

Researcher creates VR sequences to test eyewitness statements

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Psychologist Ulrike Kruse from the University of Jena (right) with a female test person in the laboratory. Credit: Anne Günther/Uni Jena

Eyewitness statements are one of the key sources for identifying perpetrators—and one of the most error-prone. For example, the Innocence Project—an organization that works to clear up miscarriages of justice in the U.S.—states that incorrect eyewitness statements played a role in 64% of the cases in which it was able to secure the release of

people who had been wrongly convicted. Further research is needed to find out why eyewitnesses are so often wrong, and this will require extensive visual material.

Psychologist Ulrike Kruse of Friedrich Schiller University Jena has now created such visual aids, through the unusual method of shooting mini crime stories. Together with her colleague, Prof. Stefan R. Schweinberger, she reports on her [work](#) in the current issue of the journal *PLOS ONE*.

"I've been working intensively on this topic for years and I continually find that there's hardly any material available for study programs in this field, because images are mostly subject to [data protection](#) and cannot easily be distributed," says Kruse. "For this reason, I decided to create such stimuli myself, use them for my own studies and, above all, make them available to colleagues worldwide."

To this end, Kruse shot six short film sequences with the support of amateur dramatics groups, in which minor offenses are re-enacted, such as pickpocketing in a busy park. In order to use Virtual Reality (VR) methods and thus make the [eyewitness](#) situations even more realistic, the psychologist also used 3D technology.

Looking for 'identical twins'

In the next step, the Jena researcher looked for 16 people who looked similar to the perpetrators in the videos, in order to photograph them for simulated identity parades and also make 3D portraits of them. "I created flyers, searched on social media and approached people personally. In total, this phase took up the most time," says Kruse.

Compiling the photo database also took such a long time because Kruse tested objectively whether the men really did look confusingly similar.

For this purpose, several people watched the videos and then provided a written description of the perpetrators. In an [online survey](#), 130 mock witnesses, as they were called, then identified the person who matched the characteristics by viewing the photos. "In such a fairness test, in the best-case scenario all the people in this virtual line-up are selected a few times because they should all fit the description. In this case, it worked very well," says Kruse.

Eyewitnesses in virtual reality

The Jena University psychologist initially used the material for her own research. As part of her doctorate, for example, she is investigating the question of whether people who are generally good at remembering faces are also good eyewitnesses. "If this is the case, you could—put simply—subject witnesses in court to a general test of their abilities in this area and in this way better assess their credibility," she explains. However, final results are still pending.

With the visual material she has created, the Jena researcher is exploring completely new avenues, as there have hardly been any studies to date in which the [test subjects](#) have used VR goggles to immerse themselves in [virtual reality](#) for their role as eyewitnesses. "So far, it has turned out that it's very difficult to remain attentive when you're fully immersed in the situation," says Kruse. "In one experiment, for example, fewer than a fifth of 68 participants demonstrated correct recognition." Further research in this area is therefore urgently needed.

More information: Ulrike Kruse et al, The Jena Eyewitness Research Stimuli (JERS): A database of mock theft videos involving two perpetrators, presented in 2D and VR formats with corresponding 2D and 3D lineup images, *PLOS ONE* (2023). [DOI: 10.1371/journal.pone.0295033](#)

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