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monitor on psychology

FINDING A JOB IN INDUSTRY

What you need to know
to land a job in industry,
with an in-depth look at
five psychologists who
are already there

*Dr. Mac Smith,
user experience
researcher at Google*



TECH COMPANIES, MANUFACTURERS, the research sector and other industries are increasingly seeking psychologists' expertise in human behavior and strong research skills. In these pages, we've gathered some of the *Monitor's* best career advice for psychologists looking to work in industry and other nontraditional settings, with tips on how to find your niche, how to determine if a company is a good fit and how to prepare for interviews. For a deeper dive into what some of these jobs look like, we've also shared five of our favorite "How Did You Get That Job?" features on psychologists working in industry and other applied settings. You'll meet a psychologist who is working to make farming more efficient, one who is improving Google searches and more. To read more career profiles, go to www.apa.org/Monitor and search "How Did You Get That Job?"

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COVER: JEFF SINGER



FINDING YOUR DREAM PSYCHOLOGY CAREER

Don't want to go into practice, research or teaching? Here's how to find a nontraditional career that uses your expertise and sparks your interest.

BY LAURA ZIMMERMAN

Many psychologists find their passions are not stirred by providing direct therapy, conducting research or teaching. They are more interested in applying their expertise on human behavior in new and atypical ways—but aren't always sure what those career paths look like. Looking to find your own unique career path in psychology? Here's advice from career experts and psychologists who work outside academia on how to do it.

■ **Look inward.** Before you start exploring career possibilities, figure out your internal motivations and passions.

"People tend to focus on knowing what's out there and don't pay too much attention to knowing themselves," says Jennifer Polk, PhD, career coach and owner of the website From PhD to Life, which provides job advice, coaching and mentoring to doctorate holders seeking nonacademic jobs. She works with job seekers to delve into their broader interests and explore which career

opportunities might be a better fit for them.

Getting comfortable with the thought of a nontraditional career requires job seekers to be honest with themselves about what they really want and why it's important to them, says Paula Chambers, PhD, founder and CEO of The Versatile PhD, a career education website that helps grad students and new doctorate holders identify and prepare for nonacademic careers.

She recommends asking yourself

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questions such as:

- What do you love about psychology?
- What's missing?
- What weird passions do you have that have nothing to do with your work, but you never run out of energy for?

These types of assessments can help you realize that the No. 1 person you need to please with your career is yourself, she says.

To conduct such a self-assessment, check out APA's free online resource aimed at helping job seekers develop a plan of action for pursuing their ideal jobs. Authoring your Individual Development Plan starts with a self-assessment, and the tool helps users explore careers, identify gaps in experience, set goals, and create a plan with milestones and outcomes.

■ **Network.** Get to know people in business and industry who can give you an inside perspective on different career paths. One way to network is to attend nonacademic conferences in the specific fields you might be interested in, such as social work, advocacy, criminal justice, military, transportation, modeling and simulation, training, engineering, energy and more. "Market yourself to people in industry," says Brandon Perelman, PhD, a postdoctoral researcher at the U.S. Army Research Laboratory in the Human Research and Engineering Directorate. "Communicate why your research and skills are important to them," he says.

Also, search for people who have a job you might like and contact them. "Don't be afraid to reach out to complete strangers, like someone you found on LinkedIn," says Chambers. "Ask if they would be able to talk to you for 20 minutes on the phone about their work." Such informational interviews can provide inside information about various careers and help establish new connections.

■ **Identify your skills.** As you start exploring alternative career paths, think carefully about the skills you already have. If you've coordinated a large research effort like your dissertation, you have project management experience. Conveying your ideas during presentations and discussions has honed your communication skills. By working in a lab, you've developed teamwork skills. Once you start examining the components of what you do on a daily basis, you can determine how to apply those skills to nonacademic jobs.

■ **Test the waters.** If you lack some qualifications for the type of job you ultimately want, work to develop those skills, says Chambers. Students can get involved in activities on campus and those already in the workforce can look for opportunities to bolster their resumes, such as writing grant proposals, learning about budgets and financial management, or developing and leading a project. Also, consider taking classes relevant to the jobs you want, such as business, grant writing or marketing.

Volunteer work can also help you learn a new skill.

Internships and fellowships also provide the hands-on experiences psychologists need to prepare for their dream jobs. Most federal and local government agencies have internship programs. For instance, you might find internships in health policy and advocacy, criminal justice or education program evaluation, and human rights advancement around the world.

Many private companies also offer internships where you can learn about for-profit research, government contracting, business development and customer relations. Companies don't always have formal internship programs, but many will hire an intern for the summer or during busy times. "I started doing a summer internship at a private government contractor and discovered I liked it a lot,"

says Perelman. The experiences and connections he made during his internship helped him land his current position.

■ **Apply for the job.** So, once you've identified the job you want, how do you get hired? "Talk about your experience and skills in ways that are friendly to the industry and the organizational culture where you intend to work," says Eddy Ameen, PhD, who directs APA's Office on Early Career Psychologists.

Also, be sure to read job ads carefully to address all the requirements. For example, don't submit an academic CV when the ad asks for a resume. Prepare a resume that is shorter and more focused than your CV. Instead of talking about yourself, shift to what an employer needs and speak directly to their requirements.

For more advice on creating a resume from a CV, go to APA's website (www.apa.org) and search for "Make Your Resume Stand Out."

■ **Land the job.** During the job interview, "your answers must be focused on the company first and yourself second," says Chambers. "Research the company extensively so you can speak intelligently about the specifics of the business."

And, employers want to know your answer to a key question: What can you do for me right now that will benefit my organization? Show them that you are the person who will meet their needs by articulating the value a psychology degree brings to any field.

Above all else, be confident. "You need to be able to sell yourself," says Shari Schwartz, PhD, who works as a mitigation expert and trial consultant at the firm she launched called Panther Advocacy and Litigation Sciences. "You've attained a doctoral-level education so there is nothing to be intimidated about. Go in there and make sure they understand you have something to offer and you'll be an asset." ■



CAN I WORK HERE?

Industrial/organizational psychologists offer their advice for helping job seekers determine whether a potential employer offers a good fit

BY AMY NOVOTNEY

Workers who feel valued by their employers are more likely to be satisfied with their jobs and be motivated to do their best. They're also less likely to want to leave the organization in the next year, according to APA's 2016 Work and Well-Being Survey, which polled more than 1,500 U.S. workers.

The survey also found that work-life fit—or how well a job fits with the rest of an employee's life—plays an

important role in employee retention, says David W. Ballard, PsyD, MBA, who directs APA's Center for Organizational Excellence. "Americans spend a majority of their waking hours at work and, as such, they want to have harmony between their job demands and the other parts of their lives," Ballard says. That means that to remain competitive, employers need to create environments where employees feel connected to the organization and have a work experience that's part of a rich, fulfilling life.

How can psychologists determine whether a potential employer will give them that positive experience and work-life fit? Some industrial/organizational (I/O) psychologists point to the importance of matching an employee's values with that of the organization. Others say previous work experiences—such as the factors they did and didn't like about a job or supervisor—are key indicators of what to look for in a new role. Overall, though, determining whether an organization is a good match has to start with

A.J. WATT/GETTY IMAGES

a thorough understanding of your career priorities, I/O psychologists say. “It is as much about what your needs and preferences are as it is about the organization,” Ballard says.

■ **Look inward.** Before the job search, psychologists should pinpoint what their work interests are, says I/O psychologist Edgar Schein, PhD, a professor emeritus at the MIT Sloan School of Management. Start by conducting a self-analysis of your career to date to help you determine your strengths, your values and what motivates you—or, as Schein calls it, your “career anchor.” His research on career anchors has shown that most people place different amounts of emphasis on the importance of eight categories or preferences. They are technical/functional competence; general managerial competence; autonomy/independence; security/stability; entrepreneurial creativity; service/dedication to a cause; pure challenge; and lifestyle.

So, for example, among clinical psychologists, some want to work for an organization because they are more security/stability oriented, while others want to set up private practices because they want to be on their own.

He points out, however, that often one’s anchor can’t truly be discovered before spending several years in the workforce. “This really is a deeper level of knowledge about oneself that isn’t usually something people know when they graduate,” he explains. “They need 10 years of experience to really figure themselves out.”

■ **Network with experts.** Early on in your career, Schein recommends reaching out to psychologists who are in jobs you can imagine moving into. “Find someone ahead of you in your career and get a sense of what work is like for them at that job,” he says.



■ **Determine personal priorities.** Job seekers also have to think about their personal priorities and interests before they start their job searches, says Helena Cooper-Thomas, PhD, a professor of organizational behaviour at Auckland University of Technology in New Zealand. Her point is backed by new research: In a meta-analysis of 92 studies with nearly 35,000 participants,

employees whose interest profiles matched their job profiles were more likely to perform better, help others in the organization and stay with the company longer. The study, led by Michigan State University I/O psychologist Christopher Nye, PhD, shows that it’s not a person’s overall interest in a particular kind of work, but how their interests across various types of work match with the skills and tasks involved in a particular job. The researchers surmise that this match—known as person-environment fit—is a much better predictor of job performance than the more general interest or personality measures often used by college career centers (*Journal of Vocational Psychology*, 2017).

One way job seekers can determine whether their interests match with those of other company employees is to search for the employer on LinkedIn, Ballard says. There, you can often find employees’ public-facing profiles, which can offer insight into the skill sets and longevity of people who work there.

■ **Consider a “misfit” job.** Candidates should also consider where they can tolerate or even benefit from “misfit,”

TRUST YOUR GUT

Before you take a job, ask yourself the following questions:

1

Will I be pursuing my true interests in this position?

2

Will I have the work-life balance I want?

3

Do my co-workers seem to mirror my values?

4

Will I feel valued by this employer and in this position?

Cooper-Thomas adds. “If you’re the type of person who likes to have fun at work by playing pranks or telling jokes, you probably wouldn’t do well in a secure facility, while those with a competitive streak may conflict with the compassionate and calm values found in some health-care settings,” she says.

But having knowledge or skills that are different from one’s colleagues can result in more innovative ideas and helpful solutions, which can help employees get noticed and accelerate their careers, she points out.

■ **Do more research.** Once psychologists determine the factors that matter most to them in a job, they should read up on any organization they are interested in, paying particular attention to its mission or values statement, says Ballard. “Something that’s often telling about an organization’s attention to employee well-being is whether or not it has something about creating a positive or healthy work environment and supporting staff built into its mission statement or values,” he says. He also recommends doing an Internet search using both Google and Glassdoor to see how the organization is portrayed and whether, for example, they’ve been embroiled in any controversy. “Look not just at the things the organization itself posts, but also the kinds of comments, statements and reactions they get from other people,” he says.

■ **Get specific in your interview.** Of course, it’s always helpful to ask about an organization’s culture during the interview process—the drawback is that there is no guarantee that the recruiter’s espoused values are the values in use, warns Cooper-Thomas. What can be more helpful, she suggests, is asking your interviewers to be more specific by sharing an incident at work that reveals the organization’s values in action. Interviewers could discuss a time they were particularly

proud of their employer, for example.

Cooper-Thomas also notes that every organization has different layers of culture, so job seekers should try to ascertain whether they would fit with the people they would work with on a daily basis, such as supervisors and colleagues. She suggests paying particular attention to how employers treat people: Is the receptionist friendly and helpful? Did the interviewers show respect by arriving on time? Did they answer the job seeker’s questions honestly?

■ **Gauge your potential support system.**

Also ask interviewers about the amount of autonomy employees have within the organization, the organization’s structure and the kinds of support available, Ballard says. For example, if you’re looking for a job where you’re providing clinical services, you’ll want to know whether there is administrative, billing and collection support.

In addition, pay attention to how formal or informal the work environment appears to be, as well as how

diverse and inclusive it is, Ballard says.

And if it’s important to you, talk to the recruiter and your potential supervisors about flexibility and work-life fit to find out if you’d have the ability to modify when, where and how much you work to accommodate your needs.

■ **Think about the “fun factor.”** Early career psychologists have spent many years studying and planning their career paths, and are usually quite passionate about further developing them, says University of Chicago Booth School of Business professor Ayelet Fishbach, PhD. But when it comes to sticking with a job, people thrive most when they’re doing interesting work with people they like, according to research by Fishbach and Kaitlin Woolley, PhD (*Journal of Personality and Social Psychology*, 2015). So, in addition to looking for benefits such as career development opportunities, it’s important to consider whether you can expect to enjoy, be challenged, fulfilled and experience social connections in a work setting, the authors say. “A workplace that offers immediate benefits in terms of engagement and enjoyment is a place where people stay,” Fishbach says.

■ **Find out what a typical day would really look like.** Finally, Schein encourages job seekers to get personal with the people they’re interviewing. That means spending time to get to know the one or two people you have met in the organization by asking them why they got into the field and how they like their jobs. This tactic works best toward the end of the interview process, he says, or even as a follow-up call once a job is offered.

“What you really need to find out is not about all the benefits and bonuses that might be available to you, but what you’d really be doing day by day and would the people around you be supportive of that,” Schein says. ■

RESOURCES

APA Handbook of Career Intervention
Hartung, P.J., Savickas, M., & Walsh, W.B., 2015

What Color Is Your Parachute? 2017
A Practical Manual for
Job-Hunters and Career-Changers
Bolles, R.N., 2017

Career Anchors: The Changing
Nature of Work and Careers
Schein, E.H., & Van Maanen, J., 2013

APA Individual Development Plan
www.apa.org/education/grad/individual-development-plan.aspx

“How Did You Get That Job?”
APA’s webinar series at
<http://psyciq.apa.org/category/careers>



HOW TO EARN THAT ‘WELCOME ABOARD’

Excellent interview skills are critical to landing the job you want. Here’s how to prepare and follow up.

BY HEATHER STRINGER

Some job seekers think that they don’t need much preparation before a job interview because they are outgoing or comfortable talking about themselves. But interviewing “is a skill and doesn’t happen automatically,” says Julie McCarthy, PhD, professor of management at the University of Toronto Scarborough in Canada. Confidence

and strong interpersonal skills will only take you so far in the eyes of a future boss. As psychologists who are experts in the area will tell you, thorough preparation is key because it helps potential employers get a deeper understanding of your competencies, weaknesses and career goals.

“The point of good preparation is not to get a job, but the *right* job,” says

Paul Fairlie, PhD, president and CEO of a human resources and organizational consulting firm based in Toronto. That preparation includes thinking about your work history and the competencies you’ve gained. “It’s a lot of work, but once you do this, you’ll have a better sense of who you are and the type of job that will engage you,” Fairlie says.

Here’s some advice from psychologist

BRAUN / GETTY IMAGES

experts on what to do before, during and after a job interview to boost your chances of getting the right offer.

BEFORE THE INTERVIEW

■ **Research the organization.** Search for news articles about the company and read its annual reports, says Paul Yost, PhD, associate professor of industrial/organizational psychology at Seattle Pacific University in Washington. Invite someone who works at the organization to coffee to learn about the company's values and culture. This type of research prepared his psychology students for interviews at Amazon.com. They learned that the concept of "fail fast" is a key aspect of the company's culture—in other words, be proactive with a bias toward action, but constantly seek feedback so you can adapt and change as you go, Yost says.

"With this in mind, they knew to give examples of when they'd been highly proactive and adapted when problems arose," he says.

For academic jobs, study up on the school's financial situation and accomplishments by searching the web and talking to faculty members, says Robert Ployhart, PhD, professor and department chair of management in the Darla Moore School of Business at the University of South Carolina.

"Ask professors and administrators about the priorities of the department," he says.

■ **Learn about the interviewers.** Look up each person on LinkedIn, as well as on work or personal websites, then use this information to connect with them during the interview, says Laxmikant Manroop, PhD, assistant professor of human resource management at Eastern Michigan University. "I always tell my students that the similarity attraction paradigm applies in the job-seeking process," Manroop says. "Interviewers

Research has shown that candidates who speak confidently, with fewer pauses and a little fast are rated more positively by interviewers, so it's better to err on the side of the hare rather than the turtle when it comes to speech tempo.

tend to view candidates more favorably when they share something in common."

■ **Find out more about the job.** Learn about the competencies and duties that will be required for the position. You can do this by looking at the job description and interviewing professionals in the field or at the organization who can explain what the responsibilities in the job description really mean, says Yost. Also, read about the specific tasks, knowledge, skills and abilities needed for positions like yours on O*NET, the free database that offers information about hundreds of job types.

■ **Develop your narratives.** Employers want to hear about problems you faced, the actions you took and the results—known as PAR in the HR world, says Yost. Write one-paragraph PAR narratives demonstrating a variety of competencies. Then rehearse these stories until they come naturally. During the interview, you can decide which narratives to share based on the questions being asked. Yost used this strategy when interviewing for a highly competitive job for a senior human resources specialist position at Microsoft. "I put together PAR stories showing, for example, how I had worked effectively with executives, developed selection systems and dealt with a project that had fallen apart," he says. Yost got the job.

■ **Improve your resume.** Add those narratives to your resume, too. "Once you've done the hard work of wording these examples in a resume, you will

have an easier time remembering these stories in an interview. It will become your personal brand and message," Fairlie says.

■ **Rehearse.** Find someone to role-play the interview with and practice answering expected questions, Fairlie says. Invite the mock interviewer to identify distracting habits, or even better, film yourself and watch the footage, McCarthy says. "Nonverbal communication is critical," she says. "By watching yourself, you may notice that you are fidgeting or not maintaining consistent eye contact, and it is easier to fix a bad habit if you are aware of it."

DURING THE INTERVIEW

■ **Keep answers concise.** "It's much more powerful to give a short, targeted one-minute answer than to ramble," says Yost. "Interviewers can ask questions if they are interested in hearing more details. Research has shown that candidates who speak confidently, with fewer pauses and a little fast are rated more positively by interviewers, so it's better to err on the side of the hare rather than the turtle when it comes to speech tempo during an interview (*Journal of Applied Psychology*, 2009)."

■ **Ask questions.** Interviewers often ask candidates if they have any questions—and it's critical that you do, Fairlie says. "Having good questions shows you have initiative, motivation and strategic thinking," he says. Ask about the reporting relationships and work flow of the organization, for example. Inquire about

the management style of the person you will report to, and why the position is vacant. Not only will your questions help impress the interviewers, the answers will help you decide if the job is a good fit for you.

■ **Focus on the organization.** Talk about how you will add to the organization rather than what you will gain from the job, Yost says. Don't ask interviewers how and when you can expect a raise or promotion, Fairlie says. "It can come across as something that is entitled rather than earned," he says.

■ **Nonverbal cues matter.** Arrive a little early, dress appropriately, be polite to everybody, smile and make eye contact. Research also shows that a weak or firm handshake can make the difference between getting a second interview or not, Manroop says. A firm handshake shows resilience, strength and confidence, he says (*Journal of Applied Psychology*, 2008).

■ **Be observant.** Get a sense of the organization by noticing the environment and interactions between people during the interview, says Lisa Dragoni, PhD, an associate professor in the School of Business at Wake Forest University. When she interviewed for her current job, she was impressed by the large community space at the school's entrance. "I asked how often it was used," she says. "I learned that faculty, staff and students used the area frequently for meetings and informal gatherings. The school had designed the room and office spaces to foster collaboration. Knowing that was part of my decision."

■ **Stay engaged.** It's important to show consistent energy throughout the meetings, Dragoni says. "I've sat on a number of selection committees, and



To help determine whether it would be a good work setting for you, during the interview, look carefully at the environment and interactions between people.

I've been surprised how often faculty will say that candidates didn't seem very interested. I wondered if this was because the applicants were tired at the end of the day."

AFTER THE INTERVIEW

■ **Send a thank-you note.** Ask for each interviewer's business card, and send each of them a tailored letter, either handwritten or via email, says Yost. "Don't send a generic note," he says. "Mention something specific that you are excited about doing in the role and how you can contribute," he says. "Even if you don't get an offer, this will help employers remember you when the next job opens up."

■ **Be ready to negotiate your salary.** Gather information about the salary range for the job—websites like APA's Center for Workforce Studies are good places to start. "The first person to name a figure loses, as the old adage goes," Fairlie says. It's ideal to ask the employer to give a salary range to start the negotiation process, but if candidates are asked

first, "the best way to respond is to ask for more information about the job, showing you understand the link between job responsibilities and compensation," he says. Once the employer makes an offer, feel free to ask for time to think about it.

■ **Follow up.** If you don't get an offer, call an interviewer after a few weeks to ask for feedback about why you didn't get the job, Dragoni says. "If you ask people for input, they are usually open to having a conversation," she says. "Ask what the basis for the decision was, what you could have done differently or better, and then thank them for their suggestions."

■ **Stay connected.** Invite the interviewers to connect with you on LinkedIn because these contacts may become important for networking in the future. ■

● **Looking for a career opportunity?** Visit psycareers.com for the latest job openings.

● **For advice** on how to negotiate your salary, go to www.apa.org/gradpsych/2014/04/salary.aspx.



DOWN ON THE FARM

Human factors psychologist Margaux Ascherl optimizes technology to make farming more efficient

BY HEATHER STRINGER

The world's population of 7.3 billion is predicted to grow to 9.7 billion by 2050, according to the Global Harvest Initiative. To feed all those people, global agricultural productivity must increase by 1.75 percent annually.

One person working to drive this increase is Margaux Ascherl, PhD, user experience leader at John Deere Intelligent Solutions Group in Urbandale, Iowa. John Deere recruited Ascherl in late 2012 while she was finishing her PhD in human factors psychology at Clemson

University. Six years later, she now leads a team responsible for the design and testing of precision agriculture technology used in John Deere equipment.

Ascherl spoke to the *Monitor* about what it's like to apply psychology in an agricultural context and how her team is helping farmers embrace new technology to feed the world.

What does your job entail?

My team is dedicated to making a good farm even better, in particular through the powerful combination of precision

ag equipment and technology—the precise placement and timing of inputs into the land, whether that be seed, moisture or crop nutrients. It's about more output and less input, which is better for the crops, the land and the farmers.

We work with the precision agriculture technology used in our machinery, like tractors, harvesters and planters. This covers everything that goes in the cab, from seats, controls and displays, as well as the technology outside of the cab that controls an array of factors from seed placement, weed and pest management

KATHRYN GAMBLE

to data collection. This increased technology has made the farmer's job more complex, so our group is responsible for creating the best user experience possible, so that farmers can focus on farming.

How did you find your job at John Deere?

I was working on my PhD in human factors psychology at Clemson University. About a year before I graduated, John Deere approached the school with a job opportunity. I learned about all the cool stuff that John Deere was doing in robotics and automation, and that captured my interest. A site visit the following summer sold me on the job.

How do you use your applied psychology training?

There are so many areas to apply our human factors knowledge—there's always a new and interesting challenge to tackle.

I started out as a senior engineer on a product team at the Moline Technology and Innovation Center, designing and testing interfaces and working through automation design issues. We'd look at industry literature and what we know on a particular topic, and apply it to a particular design. We took psychology principles and predicted how our customers would respond to design changes. We were often in the simulation lab, figuring out how to test something that wasn't quite ready for production. It's expensive to go to the field since our equipment is very large and our customers' time is valuable, so we come up with ways to work problems out in the lab first.

My next role was managing a team that looked at the entire experience across the cab. I did a lot of field research, riding along with customers and listening to their feedback on the things they liked and didn't like in the cab.

“It's fun to see how the products we've put into production are helping farmers.”

Now I manage a larger group that is working on the complex strategy of how we tie all these things together. As precision agriculture grows, automation is increasing, so the level of insights we're aiming to provide our customers through data is increasing as well.

Tell us about visiting customer farms. What do you learn from observing farmers in action?

It's fun to see how the products we've put into production are helping farmers, and how farmers are adapting to complex technology. We help them document their outcomes, and through this data they get insights into ways to increase yield and efficiencies that they wouldn't have thought of in the past.

It's also fascinating to observe just how much a farmer does in the cab. They say they're not doing much, but they're monitoring a lot of information. There are screens inside the cab to monitor as well as what's going on outside their window with the implements, such as a combine header, loader bucket or planter. There's also information coming in on their radio and smartphones, whether that be weather, crop prices or updates from other parts of their farm business. Farmers are so good at their job they don't always realize how much information they're processing to make the right decisions in the field every day.

What's it like working with huge farm machinery?

Seeing these machines up close for the first time is amazing for a human factors engineer. A combine is basically a factory on wheels, with the cockpit of a plane. It melds all the things that you

study in human factors into one vehicle. There's the cockpit to consider, as well as the transportation and manufacturing aspects.

I'm from Merritt Island, Florida, so I grew up watching space shuttle launches on the coast. I understood how important human factors is in engineering for making things useful and easy to use. So I was fascinated to learn that many John Deere machines have almost as many lines of code as a space shuttle. The 8R tractor, for example, has over 4 million lines of code and 20 processors.

What do you enjoy most about your position at John Deere?

I'm constantly learning, and there's always a new problem to solve. I love that we can see our work go into production and observe firsthand how it changes farming. When farmers tell us how our products have improved their operations and made their lives easier, that makes me feel great about the work we do.

What would you say to applied psychology graduates who may not have considered the agriculture industry as a career path?

This is a great field if you enjoy searching for solutions. If you like the user-centered design process, you'll get to collaborate with fellow human factors experts as well as agronomists, industrial designers and people from all types of engineering fields. You also get to see the output of your work fairly quickly, which is very satisfying.

This really has been the career opportunity of a lifetime. There's no such thing as a typical day. I could be in the office, in meetings, in a workshop or heading out to a test farm. There's a pair of boots that always sit in my office. I'm never sure when I'm going to need them, but I'm always ready. ■

DIVING INTO THE USER EXPERIENCE

Mac Smith uses his psychology training to help Google better understand human behavior—and to raise the questions no one else has thought of

BY GILLIAN LAW

How do you design a search engine that works for billions of people all over the world?

That's been among the top priorities for psychologist Mac Smith, PhD, a senior staff user experience researcher on Google's search engine team. Smith uses his psychology training and research skills to help his colleagues understand consumers and create a product that helps people work and thrive.

Smith leads a team that looks for ways to improve users' experiences when they conduct Google searches and to identify what the future of search will be. He came to his current job after six years of working within Google X, where he led the user experience team for Project Loon, which aims to deliver internet access to remote areas using weather balloons. He also worked on Google Glass.

Looking back, it was an undergraduate project that showed him how his psychology training could be used to create life-changing technology, Smith told the *Monitor*.

What was this project that grabbed your attention?

I earned my bachelor of science in psychology at Old Dominion University in Norfolk, Virginia. While I was there, my cognitive psychology professor asked me to work on some experiments on what he called "moving things with your mind," which of course sounded pretty interesting to an undergraduate.



JEFF SINGER

I ended up working in his research lab on what turned out to be electroencephalography-based attentional tasks. They were trying to build an adaptive automation system where, as someone's attention started to wane, the display would change to keep them alert. That was my first introduction into software and technology, and trying to make a product that was designed to adjust users' attention and improve their performance over time.

That led me to a human factors track in graduate school at George Mason University. While studying, I interned at various technology companies on interaction design and user experience. That exposed me both to how businesses work and how psychological principles can be applied to the design of everyday consumer products.

After I completed my PhD in 2008, I worked at Microsoft Game Studios as a user research engineer and learned about how to measure the difference that qualities like “fun” or “pacing” have on how well a game will sell in the market.

How did you get from there to working at Google?

Several people who were familiar with my work in graduate school and at Microsoft suggested I move to Google. And one of my research collaborators from graduate school had worked at Google for a while and would often tell me about the positive impact he was having on people's lives, and how much I would like working here. Turns out he was right.

I started work here in 2011 as a senior user experience researcher in Google X. The density of highly, highly intelligent people from very different disciplines was kind of stunning and made me wonder, “How can I also perform at these levels? How can I be as useful?” It was awe-inspiring, intimidating and yet welcoming all at the same

“One unexpected benefit of working with people from different fields has been that my research fundamentals have become stronger.”

time. The environment is designed for a lot of collaboration, so it encourages you to come in and contribute what you have.

One of Google's first principles is to focus on the person using the product. So, as a psychologist, I've been able to serve as a conduit of sorts, saying, “Here's how we can better understand those people.” It's a different skill set than what many people have here, but it feels valued.

What have you learned from working in your different roles at Google?

The tools that I use haven't changed, but I apply them in different ways. I use a great deal of observational skills and rapid experimentation. Early in my career, I would use those skills to evaluate a particular software feature, like a button to send an email. Now, it's scaled up and abstracted a bit, so that I'll sit in a meeting where we are trying to address a problem and I'll use the same skills to observe the room and figure out, what actually are we trying to solve? What are the questions that no one in the room is picking up on right now? And from there, how do we solve those?

It can be similar to a program of research in that you step back and ask, what is the aggregate amount of work that will let us answer this question in a meaningful way? And that's really fun.

How do you get your co-workers to take that step back?

Honestly, this is one of my favorite things in the world to do. I ask them,

what is the change we want to make in the world? And in order to get there, what are the questions we need to answer and decisions we need to make? And then you work backward. That's one of the most challenging but personally most gratifying parts of the job. It's also an aspect that you don't learn through formal training but through hard experience.

Is that an easy sell to ‘techie’ colleagues?

It has needed a bit of evangelizing. Here at Google, most people have a sense of what I do. But when I started my career, I had to explain what I did and how it could help them.

One unexpected benefit of working with people from different fields has been that my research fundamentals have become stronger, especially in relation to statistics and experimental design. You end up fielding questions that you covered in the first year of grad school and having to explain them to an audience that is not necessarily sophisticated on that topic.

For example, people will ask, “How many people should we have in this study?” or “How representative should this be before we can trust the results?” Now, those are actually very detailed discussions, whole books have been written on them, but you have to figure out how to communicate in a way that is concise enough but also sufficient. That was an eye-opening experience.

What have you learned in this job that other psychologists should know?

I would stress how psychology research can be applied to specific problems. Often, we consider describing phenomena or adding to the corpus of knowledge as the end product of our research, but the really rewarding aspect of my job is how our work can create inordinate amounts of value for people. ■



CRUNCHING THE NUMBERS BEHIND COLLEGE SPORTS

Tom Paskus leverages his quantitative expertise to shape policy for the National Collegiate Athletic Association

BY HEATHER STRINGER

Tom Paskus, PhD, gathers and analyzes data that shed light on the health, well-being and academic progress of student athletes. As principal research scientist at the National Collegiate Athletic Association (NCAA) headquarters in Indianapolis, Paskus and his team of 17 researchers produce this information for the college leaders who craft policies

for the nation's high school and college athletes.

In one recent effort, research by Paskus's team led to changes that seek to ease stress on student athletes: The team found that college athletes were significantly troubled by the increasing scholastic and athletic demands on their time. In response, colleges created new policies that require coaches to

give athletes more time off to visit their families and added flexibility during the season to enable athletes to devote more attention to academics and other activities.

"I enjoy using my quantitative skills to improve the lives of student athletes because a good college experience can set a positive lifelong trajectory," says Paskus, who was the first person in his

POLINA OSHEROV

family to earn a college degree. “I would never have had the opportunity to go to college if not for the doors cross-country and track opened for me.”

The *Monitor* asked Paskus about his job and how he became interested in quantitative psychology.

What does your job at the NCAA entail?

Each year, the NCAA gets high school and college transcripts from more than 100,000 athletes and tens of thousands of survey responses about student well-being. Colleges in the NCAA are required to submit athlete academic data each term, and prospective NCAA students in high school must submit information about their classes, their grade point average and their test scores before they can be certified with the NCAA.

My job is to analyze that data and translate it for college presidents, athletic directors, coaches, faculty and student athletes. I love analyzing this information and sharing the findings, which can open a national dialogue in a matter of weeks or months that leads to policy changes.

For example, our data are now showing that the eligibility rules for athletes who have transferred from one college to another need to be reviewed. Currently, athletes in certain sports are required to sit out a year before they can compete at their new schools. That requirement was created to give transfer students time to adjust to the school while maintaining their academic standing. But we are finding that certain high academic achievers may not need to sit out for a year, so we recommended that NCAA members study our research on transfers for their discussions on whether these students should participate in sports right away.

We’ve also done research related to whether athletes are more susceptible to

“We’re looking for people with strong analytic and communication skills. Many people don’t realize our research staff’s level of technical expertise, and I think university faculty and administrators are often surprised when they go to an NCAA committee meeting and hear about our work.”

high-risk behaviors such as binge drinking. Despite prohibitions on substance use in practice and in games, almost half of all college ice hockey players and baseball players use spit tobacco, which is a huge health risk. We’ve also found that student athletes in certain sports, such as gymnastics, are overusing prescription painkillers. We’re using the data to try and educate coaches and administrators in those sports about the problem.

What are some of the challenges you face?

There are a lot of passionate debates in college athletics, and it can be challenging to conduct research in such circumstances. For example, one debate is over whether athletes are getting preferential academic treatment on campus. Some argue that advising systems try to keep athletes eligible with methods like steering them to certain majors, but then they fail to graduate. The other side argues that higher percentages of student athletes are first-generation college students who are more likely to come from disadvantaged backgrounds, and they graduate at higher levels than non-athletes with similar backgrounds.

Another challenge we face is reporting data on social media. We can post the results on Twitter or other forms of social media, which is mostly fun because we get to interact directly with coaches, students and parents who would not normally be exposed to the data. But at the same time, this opens the door for inaccurate depictions of the data, or even questions about NCAA staff integrity.

What experience led you to this field?

I majored in psychology at Dartmouth College, and after graduating I started doing full-time research on schizophrenia with a local center in New Hampshire that was studying mental illness. I was drawn to Jack McArdle’s work at the University of Virginia because his projects involved longitudinal data analysis with practical applications, including one about how cognitive processes change as people age.

Before I committed to Virginia, McArdle invited me to spend an evening learning more about his work, and I saw that he was analyzing high school and college transcript data from the NCAA to determine which academic variables best predicted college graduation among student athletes. At the time, the NCAA required high school athletes to score above a certain minimum on the SAT or ACT, but McArdle’s work suggested that students with poor test scores could still succeed in college when their grades were high enough. This research eventually led to the sliding scale that is now used by the NCAA that allows higher grades to compensate for lower test scores, and vice versa. I liked how these data were being used to help athletes in practical ways, and I decided to enroll in the doctoral program at the University of Virginia.

McArdle invited me to join several NCAA research projects focused on developing methods to study how data on athletes’ social experiences, grades and courses could be used to predict

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whether they graduated from college.

After completing my doctorate, I continued working with the NCAA as a postdoc. I started exploring how a broader range of factors could predict graduation from college, such as reading and mathematical skills, substance use and an athlete's social experience on campus.

Two years later, I decided to try academic life as a faculty member at the University of Denver and taught graduate-level statistics courses and introduction to research design through the school's College of Education, but I continued consulting for the NCAA on similar projects.

After five years, as I was compiling my materials for tenure review, the

NCAA approached me about the research director position. I wrestled with whether I should leave before going for tenure, but I couldn't pass up the opportunity to manage some really exciting national projects. In 2005, I started working for the NCAA.

What characteristics does a psychologist need to do the work you do?

Perhaps surprisingly, a love for athletics isn't necessary for this job. We're looking for people with strong analytic and communication skills. Many people don't realize our research staff's level of technical expertise, and I think university faculty and administrators are often surprised when they go to an NCAA committee meeting and hear

about our work.

Our data are also relevant for college testing organizations and admissions offices that are trying to understand the predictors of college retention. For example, I've shared findings about which core high school courses lay the foundation for academic success in college.

We're also collaborating with the College Board and ACT to review their latest concordance study, which is used by every college admissions office and high school in the country to provide the best estimated comparison between the SAT and ACT in the admissions process. I enjoy making a contribution to educational questions that go beyond those related to student athletes. ■



Research by NCAA investigators has led to new policies that aim to ease stress on student athletes.

DMYTRO AKSONOV/GETTY IMAGES



FOSTERING THE USE OF NEW TECHNOLOGY

At Emulate Inc., a life sciences company in Boston, Stanley King II develops partnerships with researchers who want to use their groundbreaking “Organ-Chips”

BY HEATHER STRINGER

Stanley King II, PhD, is vice president of corporate development at Emulate Inc., a life sciences startup that has created “Organs-on-Chips” technology or “Organ-Chips.” It’s a clear, plastic chip the size of a AA battery that can recreate the biochemistry and movements of tissue in organs such as the

lung, liver, intestine and skin. The plastic vessels on the Organ-Chips are lined with living cells that are cultured under continuous blood flow and mechanical forces. The cells on the chip and the chip itself work together to perform biological functions that mimic the human body. The *Monitor* asked King about his job.

What do you do at Emulate?

My job is to work with researchers in academia and industry who want to partner with us. The technology is attractive to researchers because it is designed to predict human response more accurately than animal testing or cell cultures in a petri dish. This can improve the testing of new drugs or

EVAN RICHMAN

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understanding of diseases.

Once we partner with an organization, my job is to outline the scope of the project. I also determine who is responsible for which tasks, and the rights involved in new discoveries. For example, if we work with a drug company, new findings about the drug are owned by the drug company, while Emulate owns discoveries related to new uses or innovations of the Organ-Chips.

What are some of the businesses you're partnering with?

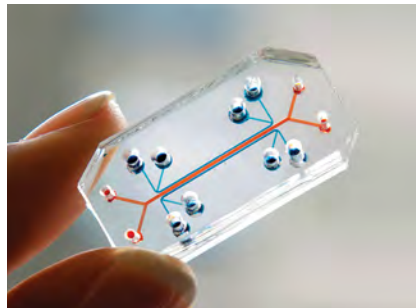
Johnson & Johnson is using our Organ-Chips to study drug side effects, such as thrombosis. Merck is using them to better develop new medicines for respiratory diseases of the lung, including chronic obstructive pulmonary disease and asthma. We're also partnering with organizations like the Michael J. Fox Foundation to research methods of reducing the side effects of promising new drugs for Parkinson's disease.

How do you use your psychology training?

My graduate training in neuroscience and behavior taught me how to use rigor and the scientific method in my critical thinking, and I rely on these skills when I'm facing a particular challenge, such as determining who Emulate should collaborate with. I form a hypothesis about who may be a good partner, then test my hypothesis by asking good questions and gathering information. I research the potential partner's past drug research, their relationships with experts in a disease area and their track record with other business collaborations. I use this information to guide Emulate's decision-making.

Where did you get the training and experience needed for this job?

During graduate school at the University of Virginia, I knew I didn't



Emulate's Organ-Chips are plastic vessels lined with living cells, designed to mimic human organs in the laboratory.

want to become a professor, but I was interested in staying close to science. I started working as an intern in the university's technology transfer office to help translate research discoveries into businesses that could create products to benefit society.

For example, I identified potential licensing partners for medical device and life science inventions. In 2010, I took a job at MIT in the technology licensing office, where I did similar work. Then in 2013, I started working at the Wyss Institute for Biologically Inspired Engineering at Harvard in business development and licensing. My role involved identifying academic research inventions that could be patented, along with commercial partners who would have interest in translating this research into products.

The research that was coming out of the Wyss Institute was truly groundbreaking, and I enjoyed working with the researchers on strategies to give their ideas therapeutic value as commercial products. They would come to me with an idea or research finding and we'd talk about whether it was patentable, potential applications for the idea, what problem or societal need it addressed and next steps for commercializing the idea.

I also spent some time in Rwanda through an international nonprofit

doing economic development and entrepreneurship training to increase employment for youth in Rwanda.

How did you find out about the job?

Emulate was spun out of the Wyss Institute to commercialize the Organ-on-Chips technology. While I was working at Wyss, I interacted regularly with the researchers who were interested in forming a company based on this technology. They founded Emulate in 2014, and two years later, they were ready to expand their business development team. I had been in Rwanda, and when I returned, the timing was right and Emulate invited me to join the team.

What do you find challenging or difficult about your job?

Whenever you are working on innovative technology, it can be difficult to introduce new ideas that challenge the status quo. We are creating a system that will allow us to refine or replace traditional use of animal models and cell cultures, and it's challenging to find partners who are committed to long-term funding for what we are trying to do.

The majority of people I talk to are receptive and definitely intrigued by the idea. They would like to see more data that prove the specific applications for the Organ-on-Chips technology. We're working with collaborators who share our vision in order to build additional data.

What do you enjoy about your job?

I like the dynamism of it. Every day we get closer to making a significant impact on human health by developing technology that better recapitulates human biology. I hope our technology will lead to new discoveries, like more effective drugs, safer chemicals and foods for people, and reductions in the number of animals being used in biomedical research. ■



RISKY BUSINESS: MIXING MONEY AND KIN

As a strategic wealth coach, Kristen Armstrong helps families see money as a way to enhance family relationships and make a social impact

BY HEATHER STRINGER

Many psychology practitioners help families talk through their issues with money, but psychologist Kristen Armstrong, PhD, has a particularly focused tack: helping wealthy families deal with the impact their money has on the family, the community and the world.

Armstrong is a strategic wealth coach on an interdisciplinary national team of advisors at Ascent Private Capital Management in San Francisco, which is part of U.S. Bank. About half of her clients own businesses, and the other half have sold businesses and are figuring out how to manage the money that remains. The *Monitor* talked to

Armstrong about her career in coaching and how she got that job.

What do you do as a strategic wealth coach?

I typically take families on a retreat to help them clarify their shared values and the purpose and meaning of their wealth. Before the retreat, I interview

CATHERINE KARNOW

each family member to gather information about their relationships with the business and one another. Then I get them together to discuss the themes picked up in the interviews and to do temperament and values assessments. This helps them better understand each other and how they each fit in with the financial and business enterprise. The conversations that follow can be very deep. For example, older generation family members see—often for the very first time—what really inspires and motivates younger family members. Once their values, vision and goals have been clarified, families often will then pursue a longer-term program of meetings, retreats and individual coaching with me to help them put some legs on their aspirations.

At the moment, I am working with a family of 39 members. The family business is growing internationally and they want to prepare the younger generation for leadership roles. One branch of the family wants to get out of the business, but wants to maintain the financial benefits and keep their family relationships strong. I will help everyone define what is in the best interest of the extended family and the business.

How do you use your psychology training?

People sometimes seek me out after a conflict has erupted and they need help repairing relationships. I use family systems and communications models to help them unpack the history related to the conflict, devise better ways to manage their differences and navigate their way through change.

These large, multigenerational enterprises evolve and become more complex over time. I educate these families about the sorts of emotions and mindsets that are very typical of people who, for example, want to let go of the reins but are not sure how to do it. They are coming

“These large, multigenerational enterprises evolve and become more complex over time. I educate these families about the sorts of emotions and mindsets that are very typical of people who, for example, want to let go of the reins but are not sure how to do it.”

to terms with the loss of an identity, so I teach them how they can also begin building a new one as mentor for the next generation.

How did you get the training and experience needed for this job?

I earned a degree in clinical psychology at the graduate school of psychology at Fuller Theological Seminary in Pasadena, California. After I graduated, I worked in clinical practice for several years, and then someone I'd known from graduate school approached me after he started a consulting practice. He was offering executive coaching and team development to Fortune 500 companies internationally, and he wanted to find a female coach to work with some of the female executives.

In response, I took some continuing-education courses in consulting psychology and I completed a two-year coaching certification program for licensed mental health professionals offered by the College of Executive Coaching in Arroyo Grande, California. I started by working with women who were being groomed for higher levels of leadership.

Then I became aware of the need for leadership development in the myriad tech startups in Silicon Valley. People were launching businesses who had never managed people before, and I found my team training and executive coaching skills very useful there. At the same time, leaders in family businesses began asking for my consulting services within their families.

How did you find out about the job at U.S. Bank?

I got a call from a headhunter who told me that U.S. Bank was developing a family education and wealth management program. They wanted psychologists on staff to help them build and execute a program around the idea that “wealth is more than money.” It's a holistic approach based on the idea that financial wealth is best managed within the larger view of the family's values, purposes, concerns, dreams and opportunities. I had experience in both the clinical and business worlds, and had advised family businesses for over a decade, so the job was a perfect match for my skills.

What is challenging about the work that you do?

It can be challenging to get face time with the clients. The family attorneys, financial advisors and I need to be very aware of a family's time because they can be busy people, so any contact must be highly valuable.

What do you enjoy most about this work?

I love seeing families come alive around the good their wealth can do.

One family I worked with has a foundation, and the younger generation was interested in seeing places they were donating money to. They are getting to know the people and the needs in these settings, and as a result, the entire family has gotten excited about what else they could do to help. ■

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