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A convexity bias in the processing of motion parallax transformations

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Abstract
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agreement to the consensus as accurate as a committee of seven raters, while being fully objective and repeatable. Its scope is limited to point patterns that do not present multiple levels of organization. [Supported by EPSRC, IKY.]

♦ **I will write I Love You on … a symmetrical pattern!! An ERP evidence of affective**
36 congruency between pattern regularity and word valence

G Rampone, A Makin, M Bertamini (University of Liverpool)

The intimate connection between symmetry and beauty is well established. People explicitly like more symmetrical than random abstract patterns. Moreover, they associate symmetry with positive valence and random with negative valence on implicit behavioural tasks. The aim of this study was to investigate the neural correlate of this association (the congruency effect). We presented reflection and random patterns with either a positive or a negative word superimposed and recorded ERPs from posterior electrode clusters. Experiment 1 was divided in two tasks: in Discriminate Regularity task participants classified the regularity of the pattern (reflection or random). In Discriminate Valence task they reported the valence of the word (negative or positive). Experiment 2 required simultaneous discrimination of regularity and valence on each trial. ERP analysis evidenced a congruency effect between symmetry and positive words starting from 200 ms up to 1000 ms after stimulus onset. Interestingly, this effect was visible only in the Discriminate Word task. Possibly word valence is easier and faster to evaluate and participants automatically evaluate the valence of the pattern on the background, which in turn alters early visual processing.

♦ **A convexity bias in the processing of motion parallax transformations**

37 B Rogers[1], H Hill[2] ([1]University of Oxford; [2]University of Wollongong)

Concave face masks are typically seen as convex even when viewed binocularly where there is concave disparity information. This bias has been attributed to the overwhelming prevalence of normal convex faces in our previous experience (Gregory, The Intelligent Eye, 1970) or to a general convexity preference reflecting the statistical dominance of convex forms in the natural environment (Hill and Johnston, Perception, 36, 1992). Georgeson (Perception, 8, 1979) reported that this bias can be overcome if a concave face mask is covered with random dots to increase the disparity information specifying concavity. We have replicated this result using a 'virtual hollow face' technique (Rogers, JOV, 10, 2010) in which we independently manipulated (i) shading information, (ii) disparity information and (iii) motion parallax information during side-to-side head movements. We also manipulated the relative contrast of the shading information on the face and a superimposed random dot pattern. At the point where a stationary observer first reported that the mask appeared concave (due to the increased contrast of the disparities), we found that the mask 'flipped' back to appearing convex when the observer started moving from side-to-side. This reveals that there is a strong bias towards convexity in the processing of motion parallax transformations. A similar result was found with unfamiliar 3D forms, suggesting that the effect is not specific to faces. In addition, these results confirm our previous finding that the visual system shows little or no preference for seeing motion parallax-specified objects as stationary during observer movement (Rogers, JOV, 12, 2012).

♦ **Drawings reveal what is lost in crowding**

38 B Sayim, J Wagemans (KU Leuven)

Objects in peripheral vision that can be identified in isolation are often not discernible when flanked by similar close-by objects, a phenomenon known as crowding. We investigated crowding by letting observers draw stimuli presented in the visual periphery. Targets consisted of a letter, a letter-like item, or a scrambled letter and were presented with or without flankers of different complexity. Targets were presented in the right visual field at eccentricities of 6 or 12 degrees. Observers were asked to draw how the stimuli appeared to them as accurately as possible. Eye tracking ensured that stimuli were only presented when observers fixated on a central fixation dot. The drawings were rated on scales capturing the differences between presented stimuli and resulting drawings. We found evidence for strong appearance changes when the stimuli were crowded. The most common difference between stimuli and drawings was that elements were missing in the drawings. Other errors included position shifts, distortions, and adding of elements. Our results show that information loss is a key feature of crowding. Drawings are a useful tool to capture "perceptual errors" that are not observed in standard crowding paradigms.