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◆ **Feature processing asymmetry in a colour and orientation conjunction-search task**

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Distinctive visual cortical areas process specific visual features of objects. Does this imply that individual features are also processed independently? To investigate this, visual-search performance for individual features was compared with performance for these same features in a conjunction-search task. Subjects searched for a target among 12 distractors while their eyes were tracked. Accuracy and latency of the initial saccade in a trial were measured. In a feature-search task, colour contrast and orientation difference for 70% correct discrimination performance was determined for each individual subject. Next, with stimuli set to these individually determined threshold levels, search performance was measured for each feature separately as well as during a conjunction task. Colour-discrimination performance was slightly better in conjunction search than in feature search. In contrast, performance on orientation discrimination dropped dramatically in conjunction search compared to feature search. Importantly, in conjunction search, saccadic latency in correct colour and correct orientation trials was approximately equal, ruling out a speed-accuracy trade-off explanation for this finding. We conclude that, when information needs to be combined to perform a task, processing of one feature can be dependent on the processing of another one, resulting in asymmetric performance.

FACE PERCEPTION

◆ **Influences of object knowledge and geometric properties on the hollow-face illusion**

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We performed a series of experiments to investigate the role of object knowledge, geometric properties, and patterns of shading on the perception of the hollow-face illusion. Effects of inversion on objects other than faces are interpreted as showing that the effect of object knowledge is not specific to faces and is not 'all-or-nothing'. Experiments with a virtual hollow face to give control over geometric properties and taking the texture contrast needed to see the face as concave as a measure of strength of the illusion showed that absolute depth does not appear to be critical but that there is a preference for local as well as global convexity. Last, an experiment with varying the orientation of the face in 90° increments with light from the right showed that both absolute orientation and whether light is from above or below relative to the face are important. Thus, in response to Heard and Chugg (2003 *Perception* 32 Supplement, 50), we argue that both object knowledge and a local and global preference for convexity affect the perception of inside-out objects. These illusions provide evidence of a role for object knowledge in the interpretation of depth cues, and for the existence of internal three-dimensional representations of objects.

◆ **ERP effects of Thatcher faces under delimited presentation times**

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Thatcher faces, which are faces in which the eyes and mouth regions are turned upside-down, are recognised as being severely distorted when presented upright but hardly distinguishable when inverted. Common theories explain this effect by the loss of configural information for inverted faces. We investigated neural correlates of this effect using event-related potentials (ERPs). Sixteen right-handed participants performed yes/no identity decisions for Thatcher or original (familiar) faces, presented for 34 ms or 200 ms in 0°, 90°, or 180° orientation. For the occipito-temporal N170 we found (i) strong effects of orientation, and (ii) differential amplitudes for Thatcher and original faces, not only at 0° orientation, but also for inverted faces. For later ERP components, these effects were additionally modulated by presentation time. Moreover, there were behavioural hints of differential importance of configural and featural processing for short and long presentations times. Microgenetic accounts for explaining these findings are discussed.