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FROM: Joel Schwarz

(206) 543-2580

joels@u.washington.edu

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UW researcher who found way to measure infant vision to be honored

A scientist's curiosity about exactly what her infant children could see nearly three decades ago opened up a lifetime's work that has provided a new view of how human vision develops.

Davida Teller, a University of Washington psychology professor, will be honored by the Association for Research in Vision and Ophthalmology during its annual meeting in Fort Lauderdale, Fla., May 11-16. Teller, a pioneer in the field of infant vision, will be presented the association's Friedenwald Award, which honors outstanding research in the basic or clinical sciences as applied to ophthalmology.

Teller, who also is a professor of physiology and biophysics, is perhaps best known for developing the Teller Acuity Cards, a standardized testing system used internationally in pediatric optometry and ophthalmology to assess an infant's vision. The cards function like an eye chart for babies who can't read the letters on a regular eye chart. The cards can be used to test children until they know their letters and can be tested with a standard eye chart.

When Teller's interest in infant vision was first piqued, she remembers finding nothing on the subject in the encyclopedia and "being too curious not to pursue answers."

So she set out to find a way to measure infants' vision.

"Any parent can tell you that children stare at things," explains Teller, "and if you can stare at something you can see it. The question we wanted to answer was how well could they see."

So Teller used grids of black and white stripes with finer and finer spaces. If the stripes get too fine, the infant will stop staring. From this beginning she developed the Teller Acuity Cards. The size of the black and white striped grids correspond to different levels of vision, much the same way letters do on the standard eye chart. Each card has a peep hole in that allows the tester to observe if the infant is or isn't looking at the grid.

Teller and other researchers have discovered that infant visual acuity develops over a period of several years. They also learned that stereo vision or depth perception can't be measured until an infant is at least three months of age and then develops very rapidly over several weeks. This suggests that something gets wired in the brain very quickly, she says.

Teller's other major area of study is the development of color vision in infants. Newborn infants don't have color vision, but her research has shown that by two months of age they can distinguish saturated or vivid colors. This means they can tell a deep red from a deep blue from a white, she says. Then they gradually

become more sensitive to smaller color differences.

At present Teller's research is focused on a deeper understanding of how color vision develops and how it relates to other aspects of vision. She is also exploring the theoretical questions of how the brain works to handle these visual functions.

Teller, who is a fellow of the American Association for the Advancement of Science, says thousands of Seattle-area parents and infants share the credit for her research. "We couldn't have done this work without their help."

Her research has been supported by the National Science Foundation and the National Eye Institute, part of the National Institutes of Health.

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For more information, please contact Teller at (206) 543-2654 or at dteller@u.washington.edu

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University of Washington Office of News and Information

newsweb@u.washington.edu

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