

Improving sonography requires improving sonography school admissions

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Diagnostic ultrasounds are the most widely used medical tests in the world. Though the technology is more than 50 years old, scientists continue to discover new uses for it, ranging from more targeted cancer treatments to liposuction. As the technology becomes more complex, a sonographer's skill level is even more important. Now, researchers at the University of Missouri may have found one of the keys to becoming a successful sonographer: spatial ability.

Doug Clem, clinical assistant professor of MU's diagnostic ultrasound program in the MU School of Health Professions, led the study of ultrasound students' spatial abilities. The study is the first to show how students' spatial abilities correlated to their results on scanning proficiency tests. Spatial ability is the ability to process and understand physical relationships among objects. This is important in sonography because ultrasounds are not like other [medical tests](#), such as x-rays or CT scans. A sonographer cannot capture the entire object at once, but instead must collect a series of images and assemble them into a logical sequential order for a physician to read.

"It's operator dependent," said Sharlette Anderson, clinical instructor of MU's diagnostic ultrasound program. "I can scan the entire liver, but I'm not giving the radiologist images of every millimeter of the liver. I am giving him specific images and anything that I see that looks abnormal. If I miss an abnormality, the radiologist never sees it and the diagnosis is missed."

The study tested first-year ultrasound students' spatial abilities prior to any major coursework. Then, scientists tracked students' results on standard scanning proficiency tests over two semesters. Initially, the study showed little association between spatial ability and scanning proficiency. However, by the end of the academic year, students with greater spatial abilities were much more likely to have scored high on scanning tests.

Clem sees spatial ability tests as a potential consideration for admission to a sonography program. Currently, the program uses academic criteria like grade point average and ACT scores to evaluate undergraduate applications. Other professions, including dentistry and engineering, have used spatial ability testing for years. Spatial ability is affected by genetics, but recent research has shown that individuals can improve their spatial ability. Participating in certain hobbies, such as playing video games, working puzzles and other similar activities can encourage spatial ability development.

"Even though you may be a really strong academic student, you may not learn to scan as easily as other people might." Clem says. "Some of our best students, straight-A students, will need extra time or extra clinical time to get past their scanning competency tests. This poses a challenge for selecting the best candidates for admission, and we think that spatial ability testing may turn out be one more piece of the puzzle that is needed to select the right individual."

The study was published in the *Journal of Diagnostic Medical Sonography*. Clem worked with Anderson and Moses Hdeib, director of the diagnostic [ultrasound](#) program. The team has started a second study, in cooperation with several universities, community colleges and proprietary schools from across the country. Through this larger study, Clem hopes to further validate the results of the first study by increasing the number of [students](#) observed. Depending on the results of the second

study, the department will consider changing admission requirements next summer.

Provided by University of Missouri-Columbia

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