

1 SUPPLEMENTAL MATERIAL

2 Chevrier et al. Childhood exposure to polybrominated diphenyl ethers and neurodevelopment at six years of age

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7 Supplemental Table 1. Outcomes statistics of the study sample (PELAGIE livebirth subcohort, France)

| | Study sample (N=246) | | | Study sample with cord blood (N=159) | | |
|------------------------------------|----------------------|--------------|--------|--------------------------------------|--------------|--------|
| | N | Mean ± SD | Range | N | Mean ± SD | Range |
| WISC-IV verbal comprehension index | 246 | 107.7 ± 15.4 | 72-155 | 159 | 106.5 ± 16.2 | 72-155 |
| WISC-IV similarities | 246 | 11.9 ± 3.3 | 5-19 | 159 | 11.7 ± 3.3 | 5-19 |
| WISC-IV vocabulary | 245 | 9.8 ± 3.3 | 1-19 | 159 | 9.6 ± 3.5 | 1-19 |
| WISC-IV comprehension | 243 | 12.0 ± 3.0 | 3-19 | 157 | 11.8 ± 3.2 | 3-19 |
| WISC-IV working memory index | 243 | 107.1 ± 14.6 | 62-140 | 157 | 106.0 ± 15.4 | 62-140 |
| WISC-IV digit span | 243 | 11.3 ± 2.9 | 3-19 | 156 | 11.0 ± 3.0 | 3-19 |
| WISC-IV letter-number sequencing | 230 | 11.3 ± 2.6 | 2-19 | 147 | 11.2 ± 2.7 | 2-17 |
| WISC-IV block design | 236 | 11.3 ± 2.6 | 0-15 | 153 | 11.5 ± 2.5 | 3-15 |

8 Abbreviations: WISC-IV. Wechsler Intelligence Scale for Children-4th edition

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10 Supplemental Table 2. Association between concentrations of BDE99 and BDE209 measured in house dust and WISC-VCI subtest scores at
 11 the age of 6 years (PELAGIE cohort, France)

| | Similarities | | Vocabulary | | Comprehension | |
|--------------------|-------------------|--------------------|--------------------|--------------------|---------------|--------------------|
| | β^a | (95%CI) (n=246) | β^a | (95%CI) (n=245) | β^a | (95%CI) (n=243) |
| Among all children | | | | | | |
| Dust BDE99 | | | | | | |
| Not detected | ref | | ref | | ref | |
| <54 ng/g | -0.66 | (-1.69, 0.37) | -0.10 | (-1.07, 0.87) | 0.04 | (-0.88, 0.96) |
| ≥ 54 ng/g | -1.46 | (-2.49, -0.44) | -1.30 | (-2.27, -0.33) | -0.03 | (-0.95, 0.89) |
| p trend | 0.005 | | 0.02 | | 0.98 | |
| Dust BDE209 | | | | | | |
| <257 ng/g | ref | | ref | | ref | |
| 257-627 ng/g | -0.21 | (-1.20, 0.78) | -0.58 | (-1.51, 0.35) | -0.06 | (-0.94, 0.82) |
| >627 ng/g | -0.40 | (-1.40, 0.59) | 0.04 | (-0.90, 0.97) | -1.22 | (-2.11, -0.33) |
| p trend | 0.42 | | 0.96 | | 0.007 | |
| Among boys | | (n=117) | | (n=116) | | (n=115) |
| Dust BDE99 | | | | | | |
| Not detected | ref | | ref | | ref | |
| <54 ng/g | 0.11 | (-1.48, 1.71) | -0.13 | (-1.58, 1.33) | 0.18 | (-1.27, 1.64) |
| ≥ 54 ng/g | -2.00 | (-3.46, -0.54) | -2.16 | (-3.50, -0.83) | -0.03 | (-1.36, 1.31) |
| p trend | 0.02 ^b | | 0.004 ^b | | 0.98 | |
| Dust BDE209 | | | | | | |
| <257 ng/g | ref | | ref | | ref | |
| 257-627 ng/g | -0.63 | (-2.11, 0.85) | -0.62 | (-1.97, 0.74) | -0.02 | (-1.38, 1.33) |
| >627 ng/g | -1.12 | (-2.60, 0.36) | -0.32 | (-1.67, 1.04) | -1.73 | (-3.09,-0.38) |
| p trend | 0.13 | | 0.64 | | 0.01 | |
| Among girls | | (n=129) | | (n=129) | | (n=128) |
| Dust BDE99 | | | | | | |
| Not detected | ref | | ref | | ref | |
| <54 ng/g | -1.33 | (-2.76, 0.11) | -0.03 | (-1.47, 1.40) | -0.24 | (-1.51, 1.03) |
| ≥ 54 ng/g | -1.15 | (-2.71, 0.41) | -0.38 | (-1.95, 1.18) | 0.02 | (-1.38, 1.42) |
| p trend | 0.07 ^b | | 0.63 ^b | | 0.96 | |
| Dust BDE209 | | | | | | |
| <257 ng/g | ref | | ref | | ref | |
| 257-627 ng/g | 0.02 | (-1.43, 1.46) | -0.74 | (-2.19, 0.70) | -0.007 | (-1.29, 1.28) |
| >627 ng/g | 0.14 | (-1.30, 1.58) | 0.12 | (-1.33, 1.56) | -0.73 | (-2.02, 0.55) |
| p trend | 0.83 | | 0.89 | | 0.27 | |

12 Concentrations of BDE99 and 209 in household dust were included simultaneously in the models.

13 ^a Adjustment for maternal educational level, maternal WAIS-III score, HOME score, breastfeeding duration, pre-pregnancy fish intake, lead concentrations in house
14 dust, and birth weight

15 ^bTest for potential modification of the association between dust BDE99 and WISC subtest score by child's sex is p=0.15 for Similarities, 0.19 for Vocabulary. Other
16 potential effect-modification by sex (for Comprehension subtest or for BDE209) was p>0.20.

17 Supplemental Table 3. Association between concentrations of BDE99 and BDE209 measured in house dust and WISC-WMI subtest scores at
 18 the age of 6 years (PELAGIE cohort, France)

| | Digit Span | | Letter Number Sequencing | |
|---------------------------|------------|----------------|--------------------------|----------------|
| | β^a | (95%CI) | β^a | (95%CI) |
| Among all children | | (n=242) | (n=230) | |
| Dust BDE99 | | | | |
| Not detected | ref | | ref | |
| <54 ng/g | -0.26 | (-1.12, 0.60) | 0.01 | (-0.79, 0.80) |
| \geq 54 ng/g | -1.04 | (-1.91, -0.17) | -0.33 | (-1.13, 0.46) |
| p trend | 0.02 | | 0.46 | |
| Dust BDE209 | | | | |
| <257 ng/g | ref | | ref | |
| 257-627 ng/g | 0.98 | (0.13, 1.83) | 0.57 | (-0.22, 1.36) |
| $>$ 627 ng/g | 0.72 | (-0.12, 1.55) | 0.38 | (-0.39, 1.14) |
| p trend | 0.10 | | 0.35 | |
| Among boys | | (n=114) | (n=109) | |
| Dust BDE99 | | | | |
| Not detected | ref | | ref | |
| <54 ng/g | -0.80 | (-2.23, 0.63) | -0.33 | (-1.67, 1.02) |
| \geq 54 ng/g | -0.94 | (-2.27, 0.39) | -0.57 | (-1.74, -0.60) |
| p trend | 0.11 | | 0.31 | |
| Dust BDE209 | | | | |
| <257 ng/g | ref | | ref | |
| 257-627 ng/g | 1.34 | (0.01, 2.67) | 0.16 | (-1.03, 1.34) |
| $>$ 627 ng/g | 1.21 | (-0.12, 2.54) | 0.28 | (-0.90, 1.47) |
| p trend | 0.08 | | 0.63 | |
| Among girls | | (n=128) | (n=121) | |
| Dust BDE99 | | | | |
| Not detected | ref | | ref | |
| <54 ng/g | -0.36 | (-1.52, 0.81) | 0.02 | (-1.12, 1.16) |
| \geq 54 ng/g | -1.28 | (-2.54, -0.01) | 0.06 | (-1.19, 1.32) |
| p trend | 0.05 | | 0.89 | |
| Dust BDE209 | | | | |
| <257 ng/g | ref | | ref | |
| 257-627 ng/g | 0.68 | (-0.51, 1.88) | 0.81 | (-0.42, 2.04) |
| $>$ 627 ng/g | 0.65 | (-0.54, 1.83) | 0.27 | (-0.89, 1.43) |
| p trend | 0.28 | | 0.67 | |

19 Concentrations of BDE99 and 209 in household dust were included simultaneously in the models.

20 ^aAdjustment for maternal educational level, maternal WAIS-III score, HOME score, maternal age, breastfeeding duration, maternal smoking status at beginning of
21 pregnancy, number of older siblings, child school attendance, lead concentrations in house dust, birth weight, andinterviewer. All potential effect-modifications by sex
22 were p>0.20.

23 Supplemental Table 4. Association between concentrations of BDE99 and BDE209 measured in house dust and WISC-IV scores at the age of
 24 6 years, with and without adjustment for birth weight (PELAGIE cohort, France)

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| | WISC-VCI (n=246) | | | | WISC-WMI (n=243) | | | |
|--------------------|-------------------------------------|----------------|--|-----------------|----------------------------------|---------------|--|---------------|
| | A priori adjustment ^a | | Without adjustment for birth weight | | A priori adjustment ^b | | Without adjustment for birth weight | |
| | β | (95%CI) | β | (95%CI) | β | (95%CI) | β | (95%CI) |
| Dust BDE99 | | | | | | | | |
| Not detected | ref | | ref | | ref | | ref | |
| <54 ng/g | -1.57 | (-6.07, 2.94) | -1.31 | (-5.87, 3.26) | -1.43 | (-5.74, 2.87) | -1.24 | (-5.56, 3.08) |
| \geq 54 ng/g | -5.45 | (-9.95, -0.96) | -5.57 | (-10.12, -1.01) | -3.61 | (-7.92, 0.70) | -3.69 | (-8.02, 0.64) |
| p trend | | 0.02 | | 0.02 | | 0.10 | | 0.10 |
| Dust BDE209 | | | | | | | | |
| <257 ng/g | ref | | ref | | ref | | ref | |
| 257-627 ng/g | -1.82 | (-6.15, 2.51) | -2.15 | (-6.53, 2.23) | 3.83 | (-0.40, 8.06) | 3.50 | (-0.73, 7.74) |
| $>$ 627 ng/g | -3.16 | (-7.52, 1.19) | -3.90 | (-8.29, 0.48) | 3.23 | (-0.94, 7.39) | 2.79 | (-1.37, 6.95) |
| p trend | | 0.15 | | 0.08 | | 0.13 | | 0.19 |

28 Concentrations of BDE99 and 209 in household dust were included simultaneously in the models.

29 ^a Adjustment for maternal educational level, maternal WAIS-III score, HOME score, breastfeeding duration, pre-pregnancy fish intake, lead concentrations in house
 30 dust, and birth weight

31 ^b Adjustment for maternal educational level, maternal WAIS-III score, HOME score, maternal age, breastfeeding duration, maternal smoking status at beginning of
 32 pregnancy, number of older siblings, child school attendance, lead concentrations in house dust, birth weight, and interviewer

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34 Supplemental Table 5. Crude association between concentrations of BDE99 and BDE209 measured in house dust and WISC-IV scores at the age of 6
 35 years (PELAGIE cohort, France)

| | WISC-VCI | | | | | | WISC-WMI | | | | | |
|--------------------|-------------|-----------------|---------------|-----------------|-----------------|----------------|-------------|---------------|---------------|----------------|-----------------|----------------|
| | All (n=246) | | Males (n=117) | | Females (n=129) | | All (n=243) | | Males (n=115) | | Females (n=128) | |
| | β^a | (95% CI) | β^a | (95% CI) | β^a | (95% CI) | β^b | (95% CI) | β^b | (95% CI) | β^b | (95% CI) |
| Dust BDE99 | | | | | | | | | | | | |
| Not detected | ref | | ref | | ref | | ref | | ref | | ref | |
| <54 ng/g | -1.55 | (-6.47, 3.37) | 3.04 | (-4.32, 10.41) | -4.48 | (-11.22, 2.26) | -1.09 | (-5.86, 3.68) | -3.22 | (-10.78, 4.33) | -0.35 | (-6.72, 6.01) |
| ≥54 ng/g | -5.33 | (-10.25, -0.40) | -7.20 | (-13.95, -0.46) | -4.57 | (-11.84, 2.71) | -4.13 | (-8.88, 0.61) | -3.71 | (-10.47, 3.04) | -4.95 | (-11.82, 1.93) |
| <i>p trend</i> | | 0.04 | | 0.08 | | 0.15 | | 0.10 | | 0.22 | | 0.20 |
| Dust BDE209 | | | | | | | | | | | | |
| <257 ng/g | ref | | ref | | ref | | ref | | ref | | ref | |
| 257-627 ng/g | -1.98 | (-6.67, 2.71) | -5.16 | (-11.68, 1.35) | 0.51 | (-6.33, 7.36) | 2.75 | (-1.80, 7.30) | 2.15 | (-4.47, 8.77) | 3.48 | (-3.01, 9.97) |
| >627 ng/g | -5.08 | (-9.78, -0.38) | -9.60 | (-16.01, -3.20) | -0.98 | (-7.91, 5.96) | 2.10 | (-2.42, 6.63) | 0.54 | (-5.92, 7.00) | 3.69 | (-2.84, 10.23) |
| <i>p trend</i> | | 0.03 | | 0.004 | | 0.80 | | 0.36 | | 0.88 | | 0.28 |

36 Concentrations of BDE99 and 209 in household dust were included simultaneously in the models.

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