SUPPLEMENTARY MATERIAL

Visual hemifield test

To determine if right visual field impairment had any effect on patient performance, visual hemifield recognition was probed with two tasks – word reading and object naming in a subset of five patients (EI, FW, MS, JW, JM). Both tasks were different from those reported in the main study. The word reading task was taken from a previous study comprising a total of 180 words: 60 of three, five and seven letters (see Appendix B: Roberts et al. 2010), matched for written word form frequencies across the three letter lengths. Object naming was probed using a basic level naming to confrontation task (Lambon Ralph et al. 1998), which comprises living and nonliving items matched pairwise for various factors including visual complexity, object familiarity, spoken frequency, phoneme length and imageability.

Procedure

Participants were seated approximately 50cm from the screen. The administration of each set of materials began with a block of 20 practice trials so that participants could familiarise themselves with the procedure, followed by the experimental items. Each trial was initiated by the experimenter after the participant indicated his or her readiness. For each trial, a fixation cross was presented simultaneously with a vertical line that altered colour for each trial (red, blue, green). Participants were asked to fixate on the cross, and were required to name the colour. The purpose of the colour alternation naming was to hold the attention of the participant, ensuring central fixation was maintained as best as possible. This was followed by the target item, after a 500ms pause. Stimuli remained on the screen until a response was given. RT and accuracy data were recorded. Due to hemifield manipulation, both experiments were conducted over two sessions: in the first session half of the items were presented to the left and half to the right of fixation, randomised. This was then switched around for testing session two.

Results

Performance in left versus right hemifield presentation was analysed with paired samples t-tests. No difference was present in RT (left: 5411ms; right: 5270ms, $t(4) = .70$ $P = .53$) or accuracy (left: 96%; right: 94%, $t(4) = 2.0$ $P = .12$) for word reading. Similarly, no difference in hemifield presentation was present in RT (left: 2276ms; right: 2350ms, $t(4) = -.60$ $P = .58$) or accuracy (left: 83%; right: 89%, $t(4) = -2.2$ $P = 1.0$) for object naming. Since patients could name images presented in their impaired visual field as easily as those presented in their intact visual field, this indicates that visual field defects are extremely unlikely to impact up on performance for centrally presented items.

Famous face recognition

Images of famous people were selected if a high proportion of UK people rated them as “iconic” or “very famous”. Stimuli consisted of 40 greyscale photographs with an average width and height of 180x250 pixels, a horizontal and vertical resolution of 96dpi and a colour pitch depth of 8. AZ patients did not complete the famous face task because the faces are specific to a British audience. Eight patients (EI, KW, JWF, RK, TS, JW, JM, MS) were included and 9 controls.

Procedure

Visual recognition was probed with two tasks – naming and cross-modal (word-face) matching. The administration of each set of materials began with 16 practice items, followed by the 40 experimental items. For naming, items were presented centrally following a fixation cross and the participants were asked to name them e.g., Marilyn Monroe. In the matching task, participants were presented with a target name in both spoken (by the experimenter) and written (for an unlimited duration) form. This was followed by a backward pattern mask and a series of four faces to match the name to. The first two were presented left of fixation and the second two to the right. For example, the name “Richard Branson” followed by a series of four faces: Donald Trump, Noel Edmonds, Richard Branson, Alexi Lalas. Participants indicated their choice by means of a key press. Targets were counterbalanced and distributed equally across the four positions across the trials. Stimuli remained on the screen until a response was given. RT and accuracy data were recorded.

Results

Figure 9 displays results for patient and control groups on (a) face naming and (b) name-face matching. Since AZ patients did not complete this task it was not viable to split patients into severity sub-groups. We compared the performance of the two groups (patients vs. controls), therefore, with independent samples t-tests. Relative to controls, patients had slower RTs ($t(15) = 3.79$, $P < .005$) and were less accurate ($t(15) = -2.36$, $P <. 05$) for face naming. Comparable t-tests for name-face matching revealed this was also the case in RT ($t(18) = -3.90$, $P < .005$) but not accuracy ($t(15) = -1.14$, $P = .27$).

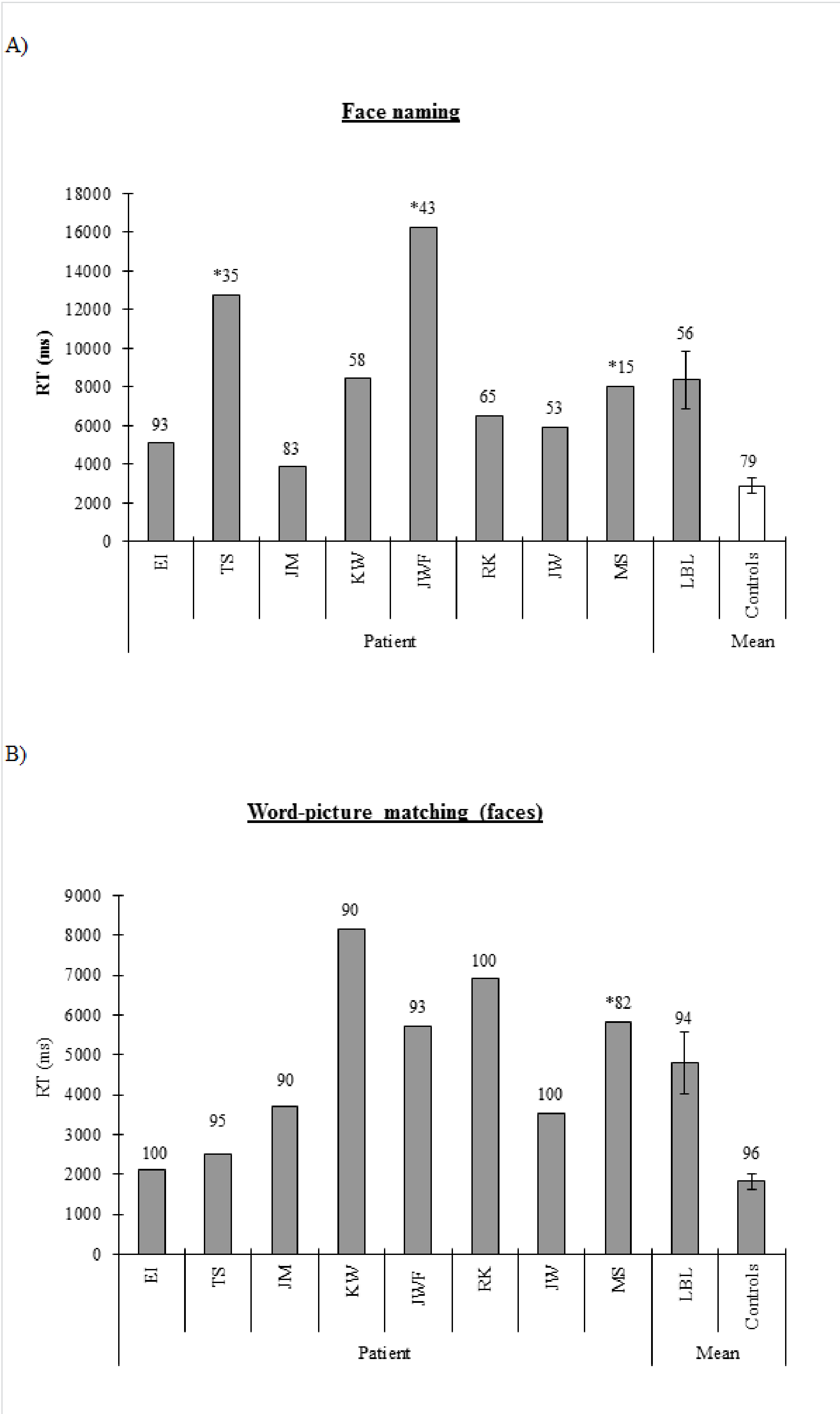

Figure 9. Results from famous face naming (A) and matching (B) tasks.

References

Lambon Ralph MA, Howard D, Nightingale G, Ellis AW. 1998. Are living and non-living category-specific deficits causally linked to impaired perceptual or associative knowledge? Evidence from a category-specific double dissociation. Neurocase. 4: 311-338.

Roberts DJ, Lambon Ralph MA, Woollams AM. 2010. When does less yield more? The impact of severity upon implicit recognition in pure alexia. Neuropsychologia. 48: 2437-2446.