Pattern discrimination in a human subject suffering visual agnosia


Since suffering a stroke some four years ago, H. J. A. has exhibited lack of visual pattern recognition, and CT scans show areas of neuronal damage localized bilaterally in the posterior cerebral cortex (Humphreys & Riddoch, 1984). His failure to recognize familiar objects, including faces, is particularly marked for line drawings (Humphreys & Riddoch, unpublished). We have measured the time required for detection of a target element which differs in orientation from multiple, identical background elements (Fig. 1A). Probability for detection of a given target, $P(t)$, was measured as a function of time, $t$, following its presentation, and $r_1$, the $t$ value for 50% probability of detection, provides a measure of discrimination performance. H.J.A.'s $r_1$ values for background elements | and || are essentially normal, but become increasingly abnormal for backgrounds II, ⊗, Δ and ○ (Fig. 1B). The data demonstrate that H.J.A.'s discrimination is disturbed for targets incorporating different line orientation, but not for single lines. Thus those mechanisms responsive to single lines function normally, whereas those which associate line elements into 2-D patterns are selectively disturbed.

REFERENCE