

The Changing Landscape for Research and Education in Psychological Science

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It doesn't seem possible but this is the last column of my term as APS President. Throughout the past year you have heard from many of our APS colleagues who hold various administrative positions in universities in the United States and Europe. They wrote on a variety of topics such as the importance of departments of psychology in their institutions, the current research climate in the behavioral sciences, new administrative structures designed to facilitate the teaching and research of psychological scientists, and the emergence of "Big Data" in our science. I want to end my series of columns with a discussion of two major trends that I believe will significantly impact research and teaching in psychological science in the future: an increased emphasis on interdisciplinary research and scholarship in psychological science, and the emergence of new strategies and approaches to how we teach students our discipline and how those students learn.

More than one of my guest writers this year wrote about the emergence of interdisciplinary research in psychological science. To me, interdisciplinary research brings together the expertise of two or more scientists who contribute different backgrounds and approaches to a research area. The contributions can come from different fields or subfields or involve different levels of analysis from the same field or subfield. I believe there are at least three major forces that have driven research and scholarship toward a more collaborative enterprise.

First, the research problems that psychological scientists explore have always been highly complex. However, it seems more recently we as a field have discovered that the solutions to these complex problems may be best discovered when the problems are attacked from multiple perspectives, multiple levels, and multiple sources of expertise. Examples of these analyses include how neuroscience has been combined with social psychology, economics, and animal behavior, and clinical science; how clinical science has incorporated the expertise of clinical and basic scientists to advance our understanding of clinical disorders and their treatments; and how the field of cognitive science has emerged by combining

the power of cognitive psychology with virtually every field of psychology (and other disciplines) to advance our understanding of the human mind.

Second, technology can drive innovation and discovery and over the last 20 years or so we have witnessed an enormous expansion of our technological capabilities. We have seen the development of technologies like brain imaging and recording, eye-tracking, automated response monitoring, and more powerful computational approaches that have made it easier to collect data. We can now generate gigantic data sets that can be mined and explored and shared. Indeed, a new field called data analytics has emerged in response to this explosion of available data. The optimal use of these new technologies, as well as the great potential for innovative approaches for studying complex problems due to the availability of these technologies, has increased collaboration and cooperation between scientists.

Third, the basic funding structure for research has changed over the years. Not too long ago the lion's share of federal grants went to independent investigators who worked largely in self-contained laboratories. The funding model has shifted more toward awarding grants to investigators who recruit co-investigators who broaden the approach of study. And the focus of federal funding has also shifted over the last several years. For example, neuroscience research as well as translational clinical science research, both of which engage many psychological scientists, have been supported relatively well by the National Institutes of Health and the National Science Foundation, while other areas of behavioral and social science research have seen decreased funding. I believe one of the long-term effects of this shift in funding has been to push us as a field toward becoming much more interdisciplinary. I don't believe this is a bad thing. Fields like neuroscience should be enhanced by the contributions of psychological scientists and psychological science should benefit from what fields like neuroscience, mathematics, economics and engineering can offer us. At the very least, the faculty members we hire these days are very different than those we hired 30 years ago — they expect this interdisciplinary world, and their long-term success depends on our ability to facilitate it.

Several of my guest columnists made reference to the significant contributions that our psychology departments make to the teaching mission of our institutions of higher education. Psychology continues to be a popular major. Students are fascinated with the topics encompassed by our field — our field captures the very basis of what it means to be human. Psychology in many ways is the ultimate liberal arts degree — our students are exposed to the social, behavioral, natural, physical, and computational sciences and, often, the humanities and the arts while earning their degrees; few other fields offer the breadth and exposure that our field does. And, psychology provides the basic so-called “soft” skills necessary to launch a variety of successful careers in law, medicine, business, and social work, just to mention a few. As an arts and sciences dean I talk to many psychology graduates. I never cease to be amazed at the sheer breadth of careers and disciplines our graduates find themselves in — we prepare students well for life.

How we teach our students, however, is likely to change significantly in the near future due to advancements in technology, particularly the increased access to information and knowledge that is afforded by the Internet. For many years we have taught our basic introductory and area-oriented survey courses to many students using large lecture formats that sometimes were supplemented by discussion or laboratory sections. This has especially been true at our large, state-supported institutions. At many places it has been the only option, given the great interest students have in our discipline and the funding and space constraints our departments often face. Done right, this way of teaching has served our

students well over the years.

The Internet is changing this world not only for psychological science but for many of the disciplines that make up the liberal arts and sciences. There are now excellent 100 percent online courses available to students that provide substitutes for our traditional large-lecture format courses. Included among these courses are the Massive Open Online Courses (MOOCs) that have been created at some of the nation's premier institutions. Many of these courses are excellent and provide high-quality learning experiences for students interested in a subject matter like psychology; some of these courses have been less effective, amounting to little more than videotaped presentations of standard lectures. There is significant pressure being exerted at our institutions of higher education to find more affordable means to deliver instruction, and online instructional experiences are increasingly being examined as alternatives to more traditional methods. With ever-increasing tuition and mounting student debt, this pressure will not disappear anytime soon. Our universities and colleges are adapting to these changes.

For example, many of our colleagues have developed "flipped classrooms" where students spend time online watching lectures, interacting with others, and accessing excellent supplemental materials — then meeting other students and the instructor in smaller groups for discussion and other activities that help the student master the course content. The role of these faculty members has shifted from lecturer to being more of a mentor. The faculty I have talked to find this change to be extremely rewarding. More importantly, early results suggest the students learn effectively in this new environment. I do not believe this new world will disappear soon.

But this new Internet-based instructional world has the potential power to do something else: To introduce our discipline to thousands of individuals not currently at our institutions of higher education and to do so in a manner that is highly engaging. Anywhere in the world, pre-college students, people who are unable to go to college for a variety of reasons, and those individuals who have already finished degrees can learn about our discipline through these online instructional experiences. Some would argue our discipline is already very popular. I would argue that psychological science is often misunderstood and underappreciated. I think we should welcome the opportunity to spread the word about the importance and centrality of our discipline. Done correctly, this new online world may be a very effective means to do so.