowa delegations to discuss how this amendment has affected their own research projects and the importance of protecting the peer review process from political interference. It is expected that the conference committee may complete its work on the FY06 funding bill before Congress breaks for the month-long August recess.

To read APA’s letter to the House:
<http://www.apa.org/ppo/issues/neugebauerbaltr62205.pdf>

To read more about this issue, please go to: <http://www.apa.org/ppo/scippo.html>

Across these domains we find a pattern of behavioral and neural effects consistent with those seen for face recognition. In particular, category-selective activation in the fusiform gyrus has, of late, been taken as the hallmark of face specificity. We and others see similar selectivity for many other object domains, in particular when subjects are experts. Of course, this analysis only addresses the question of spatial specialization, that is, “is a particular piece of neural real estate dedicated to face processing?” (unlikely given current data) and begs the more meaningful question “what are the computational principles underlying processing in this brain region?” (we don’t know at present).

Recent arguments based on finer resolution imaging or other methods for assessing spatial overlap between selective regions in the fusiform for faces and non-face objects miss this point (see <http://web.mit.edu/bcs/nklab/expertise.shtml>). First, even if there was convincing evidence that the microstructure of the brain regions recruited by faces and non-face objects of expertise were non- or partially-overlapping, this would not demonstrate that these regions were functionally distinct. Indeed, there is already good evidence that category-selective regions for different object categories are not functionally separable and that the representations of faces and different objects are both distributed and overlapping (Haxby et al., 2001). Moreover, adjacent, overlapping regions in visual cortex often show selective tuning for particular stimulus properties, but common underlying computational principles – one example being orientation columns in V1 (Kamitani & Tong, 2005). Second, the particular studies addressing the question of overlap used stimuli that were outside of the domain of expertise being tested, for example, antique cars shown to modern car experts (Grill-Spector et al., 2004; Rhodes et al., 2004). Thus, it is unlikely that any strong effect of expertise could have ever been obtained under these

conditions, let alone evaluated in terms of its relationship to face processing.

How Experience Shapes Vision

My research on two issues fundamental to human object recognition have led me to the conclusion that experience plays a significant role in shaping our visual behavior. First, I believe that invariance is achieved by deploying our astonishing memory capacities, that is, by encoding a great deal of what we see as it originally appears. Second, I think that there is compelling evidence that our object recognition system is generic, that is, the organization of object classes in ventral-temporal cortex is based on the manner in which we learn to process different categories. At the same time, it should be obvious that evolution has endowed us with the specific mechanisms that enable such learning through experience. The challenge we face as cognitive scientists is to unravel the synergistic manner in which nature and nurture interact throughout our lifetimes.

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