

The pupils are the windows to the mind

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The eyes are the window into the soul -- or at least the mind, according to a new paper published in *Perspectives on Psychological Science*, a journal of the Association for Psychological Science. Measuring the diameter of the pupil, the part of the eye that changes size to let in more light, can show what a person is paying attention to. Pupillometry, as it's called, has been used in social psychology, clinical psychology, humans, animals, children, infants—and it should be used even more, the authors say.

The pupil is best known for changing size in reaction to light. In a dark room, your [pupils](#) open wide to let in more light; as soon as you step outside into the sunlight, the pupils shrink to pinpricks. This keeps the retina at the back of the eye from being overwhelmed by bright light. Something similar happens in response to psychological stimuli, says Bruno Laeng of the University of Oslo, who cowrote the paper with Sylvain Sirois of Université du Québec à Trois-Rivières and Gustaf Gredebäck of Uppsala University in Sweden. When someone sees something they want to pay closer attention to, the pupil enlarges. It's not clear why this happens, Laeng says. "One idea is that, by essentially enlarging the field of the visual input, it's beneficial to visual exploration," he says.

However it works, psychological scientists can use the fact that people's pupils widen when they see something they're interested in.

Laeng has used pupil size to study people who had damage to the hippocampus, which usually causes very severe amnesia. Normally, if

you show one of these patients a series of pictures, then take a short break, then show them another series of pictures, they don't know which ones they've seen before and which ones are new. But Laeng measured patients' pupils while they did this test and found that the patients did actually respond differently to the pictures they had seen before. "In a way, this is good news, because it shows that some of the brains of these patients, unknown to themselves, is actually capable of making the distinction," he says.

Pupil measurement might also be useful for studying babies. Tiny infants can't tell you what they're [paying attention](#) to. "Developmental psychologists have used all kinds of methods to get this information without using language," Laeng says. Seeing what babies are interested in can give clues to what they're able to recognize—different shapes or sounds, for example. A researcher might show a child two images side by side and see which one they look at for longer. Measuring the size of a baby's pupils could do the same without needing a comparison.

The technology already exists for measuring pupils—many modern psychology studies use eye-tracking technology, for example, to see what a subject is looking at, and Laeng and his coauthors hope to convince other psychological scientists to use this method.

Provided by Association for Psychological Science

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