**Supplementary material-methods**

Identification:

We conducted a systematic search in the PubMed and web of science databases for full-length original articles published in English and peer-reviewed journals between January 1995 and December 2018 using a term list including words relative to offenders, criminals, psychopathy, event-related potential, late positive potential and LPP. We used words with combination of thesaurus [MeSH Terms] related to medical subject headings description, [Other Term] related to keywords used in studies, and [Title/Abstract] related to words in title and abstract of

Eligibility criteria:

Two investigators (WV, JB) independently screened the results according to the eligibility criteria, first on titles and abstracts and then on full-text articles. Eligibility criteria were: (1) studies included subjects with psychopathic traits (i.e., patients with psychopathy or subjects with psychopathic traits (individuals above cut-off on clinical scale but not institutionalized), (2) studies reported an original measure of LPP amplitude, (3) LPP amplitude was measured following the presentation of an emotional visual stimulus, (4) LPP was recorded at centro-parietal sites, (5) studies used validated clinical tools for the assessment of psychopathic.

Key words:

(((((("Criminals"[Mesh] OR "Juvenile Delinquency"[Mesh] OR PSYCHOPATH[Title/Abstract] OR PSYCHOPATHS[Title/Abstract] OR PSYCHOPATHIC[Title/Abstract] OR AGGRESSI\*[Title/Abstract] OR OFFENDER\* [Title/Abstract] OR PSYCHOPATHY[Title/Abstract] OR CRIMINAL\*[Title/Abstract] OR DELINQUENCY[Title/Abstract])) OR (PSYCHOPATHS[Other Term] OR PSYCHOPATH[Other Term] OR PSYCHOPATHY[Other Term] OR PSYCHOPATHIC[Other Term] OR AGGRESSI\*[Other Term] OR OFFENDER\* OR CRIMINAL\*[Other Term] OR DELINQUENCY[Other Term]))) AND (("EVENT-RELATED POTENTIALS"[Title/Abstract] OR ERP[Title] OR "EVENT-RELATED POTENTIALS"[Other Term] OR ERP[Other Term] OR "EVENT-RELATED POTENTIALS"[MeSH Terms] OR "LATE POSITIVE POTENTIAL"))).

Data and methods for meta-analysis:

Our primary outcome was LPP amplitude evoked by visual stimuli. It was calculated as the mean positive signal amplitude compared to the mean amplitude during a baseline interval for each stimulus category (emotional, negative, positive, neutral valence) and each group (subjects with psychopathic traits, control subjects). First, we extracted LPP amplitude from electrodes tested in the included studies.

The meta-regression was computed on Cohen’s d effect size according to mixed-effect model fitted by setting method estimator. We assessed the impact of categorical moderators in the meta-analysis to investigate whether LPP amplitude was modulated depending on emotional valence. Results of meta-regression analyses were reported according, QE-test for residual heterogeneity, which tests the variability in the observed effect sizes and QM test statistic for the omnibus test of coefficients. In a second phase, for each study, we computed analyses of subgroups versus control population with a random model (RE) meta-analysis which provided a Cohen’s d effect size. A RE model was used to take into account between-study variability, and therefore provided a more conservative estimate of composite effect size. Effect sizes were calculated from mean and standard deviation (SD), F-test value, and sample size by entering values into an effect size calculator (Lipsey and Wilson, 2000) and collecting effect size and Variance of d (Vd). We also calculated effect size on Eta-squared and correlation coefficient (r) by converting them in Cohen’s d and collecting effect sizes and variance (Cohen, 1988; Rosenthal, 1994; Borenstein *et al.* 2009). We conducted quantitative analyses using R project with Metafor package, version 3.2.1 (Viechtbauer, 2010). We extracted Cohen’s d effect sizes and 95% confidence intervals (CI95%) for each study. The heterogeneity test Q was also calculated with R project. The mean effect size from included studies was computed according to the RE model. Finally, Egger’s test (weighted regression models with multiplicative dispersion) was used to test funnel plot asymmetry and potential publication bias. Supplementary material provides all data used for effect size calculation.

Reference:

**Borenstein M, Hedges LV, Higgins J, Rothstein HR** (2009) *Introduction to Meta–Analysis*. John Wiley & Sons, Ltd, pp.409–414.

**Cohen J.** (1988) Statistical power analysis for the behavioural sciences. *Hillsdale, NJ: Lawrence Earlbaum Associates*, *2.*

**Lipsey MW and Wilson D** (2000) *Practical meta–analysis* (applied social research methods).

**Rosenthal R** (1994) Parametric measures of effect size. In H. Cooper & L.V. Hedges (Eds.), *The Handbook of Research Synthesis*. New York: Russell Sage Foundation*,* pp.231–244.

**Viechtbauer W.** (2010). Metafor: meta-analysis package for R. *R package version*, *2010*, 1-0.