The brain works as a 'cyclops,' compensating the optical differences between the eyes

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The eyes differ in their optical properties what results in a blur projected in each retina, despite we see sharp images because the visual system calibrates itself. An international research performed by the Consejo Superior de Investigaciones Científicas has discovered that when each eye separately has a different level of blur, our brain uses as sharp reference the image projected through the less aberrated eye. The research has been published in *Current Biology*.

"Our impression about what is sharp is colossal and it is determined by the sharper image among those which are projected through both eyes", explain the CSIC researcher Susana Marcos of the Instituto de Óptica Daza de Váldes. The research reveals that, despite these blur differences, the perception of each eye separately about the sharper image is the same, regardless of the eye we use to make the test and coincides with the blur image projected through the less aberrated eye.

The nature of these visual calibrations is important in order to understand the different consequences referred to the refractive errors between both eyes. "For instance, an available solution to correct the presbyopia is monovision, in which different refractive corrections are provided for both eyes. One eye, the dominant eye, is corrected for distance viewing and the other one is corrected for vision viewing. It is essential to understand the visual calibration with different levels of blur to understand the visual processing of the patients, the main objective is to provide the best possible correction", conclude the researcher.

More information: Aiswaryah Radhakrishnan, Carlos Dorronsoro, Lucie Sawides, Michael A. Webster, Susana Marcos. A cyclopean neural mechanism compensating for optical differences between the eyes. *Current Biology*. DOI: 10.1016/j.cub.2015.01.027