

Presidential Symposium: Time Will Tell

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The ghosts of psychology past, present, and yet to come sprung from the lips of the three celebrated speakers in the Presidential Symposium at the APS 20th Annual Convention.

Tackling the talk's theme — psychology as a hub science — Richard Thompson tracked a history of behavioral knowledge enhanced by brain imaging, Daniel Kahneman questioned the current conversation between psychology and economics, and Claude Steele envisioned a field dominated by interdisciplinary studies and translational funding.

APS Fellow Kahneman acknowledged psychology's influence on the growing field of behavioral economics, but argued that the present dialogue might not be as fluid as some behavioral researchers would like to believe.

Kahneman, Princeton University, is particularly qualified to evaluate the state of behavioral economics because, as he noted during his talk, he was there when it began in the early 1980s — “in a bar, in Rochester, at a conference of the Cognitive Science Society.” As if that were not enough, he was awarded the Nobel Prize in Economics in 2002.

Though psychologists and economists are both interested in social dilemmas, Kahneman said, the former tend to know more about the other field than the latter do.

“At the moment there is a thin conversation between psychology and even behavioral economics,” he said.

Part of the difference is a culture of citation. Citing psychology papers is essentially taboo among economists — a practice so pervasive, said Kahneman, that if he and collaborator Amos Tversky had published their seminal “prospect theory” in a psychology journal, instead of *Econometrica*, the history of behavioral economics might look entirely different.

“[Economists] never cited anything that we published in a psychological journal,” Kahneman said.

Take, for example, perhaps the greatest success story in behavioral economics — Richard Thaler's work on a program called Save More Tomorrow.

Most people will save only about 3 percent of their income to a retirement fund, and hesitate to increase that amount. In Save More Tomorrow, when employees earned a raise the firm automatically invested 3 percent of their *new* salary. This system occurred automatically, though employees were free to stop it whenever they pleased.

Overall, the average savings rate at the company studied increased to 11 percent.

Save More Tomorrow uses some beautiful psychology, said Kahneman, to help people make a decision — or no decision — that in the end makes them happy. A smaller raise simply does not hurt as much as setting aside more money next month.

But although the idea embraces “the spirit of psychology,” said Kahneman, it uses very little technical psychology.

The reason, he said, is similar to why English-speaking psychologists tend to ignore findings published in a foreign language. It would take a great amount of effort to learn fluent French. Similarly, the effort economists would need to put forth, up front, to understand all the complexities of behavioral science would be an “enormously high” entry cost, he said.

“There is behavioral economics,” he said, “but it’s in ‘Economics.’”

The Future of ‘Hub-ness’

[20th Annual APS Convention \(2008\) – Presidential Symposium: Psychology as a Hub Science-Part 2 – Claude Steele](#) from [Psych Science](#) on [Vimeo](#).

Focusing on the changes in the field to come, APS Fellow Claude Steele, Stanford University, advised psychologists to “increase our hub-ness.”

Accomplishing this goal may come down to what Steele sees as three critical challenges facing psychology: working alongside neuroscience, recognizing how the mind emerges from social context and culture, and performing basic research within a funding system that favors applied science.

If the first task remains to be crossed off the list, it is well on its way — as Richard Thompson would illustrate in the next talk.

Stressing that behavior will never reduce entirely to biology, Steele said the use of brain imaging and the physiological evidence of neuroscience will increasingly be part of the core of scientific psychology.

Is it really so far-fetched, he asked rhetorically, to ask whether cognitive dissonance and stereotype threat can be reduced by a shot of oxytocin?

To foster such mind-brain collaboration, Steele proposed restructuring psychology departments — toward hiring faculty with collaborative resumes to instill such thinking in students.

A challenge for psychology is to better understand how psychological functioning arises from its social contexts. He argued that we receive beliefs, paradigms of thought, reasoning strategies, etc., from those around us often without knowing it, and often without having engaged in much processing of our own. This is an important way that culture, social location, social networks, and life circumstances influence us — our beliefs, emotions, identities, and actions.

Steele drew an example from his own experience. During the O.J. Simpson trial, he attended a university

gathering of largely African American faculty members, many of whom, it emerged, were pulling for Simpson to be acquitted.

The following week, the staff in Steele's psychology department — predominantly white — had the opposite view.

Despite having strong views, few people in either situation had analyzed *for themselves* the evidence in the case, Steele said. Instead, the scenarios that guided peoples' beliefs — strong beliefs they took as their own — were largely received from their social networks, suggesting to Steele how integral our social context is to our psychological functioning.

Being precise about this role of social context, like the role of the brain in psychological functioning, is an important challenge for our future — another call to “hubness.”

Perhaps the biggest obstacle in the road ahead is funding. The reality, said Steele, is that few places support non-neurological, non-translational psychological research — and no crystal ball is needed to see that this tendency will not soon change.

“There isn't, in the general culture these days, as much faith in science as there used to be,” he said.

In response psychologists may have little choice but to hone basic theories while operating in more practical contexts. As far as Steele can tell, the field is up to the challenge.

“I am confident,” he said, “that psychology will have a very brilliant future.”

800 Pounds of Profundity

Pulling out some classic psychological studies from the scrapbook (see sidebar for a list), APS Past President Thompson, University of Southern California, chronicled how even some of behavior's greatest hits have been technologically remastered by neuroscience.

“The 800-pound gorilla in the room,” he said, referring to massive brain imaging equipment, “has had a profound impact on psychology.”

Study after study, Thompson juxtaposed what we knew then with what we know now. The differences, owed largely to advances in neuroscience, were clear.

Take, for example, the study of conditioned fear. In 1920, John Watson observed the behavior of “Little Albert,” who enjoyed playing with a white rat. Watson stood behind the child and, very loudly, hit a pipe with a hammer. Albert cried — and over time he became scared of his fuzzy friend.

Psychologists now know, as a result of studies of human and animal brains, that “the amygdala has turned out to be critical for conditioned fear,” Thompson said.

In another study, scientists had subjects read two stories: one was neutral, the other included a horrible

scene of a little boy being hit by a car.

By observing activity in the amygdala during the encoding and retrieval of these memories, scientists now better understand why people often recall emotional experiences more accurately, Thompson said.

Other research using brain scans, he said, has revealed that regions in the cerebellum active during simple forms of learning are “identical” in humans and some animals.

Yet another example is working memory: as the difficulty of a recollection task increases, psychologists can watch activity spike in many regions of the brain.

But, imaging is not all-encompassing and its limitations — such as the inability to separate the mind from the brain — mean that much work is still left for more traditional psychology. Despite this, there remains one area in which psychology has not advanced. And, in this sense, Thompson’s view of psychology’s past melded well with Steele’s outlook for the future: “It would appear,” said Thompson, pointing to a chart of funding from the National Science Foundation, “that federal funding agencies still have not fully realized that psychology is a hub science.” ?

– Eric Jaffe

Psychology and Neuroscience

In his talk, Richard Thompson noted studies that demonstrate progress in the relationship between psychology and neuroscience, including the following:

Boyack, K.W., Klavans, R., & Borner, K. (2005). Mapping the backbone of science. *Scientometrics*, *64*, 351-374.

Hayworth, K.J., & Biederman, I. (2006). Neural evidence for intermediate representations in object recognition. *Vision Research*, *46*, 4024-4031.

Kanwisher, N., McDermott, J., & Chun, M. M. (1997). The fusiform face area: A module in human extrastriate cortex specialized for face perception. *Journal of Neuroscience*, *17*, 4302-4311.

Logan, C.G., & Grafton, S.T. (1995). Functional anatomy of human eyeblink condition determined with regional cerebral glucose metabolism and positron-emission tomography. *Proceedings of the National Academy of Sciences, USA*, *92*, 7500-7504.

McCormick, D.A., & Thompson, R.F. (1984, January 20). Cerebellum: essential involvement in the classically conditioned eye response. *Science*, *223*, 296-299.

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Petersen, S.E., Fox, P.T., Posner, M.I., Mintun, M., & Raichle, M. E. (1988, February 18). Positron

emission tomographic studies of the cortical anatomy of single-word processing. *Nature*, 331, 585-589.

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Sergerie, K., Chochol, C., & Armony, J.L. (2008). The role of the amygdala in emotional processing: A quantitative meta-analysis of functional neuroimaging studies. *Neuroscience and Behavioral Reviews*, 32, 811-830.

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Ungerleider, L.G., Courtney, S.M., & Haxby, J.V. (1998). A neural system for human visual working memory. *Proceedings of the National Academy of Sciences, USA*, 95, 883-890.

Uttal, W. (2001). *The new phrenology: The limits of localizing cognitive processes in the brain*. Cambridge:MIT Press.

Van Essen, D.C., Drury, H.A., Joshi, S., & Miller, M.I. (1998). Functional and structural mapping of human cerebral cortex: Solutions are in the surfaces. *Proceedings of the National Academy of Sciences, USA*, 95, 788-795.

van Stegeren, A.H., Everaerd, W., Cahill, L., McGaugh, J.L., & Gooren, L.J. (1998). Memory for emotional events: Differential effects of centrally versus peripherally acting beta-blocking agents. *Psychopharmacology*, 138, 305-310.

Watson, J.B., & Rayner, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology*, 3, 1-14.

Woolsey, C.N., & Harlow, H.F. (1958). *Organization of somatic sensory and motor areas of the cerebral cortex*. Madison: University of Wisconsin Press.