**Dot Probe**

**Methods**

**Apparatus**

Eye position and pupil size were measured by a video-based eye-tracker (EyeLink 1000 Plus Desktop Mount; SR Research, Osgoode, ON,Canada) at a rate of 500 Hz. Pupil area was assessed in a centroïd pupil-tracking mode with a monocular setup (25-mm lens, 500 Hz sampling), using participants dominant eye. Stimulus presentation and data acquisition were controlled by E-Prime (Psychology Software Tools, Pittsburgh, PA) and Eyelink software respectively. Stimuli were presented on a 23.6-inch CRT monitor (ViewPixx; VPixx Technologies, Quebec, Canada), at a screen resolution of 1920x1080 pixels (120 Hz refresh rate). Responses were recorded using a Logitech F310 Gamepad (Logitech, Romanel-sur-Morges, Switzerland).

**Stimuli**

Stimuli consisted of images of happy (12), sad (12), and neutral (24) facial expressions from the Karolinska Directed Emotional Faces database (KDEF; (Lundqvist, Flykt, & Öhman, 1998). Each emotional face was paired with the neutral expression of the same actor. Stimuli (subtending 2° by 4° visual angle) were presented to the left and right sides of the visual field against a grey background (RGB: 110,110,110), with an center-to-center distance of 480 pixels (5° by 4° visual angle). Location and presentation of the stimulus pair varied randomly throughout the task. Stimulus-pairs were randomly presented four times within each block to counterbalance their location. To minimize variation of luminance throughout the task, stimuli background were removed and replaced to match background color. Stimuli did not vary in terms of luminance (12.0 cd/m2).

**Procedure**

Participants were seated in a dark room and the experiment con-

sisted of 210 trials lasting approximately 40 min (Fig. 1A). Each

trial began with the appearance of a central ﬁxation point (FP) (0.6°

diameter; 6 cd/m

2

) on a gray background (11 cd/m

2

). After 1–1.4 s

of central ﬁxation, a peripheral visual stimulus (0.6° diameter) was

presented for 100 ms to the left or right of the FP (8° eccentricity

on the horizontal axis) on a subset of trials (90 trials) and partici-

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The experiment consisted of 192 trials (96 trials x 2 blocks) lasting approximately 20 min (Fig. 1). Participants were seated in an illuminated room (12.0 cd/m2), 60 cm from the computer screen. Ocular dominance was then determined by using a modified version of the near-far alignment test (Miles, 1930). Before the task, a thirteen-point calibration routine used to map eye position to screen coordinates. Calibration was accepted only once there was an overall difference of less than 0.5° between the initial calibration and a validation retest. After completing calibration, participants were informed that the task would soon begin and all instructions would be presented on the monitor. Participants were instructed to view the images naturally, as if they were watching a slideshow. Further, they were also instructed to look at the fixation cross prior to each trial in order to standardize the starting location of their gaze. At the start of each block an online single-point drift correction were conducted. The task began with a series of 20 practice trials, using KDEF images not included with test stimuli. Each trial began with the appearance of a central ﬁxation cross (FC). Participants were required to maintain gaze of central ﬁxation (subtending 2° by 2° visual angle), for a duration window of 500 msec before continuing. If central fixation was not detected within 2000 msec, online single-point drift correction procedures were conducted. Immediately following drift correction, stimulus-pair appeared for 1000 msec. Following stimulus offset, a probe appeared (the letter “Q” or “O”) in place of one of the stimuli, the location randomized with equal frequency. Participants were asked to indicate the location of the probe by pressing the left trigger when seeing “Q”, and the right trigger when seeing “O” (reversed for left-handed participants). After their response, the probe disappeared, before beginning the next trial. The intertrial interval was 1000 msec. The two task blocks were completed sequentially with a self-paced break between them.

**References**

Lundqvist, D., Flykt, A., Öhman, A. (1998). The Karolinska Directed Emotional Faces – KDEF. CD ROM from Department of Clinical Neuroscience, Psychology section, Karolinska Institutet Stockholm. ISBN 91–630–7164–9.

Miles, W. (1930). Ocular dominance in human adults. Journal of General Psychology*.* 3(3)412–420. doi: 10.1080/00221309.1930.99182180022-1309

The experiment consisted of two sessions of approximately 2 h

duration each, and subjects completed a total of 44 9 3-min runs

(MIB: 6; Replay: 38). Subjects completed 16 low-, 16 medium- and

6 high-surprise Replay runs. Different numbers of runs per hazard

function were used to obtain a similar number of trials for each of

the three conditions (the high-surprise condition yielded more trials

per unit time). Subjects performed the MIB and high-surprise

Replay conditions in one session, and the medium- and low-surprise

Replay conditions in the other session. The two types of runs in

each session were presented within two separate blocks to allow

subjects to learn the event distributions of each condition as much

as possible. The order of blocks within a session and the order of

sessions were counterbalanced across subject