Prenatal solvent exposure and motor inhibition function at the age of 10 – 12 in the PELAGIE mother-child cohort.

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Background/Aim
Epidemiological studies reported that prenatal solvent exposure was associated with higher frequency of attention deficit and higher levels of hyperactivity or impulsivity in exposed children which suggest impaired motor inhibition function. The purpose of the present work is to investigate the effect of prenatal exposure to solvents on the motor inhibition function measured by neuropsychological test performed in children of 10-12 years old.

Methods
Ninety nine children from the PELAGIE mother-child cohort (France; from 2002) underwent functional Magnetic Resonance Imaging (MRI) during which motor inhibition function was assessed with the go/no-go task during 10 minutes: children were asked to press a button as quickly as possible in response to a green smiley but not press the button when seeing a red smiley. Task performance was assessed by the average reaction time (RT) and the commission rate (incorrect answer to a red smiley). Solvent exposure was assessed at the beginning of pregnancy (<19 WG) by self-reported questionnaire (n=89) and oxygenated, chlorinated and petroleum solvent job-exposure matrices (JEM; n=92). Multiple linear regression including confounders allowed to estimate association between exposures and performance.

Results
Petroleum and chlorinated solvent JEM-based exposures were associated with a longer RT. No association was observed between RT and oxygenated solvents JEM-based exposures and self-reported exposure.
Concerning commission rate, no association was observed with any of the exposures assessments.

Conclusions
Prenatal solvent exposures seem associated with performance to the go/no-go task. This result needs to be linked to the functional MRI analyses on cerebral activations.