Applying Psychology to Improve Electrical Safety

It takes courage to stand in front of an audience of 500 people at a conference and deliver a keynote speech. Just ask anyone who has done it. The task may seem even more daunting if your audience consists of people whose area of knowledge is not your own. But if your subject matter offers personal value to the audience, they will surely listen. That was the experience of Anna Floyd, IEEE Senior Member, psychology expert on human performance, and keynote speaker at the 2019 IEEE Industry Applications Society (IAS) Electrical Safety Workshop (ESW) held in Jacksonville, Florida. Her talk was “The Human Factor.” Let us learn how she navigated her career path.

Education

Everything seemed to point toward a career as a teacher or educator for Floyd as she was growing up in Maryland. An avid reader, she was always interested in learning and sharing information. She knew early on that she wanted to do work that would help people.

Floyd attended the University of Maryland, College Park, to earn her undergraduate degree. She explained her career path choice in this way: “As an undergraduate student, I chose psychology as my major because I was drawn to doing work that helps other people to better understand themselves. Later, I decided to pursue graduate studies in the field of health psychology, which is a field that studies, among other things, how people make behavior choices that impact their health and what factors influence these choices.” Floyd became interested in investigating such things as risk perception, multitasking, behavior modification, coping with chronic illness, smoking cessation, quality of life, and how to help people in dealing with issues that go along with stress and illness, like grief. In 2009, she earned her Ph.D. degree in health psychology from the State University of New York, Stony Brook.

At one point in Floyd’s graduate work, during a conversation with her father, Lanny Floyd (an electrical safety professional, IEEE Fellow, and well-known active member of the IAS), she realized how much her work in health psychology could improve the field of professional safety. After graduation, she started writing papers and presenting (at the IAS meetings and other venues) psychological topics applied to professional safety. Floyd explained, “I was interested in helping supervisors understand how to influence and motivate their workers to be safe. As a psychologist, I understand the natural limitations of human performance that make prevention through design such a valuable approach, and I hope I can share this with engineers who are actively designing processes, tools, equipment, plants, and so on.”

Transition From College to the Working World

Finding work after graduation isn’t always easy, especially when the economic conditions aren’t favorable. Floyd described her own odyssey by
stating, “My path meandered a little after I got my Ph.D. degree. I moved from New York to Colorado for a one-year postdoctoral fellowship in health communication. After that, I looked for a job as a professor. It was the height of the recession, and it was hard to find something! I had a strong background in statistics from graduate school, so I started doing some consulting work using that background to help nonprofit organizations evaluate the effectiveness of their programs. After a few years of consulting, I landed a position as a professor of psychology at a liberal arts university in Denver, where I taught undergraduate and graduate students in psychology for six years.”

She said, “As a professor, I developed skills around curriculum and course development, including online course development. So I was building on my understanding of psychology and cognition in the context of best practices for learning, education, and training. I was also still actively publishing and presenting psychology concepts related to safety, work that I’d been able to pursue through networking in the IEEE IAS.” Between 2010 and 2019, she published a number of articles merging psychology and professional safety, covering topics like occupational culture, risk taking, and multitasking. In 2018, she started looking for a career that would bridge her expertise in psychology with her interests in engineering and helping others.

Floyd elaborated, “I felt inspired to continue my work that had beneficial impact for engineers, and I was also looking for something that had a strong humanitarian component. Recently I accepted a position as training course developer with Engineers Without Borders USA (EWB-USA) in Denver. It is a humanitarian organization that connects communities who request engineering projects that support basic human needs with engineers who have the technical skills to develop those projects.”

**Getting Involved in the IAS**

Floyd’s introduction to the IAS was through her active-member father. Even before her IAS involvement as an adult, she remembers a visit at about age 10 or 12 to an IAS Petroleum and Chemical Industry Committee conference in San Antonio, Texas, with her father. She grew up understanding that the IAS is a wonderful organization through her father’s continuous involvement. Now, as a member herself, she has found the IAS to be an inspiring and welcoming place where she is able to learn from other people’s expertise while she reciprocates by helping others learn from hers. In 2013, Floyd initiated a program to help boost student-professional networking and knowledge sharing around electrical safety. The program, the IAS Electrical Safety Prevention through Design Engineering Education Initiative, is supported through the IAS and the Myron Zucker Endowment and subsidizes student participation in the IEEE Electrical Safety Workshop.

Since 2010, Floyd has contributed a body of work to the IAS that adds to our general understanding regarding human factors in workplace safety. These offerings have been recognized by first-, second-, and third-place Best Paper Awards at IAS ESWs. These papers were sometimes developed in collaboration with her father. A more recent contribution was her ESW keynote speech mentioned earlier.

**Work Satisfaction**

When it comes to work satisfaction, Floyd speaks eloquently about what she likes. “The presentations I’ve done are very gratifying for me professionally because I really enjoy sharing information that’s useful and practical. I love bringing psychology into the engineering field, particularly in the context of human safety,” she said. “This feels like work that can have a real, potentially lifesaving benefit. EWB-USA uses a community-driven approach to develop engineering solutions for basic human needs (this ranges from water projects to sanitation projects to energy projects and others). The community-driven approach means that we partner with communities throughout the entire process. The people who live in the communities we work with are a part of the process from the beginning.”

**Typical Workday**

On a daily basis, Floyd interacts with people, whether as a teacher, professor, or course developer. At EWB-USA, she talks with engineers, mostly civil, environmental, or electrical, translating their knowledge into course and curriculum material. Occasionally, she will also draft scripts for film and video production. She considers herself a curious observer, and, in another life, she said, she could easily see herself as a journalist.

As a trained psychologist and student of human behavior, she has made two behavioral observations about engineers in general. First, she noted, is that they tend to lean toward using flowcharts and schematic diagrams to visually explain complicated things. Second, they tend to be quite passionate about their work, which, she said, makes them fun and intriguing to work with.

**Aha! Learning Discovery**

The most significant learning moment for Floyd was a conversation with her father when they realized that her psychology work had tangible applications to safety in the workplace. That launched her subsequent work and contributions to the IAS electrical safety community.

**Leisure Activity**

As a psychologist, Floyd is fascinated by human attention. Her interest in this area has led her to practice meditation regularly, either at her home in Denver or at a Zen meditation center in nearby Boulder, Colorado. She started practicing in 2015 but became interested in meditation in 2010 through a style called
passage meditation, using scripture passages from different religious traditions. For relaxation in her leisure time, Floyd also practices yoga, preferring a style called vinyasa. This helps her relieve stress, another topic she studied during her psychology research. “Humans react to stress via an inborn fight-or-flight response that releases stress hormones,” Floyd shared. “When we get stressed, movement through exercise can help the body dissipate those stress hormones and help us return to a less-stressed state.” In addition to yoga, Floyd enjoys playing the cello and guitar, listening to music, reading, and spending time with her husband and their dog, Dizzy.

**Sharing Advice**
Floyd offered this advice to others from her own experience: “Be open to unexpected things that happen to you in life, especially things that aren’t necessarily welcome. We have a tendency to not like the unexpected things, like detours in traffic or, in my case, not finding a job that I had wanted after graduating from college. Detours may take you through unfamiliar, new territory that may contain fruitful opportunities for you to discover. So, don’t be so quick to say no,” she continued, “but be willing to say yes to new experiences. You never know what new relationship, event, or activity will be there for you that may weave itself into your life in a useful way. But you have to be open to receiving the unexpected in order for that to work.”

**Conclusion**
It is helpful for us to allow expert knowledge from humanistic sciences like psychology to inform our understanding of the linkage between human performance factors and safety in our everyday workplace. That is the educator’s role that Floyd enjoys fulfilling in her own ongoing contributions as an active young professional member of the IAS. If you have special knowledge that is worth sharing, why not consider presenting a paper or talk at an IAS conference to help broaden the understanding and awareness of your fellow members in the professional IAS community?

Want to collaborate and get involved with the IEEE? Use social media!

Follow and engage with the IEEE on YouTube, LinkedIn, Facebook, and Twitter! For a list of registered IEEE sites, visit [www.ieee.org/about/social_media](http://www.ieee.org/about/social_media).