**Materials and Methods**

**Stimulus material**

**Table S1.** Normative valence and arousal ratings for the IAPS (Lang et al. 2008) stimuli employed as emotional distractors in the Emotional N-Back Task.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Positive (N=80)** | | **Negative (N=80)** | | **Neutral (N=80)** | |
| **Pictures** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **Valencea** | 7.20 | 0.50 | 2.78 | 0.63 | 5.14 | 0.51 |
| **Arousalb** | 5.33 | 0.69 | 5.50 | 0.71 | 3.19 | 0.80 |

**a** Valence: positive > neutral (t = -25.66, df = 79, p<.001), positive > negative (t = -49.37,df = 79, p< .001), neutral > negative (t = -24.90,df = 79, p< .001).

**b** Arousal: positive > neutral (t = -17.88, df = 79, p< .001), positive = negative (t = 1.36, df = 79, p=.18), neutral < negative (t = 17.91, df = 79, p< .001).

**Table S2.** Pairs of symbols employed as target/non target stimuli in the Emotional N-Back Task.

|  |
| --- |
| **Symbol pairs** |
| § £ |
| § ‡ |
| ¤ # |
| ¤ ¥ |
| ‡ # |
| ‡ ¥ |
| £ ‡ |
| £ § |
| ~ ¤ |
| ~ ‹ |
| ¥ § |
| ¥ £ |
| º ~ |
| º ^ |
| ^ ¤ |
| ^ º |
| # ‹ |
| # ^ |
| ‹ ~ |
| ‹ º |

We balanced pairs of stimuli by taking into account symbols’ size and complexity (e.g., pairs composed only by big or small symbols) to avoid that one of the two symbols was more salient respect to the other one.

**Procedure**

**Questionnaires**

*Difficulties in Emotion Regulation Scale (DERS)* is a self-report questionnaire (Gratz & Roemer 2004; Sighinolfi et al. 2010) that individuates specific facets of emotion regulation. It is composed of 36 items and 6 subscales: i) Non-acceptance of emotional responses (non-acceptance); ii) Difficulties engaging in goal-directed behavior (goals); iii) Impulse control difficulties (impulse); iv) Lack of emotional awareness (awareness); v) Limited access to emotion regulation strategies (strategies); vi) Lack of emotional clarity (clarity). Each item requires an answer on a Likert scale, from 1 (almost never) to 5 (almost always). The total score is obtained from the sum of the 6 subscales. Higher scores highlight the presence of some difficulties in the emotion regulation.

*Positive and Negative affect Schedule (PANAS)* (Terracciano et al. 2003). The PANAS is a self-report questionnaire that consists of two 10-item scales to measure both state and trait positive and negative affect. Each item is rated on a Likert scale from 1 *(not at all)* to 5 *(very much)*.

**Task and design**

**Memory recognition task**

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**Figure S1.** Timeline of the memory recognition task. Affective stimuli were taken from the IAPS (Lang et al. 2008).

Participants were presented with a surprise memory recognition task consisting of 180 affective stimuli taken from the IAPS (Lang et al. 2008): 120 affective stimuli (40 stimuli per valence) were the familiar stimuli (i.e. the emotional distractors previously presented during the Emotional N-Back task), while the remaining 60 affective stimuli (20 stimuli per valence) were the unfamiliar stimuli (i.e. the stimuli were not presented during the previous task). The response was considered as (i) correct when they categorized as already seen the familiar stimuli and as unseen the unfamiliar ones and (ii) incorrect when they categorized as unseen the familiar stimuli and as seen the unfamiliar ones.

Each trial in the memory recognition task included the following elements: 1) fixation cross (1000 ms), 2) affective stimulus (1000 ms), 3) yes/no memory recognition task (“Did you already see this image in the previous task?”) (see Figure S1). The affective stimuli were presented in a fully randomized order.

We fit the behavioral data in a single trial multilevel logistic regression model predicting accuracy (1 = correct; 0 = wrong) in the recognition memory task from the following categorical variables: valence (0 = negative, 1 = neutral, 2 = positive), group (1= patients, 2 = controls) and their reciprocal interaction. We also modelled participants as a random factor (i.e. random intercept) and valence as random slope over participants, as suggested in these guidelines (Barr 2013; Barr et al. 2013; Jaeger 2008).

The model showed a significant main effect of valence (Chisq = 55.65, p < .001, see Figure S2). The main effect of group (Chisq = 1.52, p = .22) and the interaction valence by group (Chisq = 1.08, p = .58) were not statistically significant.

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**Figure S2.** Accuracy in the recognition memory task.

Pairwise Bonferroni-corrected contrasts showed that negative stimuli are recognized better than positive (b = .44, SE = .07, z = 6.08, p < .0001) and neutral (b = .68, SE = .07, z = 10.26, p < .0001) stimuli. Also, positive stimuli are recognized better than neutral ones (b = -. 25, SE = .07, z = -3.51, p < .001).

Memory recognition performance indicates that valence significantly affects stimuli processing, as negative stimuli are correctly remembered more than positive and neutral ones. This is in agreement with studies suggesting that negative visual material strongly captures attention (Huang & Luo 2007; Miyazawa & Iwasaki 2009; Tartar et al. 2012) and also elicits enhancing effects on long-term memory (Kensinger 2007).

In addition, these findings suggest that accuracy seems to be driven by valence magnitude: negative > positive > neutral, in line with a recent review showing that emotional distractors capture automatic attention more than neutral ones (Carretié 2014).

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