

Michael C. Edwards, PhD — Quantitative Psychologist

DOING RESEARCH INTO RESEARCH METHODS

Two people answer two different questionnaires assessing depression. Both say “yes” to half the questions. Are they equally depressed? That depends, says Michael C. Edwards, PhD. “Saying those two scores are the same makes a whole bunch of assumptions,” he says. “What if one questionnaire measures really severe symptoms and the other measures really mild symptoms? This raises an even bigger question: What are we saying when we just add up how many times someone says ‘yes’ and ignore what they are saying ‘yes’ to?”

That’s the kind of problem Edwards studies. He’s an associate professor in quantitative psychology at The Ohio State University (OSU), where he teaches and does research involving measurement issues in the social sciences. In other words, he studies the statistical methods psychologists use in their research, with a special emphasis on the methods used to study constructs we can’t directly observe. “I work on trying to make sure we’re measuring what we think we are and getting good results as efficiently as possible,” he says. He specializes in methods called item response theory and factor analysis. These are techniques that help researchers study things that they can’t directly observe — such as mathematical ability, intelligence or depression.

“We have a group of symptoms that we use to define something like anxiety disorder,” he explains. “There’s no blood test to determine if you have an anxiety disorder.” But there are questionnaires that can help a researcher or mental health practitioner gauge whether a person has an anxiety disorder and, if so, how severe it is. He also works on something called adaptive testing, which is a way of modifying tests based on how someone is responding to the questions.

For example, he says, “Imagine you are taking a questionnaire measuring anxiety. I ask you an average severity question and you say ‘yes.’ I ask you another average severity question and you say ‘yes.’ That means I don’t have to ask low severity questions. If you’re saying yes to average severity questions, I know you would probably say yes to lower severity questions.” This kind of test adaptation is increasingly important because, he says, “our attention span for surveys is dropping.”

THE ROAD TO QUANT

As an undergraduate, Edwards had dual majors in English and psychology and thought he would go to graduate school to become an English professor. But his English advisor didn’t think he would excel in those programs, so he focused on psychology instead. But psychology is a big field and he only knew that he didn’t want to see patients. “I was pretty sure I’d be terrible at that,” he says. “So I asked my psychology advisor, ‘What part of psychology is the farthest away from clinical psychology?’ and he said, ‘That’s probably quantitative psychology.’ I always liked problem-solving and the brief exposure I had to statistics as an undergraduate was interesting, so once I got into quant, the fit seemed pretty natural.”

In grad school, Edwards thought he would probably end up working in industry, but OSU made him an offer before he had finished his doctorate. “I knew with absolute certainty I didn’t want to go into academics — right until I took the job,” he laughs.

Today, he says, he has a satisfying career teaching, advising graduate students, conducting his own research and collaborating with other researchers — for example, he’s partnering with researchers who are studying anxiety in children with autism. “I get to move between these different worlds and learn from people who are some of the best in the world in what they do.”

BY THE NUMBERS

While you don’t have to be a math whiz to be a quantitative psychologist, “it certainly doesn’t hurt,” Edwards says. “You don’t need a PhD in math to get interested in quantitative psychology, but if seeing a math problem makes you run for the hills, it’s probably not your cup of tea.” Computer programming is also becoming increasingly important to the discipline, he notes.



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QUANTITATIVE PSYCHOLOGY

Quantitative psychology is the study of methods and techniques for the measurement of human behavior. It involves the statistical and mathematical modeling of psychological processes, the design of research studies and the analysis of psychological data.

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