

SUPPLEMENTARY FILE

Title page

Association between lung function of school age children and short-term exposure to air pollution and pollen: the PARIS cohort

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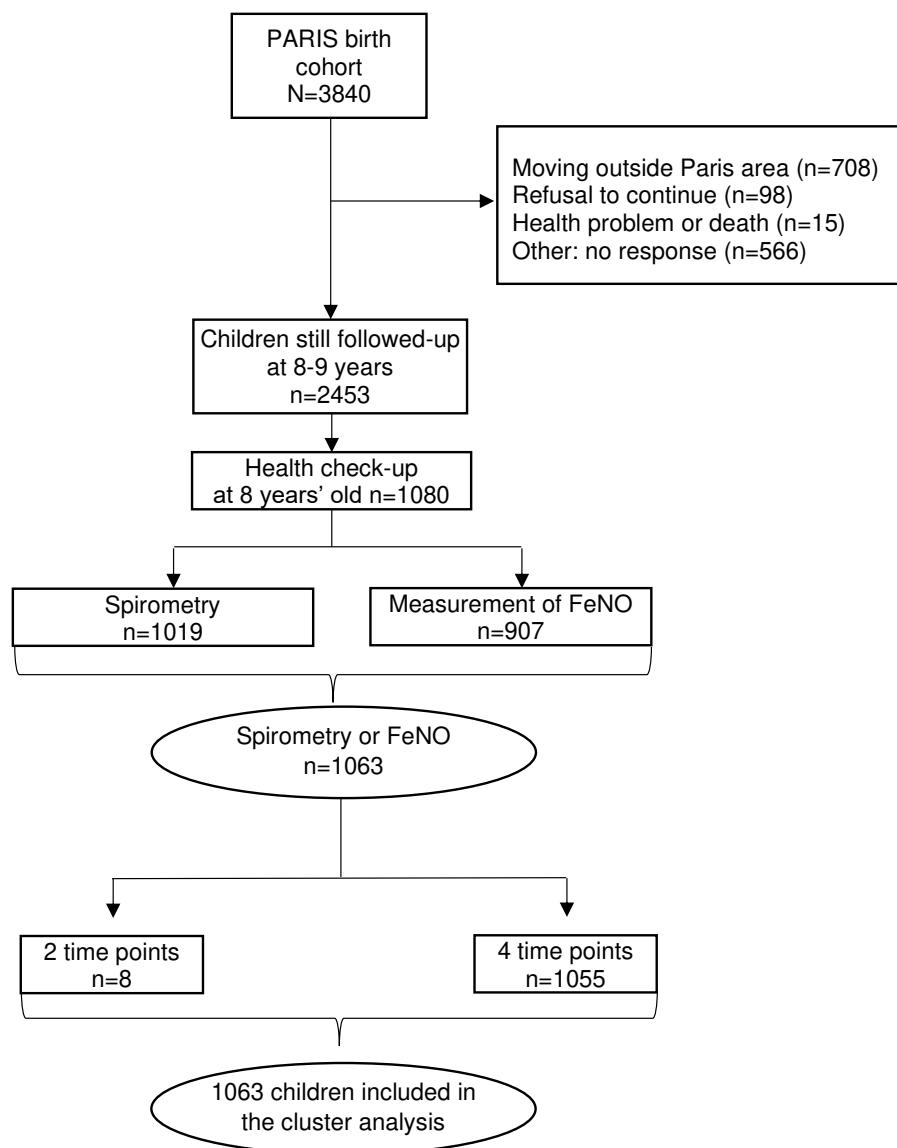


Figure S1. Flow chart of the PARIS cohort children participating in the cluster analysis.

Table S1. Average daily exposure to air pollution and pollen in the 4 days before the health check-up at 8 years old in children from the PARIS cohort included in the cluster analysis (n=1063).

	Median	25 th percentile	75 th percentile
ATMO air quality sub-index (1 [very good] to 10 [very poor])			
PM₁₀	3	3	4
NO₂	3	2	3
O₃	3	2	4
Pollen concentration (grains/m³)			
Alder	0	0	0.6
Ash	0	0	0.8
Birch	0	0	0.8
Cypress	2.1	0	9.4
Grasses	0	0	2.9
Hazel	0	0	0
Oak	0	0	1
Plane-tree	0	0	0.2
Poplar	0	0	0.4
Daily total concentration	30.2	0	134.7

Table S2. Best Calinski-Harabasz criterion values for each number of clusters after 500 iterations.

Number of clusters	Calinski-Harabasz criterion
2	279
3	260
4	267
5	246
6	236
7	217
8	205

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
	550 (51.7%)	327 (30.8%)	104 (9.8%)	82 (7.7%)
Exposure to air pollution (median of ATMO sub-indices)				
PM ₁₀				
NO ₂				
O ₃				
Exposure to pollen (median of allergenic risks)				
Alder				
Ash				
Birch				
Cypress				
Grasses				
Hazel				
Oak				
Plane-tree				
Poplar				

Legend:

ATMO sub-indices	1-2	3-4	5	6-7	8-9	10
	“Very good”	“Good”	“Medium”	“Mediocre”	“Bad”	“Very bad”
Allergenic risks	0	1	2	3	4	5
	“Nil”	“Very low”	“Low”	“Moderate”	“High”	“Very high”

Figure S2. Average exposure to air pollution and pollen according to clusters identified in the four days preceding the health check-up at 8 years old in the PARIS birth cohort

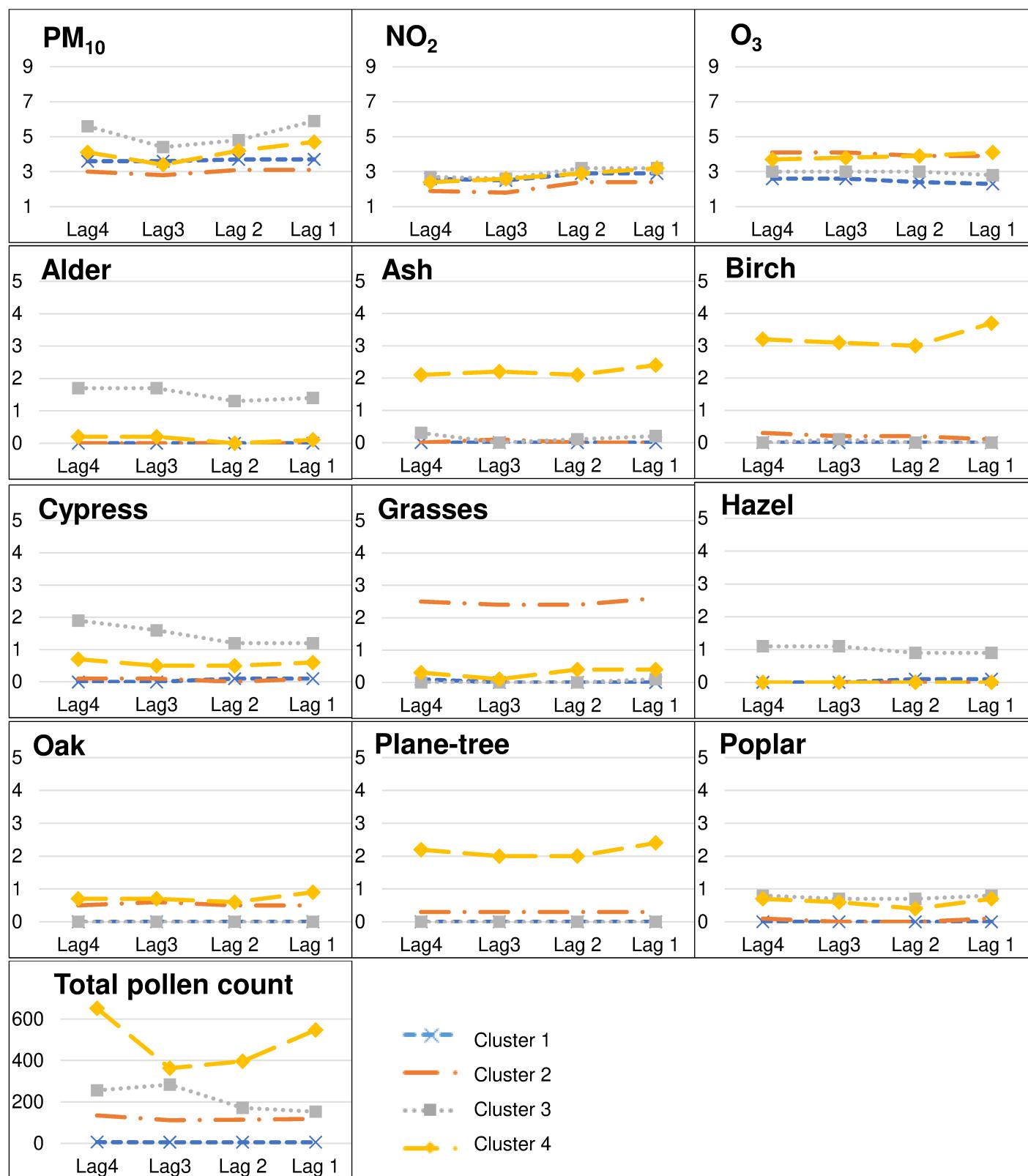


Figure S3. Clusters of recent exposure both air pollution and pollen identified during the health check-up at 8 years old in the PARIS birth cohort with complete data for all clusters (n=1055).

Legend: The x-axis indicates the four time points corresponding to the four days (lag4, lag3, lag2, lag1) before preceding the health check-up and the y-axis is the mean value at each time point in each cluster. The variables were coded as follows: PM₁₀, NO₂ and O₃ ATMO sub-indices from 1 (very good) to 10 (very bad), allergenic risk for each pollen species from 0 (nil) to 5 (very high), and total pollen concentration including 19 pollen species in grain/m³.

Table S3. Average of 4 days before for concentration of pollen count and for ATMO sub-indices of air pollution for children of the PARIS cohort with complete data for all clusters (n= 1055).

	Cluster 1			Cluster 2			Cluster 3			Cluster 4		
n (%)	542 (51.3)			327 (31)			104 (9.9)			82 (7.8)		
Percentile	median	25 th	75 th	median	25 th	75 th	median	25 th	75 th	median	25 th	75 th
Exposure to air pollution (expressed in ATMO sub index, 1 to 10)												
PM ₁₀	4	3	5	3	3	3	6	4	7	4	3	6
NO ₂	3	3	3	2	2	3	3	3	3	3	3	3
O ₃	3	2	3	4	3	5	3	3	3	4	4	4
Exposure to pollen (expressed in pollen grains/m ³)												
Alder	0	0	0	0	0	0	23.4	16.8	41.1	1.6	0.8	2.5
Ash	0	0	0	0	0	1	1.6	0.4	2.8	33.9	26.7	126.6
Birch	0	0	0	0.2	0	1.6	0.2	0	1	174.5	36.1	269.1
Cypress	0	0	0	4.9	3.1	7.6	70.6	34.9	131.4	15.2	8.4	32.9
Grasses	0	0	0	19.9	6.8	38.6	0	0	0.2	0.8	0.4	1
Hazel	0	0	0	0	0	0	12.1	4.5	20.5	0	0	0.4
Oak	0	0	0	2.7	0	17.2	0	0	0	2.1	0.6	48.7
Plane-tree	0	0	0	0.2	0	3.7	0	0	0	153.9	1	252.3
Poplar	0	0	0	0	0	0.4	5.6	0.8	14.5	6.6	4.3	13.7
Daily total concentration	0	0	0	113.5	60.6	176.1	154.4	92.5	250.2	509.5	428.2	666.4