Substantial failures to detect faces due to redundancy masking

Bilge Sayim*[1,2], Li L-Miao , Yu R. Dandan , and Bert Reynvoet

[1]University of Lille – SCALAB UMR CNRS 9193 – France
[2]University of Bern – Suisse

Résumé

In redundancy masking (RM), items in repeating patterns are lost. For example, when presented with 3 identical letters in the periphery, observers frequently report only 2 letters. Here, we investigated if highly complex, socially relevant stimuli were subject to RM. In Experiment 1, three to six identical faces, shape-matched outlines, and luminance-matched noise patches were presented randomly to the left or right of fixation at 10∘ eccentricity. The edge-to-edge spacing between items was varied. Item size and the spacing between them were well above the resolution limit. Participants were asked to indicate the number of items (1-9). In Experiment 2, three to six identical upright or upside-down faces were presented. Participants indicated the number of faces and their orientation (upright or upside-down). There was strong RM in both experiments: the reported number of items was lower than the actual number, even for as few as three items. In Experiment 1, this effect was stronger for outlines and noise patches compared to faces. In Experiment 2, orientation discrimination performance was similarly high (above 89% correct in all conditions) in trials with and without RM (but higher in trials without RM compared to RM when the faces were small). Our results showed that observers frequently failed to report faces even when only three faces were presented. The substantial failure to detect faces shows the strong impact of RM on conscious vision. We suggest that RM is a key mechanism that compresses redundant visual information.

Mots-Clés: peripheral vision, redundancy masking, crowding, detection

*Intervenant