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### ***Adaptation to the aberrations and daily tasks***

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Adaptive Optics is an ideal tool to explore the impact of aberrations on visual performance and visual perception. We will present a set of experiments aiming at studying the visual benefit of correcting high order aberrations on visual acuity (at various luminances and contrast polarities), as well as on various daily visual tasks, such as face or facial expression recognition. We found that, by correcting high order aberrations, visual acuity increased by factor of 1.29 (on average across luminances), and face recognition improved by 1.13, on average (although facial expression recognition was not improved). Correcting the aberrations consistently increase subjective impression of sharpness (of 84% of the images, on average).

Furthermore, using adaptive optics, we have demonstrated that subjects can adapt to the blur imposed by astigmatism and high order aberrations, as the perceived best focus shifts after subjects had been adapted to astigmatic images, as well as to images degraded by high order aberrations (scaled versions of their own aberrations, or by other subjects' aberrations).

Interestingly, adaptation to the subject's own aberrations produces no aftereffects, and subjects perceived images degraded with an overall blur similar to their own as neither too blurred nor too sharp, as opposed to images degraded using other subjects' aberrations. These results demonstrate that spatial vision is calibrated to the amount of aberrations present in each individual's retinal image.