

Air pollution linked to slower cognitive development in children

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Larkmead School. Credit: CC-BY-SA-2.5,2.0,1.0

Attendance at schools exposed to high levels of traffic-related air pollution is linked to slower cognitive development among 7-10-year-old children in Barcelona, according to a study published by Jordi Sunyer and colleagues from the Centre for Research in Environmental Epidemiology (CREAL), Spain, published in this week's *PLOS Medicine*.

The researchers measured three [cognitive outcomes](#) (working memory, superior working memory, and attentiveness) every 3 months over a 12-month period in 2715 primary school children attending 39 schools. By comparing the development of these cognitive outcomes in the

children attending schools where exposure to air pollution was high to those children attending a school with a similar socio-economic index where exposure to pollution was low, they found that the increase in cognitive development over time among children attending highly polluted schools was less than among children attending paired lowly polluted schools, even after adjusting for additional factors that affect cognitive development. Thus, for example, there was an 11.5% 12-month increase in working memory at the lowly polluted schools but only a 7.4% 12-month increase in [working memory](#) at the highly polluted schools. These results were confirmed using direct measurements of traffic related pollutants at schools.

The findings suggest that the developing brain may be vulnerable to traffic-related air pollution well into middle childhood, a conclusion that has implications for the design of [air pollution](#) regulations and for the location of new schools. While the authors controlled for socioeconomic factors, the accuracy of these findings may be limited by residual confounding, that is, the children attending schools where traffic-related pollution is high might have shared other unknown characteristics that affected their [cognitive development](#).

More information: Sunyer J, Esnaola M, Alvarez-Pedrerol M, Forns J, Rivas I, López-Vicente M, et al. (2015) Association between Traffic-Related Air Pollution in Schools and Cognitive Development in Primary School Children: A Prospective Cohort Study. *PLoS Med* 12(3): e1001792. [DOI: 10.1371/journal.pmed.1001792](https://doi.org/10.1371/journal.pmed.1001792)

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