New Research From Psychological Science

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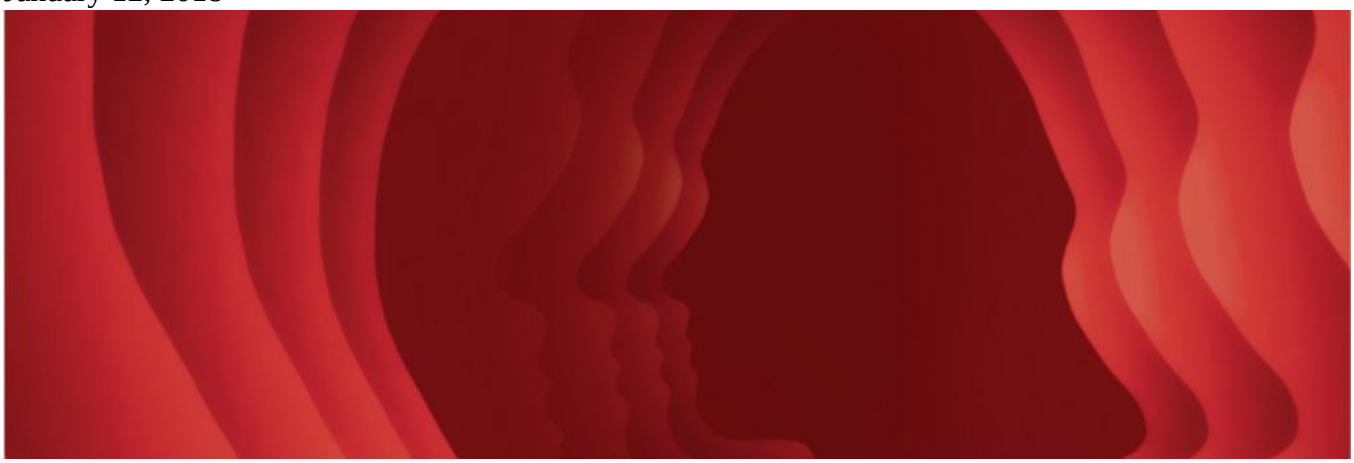

Read about the latest research published in *Psychological Science*:

Symmetric Objects Become Special in Perception Because of Generic Computations in Neurons

T. Pramod and S. P. Arun

Symmetry influences how we sense and perceive visual stimuli. The authors hypothesized that when identical parts are present in an object, making it symmetric, their effect on perception is nonlinear – that is, the response to the whole object is not simply the sum of responses to each part. The researchers created a set of objects in which two arbitrarily chosen parts are connected by a stem; attaching the same part on each side of the stem yields a symmetrical object. In one experiment, monkeys viewed the stimuli while researchers recorded neuronal activity in the inferior temporal cortex, an area that is critical for recognition. In three experiments with humans, participants viewed the objects while completing a visual search or making judgments about symmetry. Data from the monkey experiment and the human experiments showed no differences between visual processing of symmetric and asymmetric objects. Contrary to the researchers' hypothesis, both types of objects appeared subject to linear-part summation. However, the data did indicate that responses to two symmetric objects were more distinctive from each other than were responses to two asymmetric objects. This distinctiveness may be what drives symmetry perception, the authors conclude.

Lack of Automatic Imitation in Newly Sighted Individuals

Ayelet McKyton, Itay Ben-Zion, and Ehud Zohary

Humans are naturally inclined to mimic actions that they observe in others, a phenomenon known as *automatic imitation*. To find out whether this reflects an innate aspect of the mirror-neuron system or experience-based learning, the authors compared task performance in newly sighted children and their same-age peers. A red sticker was placed on participants' right hands and a blue sticker was placed on

their left hands. They watched short videos showing red or blue hands tapping on a table and were instructed to tap with the hand that had the same-color sticker as the hand tapping in the video. On compatible trials, participants mirrored the video – they tapped with their right hand, for example, if the video showed a red (right) hand tapping. On incompatible trials, however, participants had to tap with a hand different from the one shown tapping in the video. In line with the automatic-imitation effect, control participants performed faster on compatible trials than on incompatible trials; however, the effect was much weaker in the newly sighted participants. Based on these findings, the authors conclude that the automatic-imitation effect is likely learned through visually guided motor experience.

Perceived Average Orientation Reflects Effective Gist of the Surface

Oakyoon Cha and Sang Chul Chong

People are able to perceive the gist of a complex visual scene at a glance by summarizing objects or features according to specific properties, such as average color, orientation, or size. When different objects share similar features, the brain must create ensemble representations that reflect the arrangement of the objects. The authors hypothesized that the visual system uses spatial configuration to create perceptual groups that remain distinct from one another – thus, they expected that people would not integrate ensembles of different perceptual groups in answering questions about an overall scene. To test this hypothesis, seven participants (including the authors) viewed a series of circular arrays – each array contained 60 Gabor patches, nine of which were placed either randomly or in a vertical line within the array. The participants reported whether the array was, on average, oriented clockwise or counterclockwise. Data analyses indicated that participants ignored the vertically aligned patches when calculating the average orientation, suggesting that the distinct perceptual groups were not integrated in overall scene perception. This tendency may help us distinguish, for example, the features that belong to occluding objects from those belong to occluded objects.