

Table 1. Sample description (n=9,372)

	Missing values	% (n) or mean (SD)
Family characteristics		
Maternal age at delivery	0	30.8 (5.0)
Maternal 5-year university degree	358	17.5% (1,579)
Older children in household	0	
No older child		46.5% (4,358)
One older child		36.2% (3,396)
At least 2 older children		17.3% (1,618)
Maternal employment during pregnancy	3	73.7% (6,901)
Household income (€/month/consumption unit)	296	1642 (1063)
Residence in urban area	2	77.1% (7,225)
Smoking during pregnancy	120	
Never smoker		53.8% (4,978)
Smoker only before pregnancy		24.3% (2,252)
Smoker only in early pregnancy		4.2% (389)
Smoker throughout pregnancy		17.7% (1,633)
Maternal pre-pregnancy BMI (kg/m ²)	147	23.7 (5.0)
Fish consumption during pregnancy (times/week)	1,130	1.4 (2.6)
Dietary supplements with w3 during pregnancy	1,013	11.3% (941)
Child characteristics		
Boys	0	49% (4,588)
Gestational age (weeks)	150	39.1 (1.5)
Child birthweight	272	
SGA small weight for GA		10.1% (919)
AGA adequate weight for GA		80.1% (7293)
LGA large weight for GA		9.8% (888)
First physician consulted after hospital discharge	63	
Paediatrician		36.1% (3360)
Other child doctor ^a		13.5% (1253)
General practitioner		45.0% (4188)
Other (including emergency)		5.5% (508)
Maternal stimulation at 1 year	553	
Often		66.1% (5833)
Sometimes		32.0% (2826)
Rarely or never		1.8% (160)
Infant feeding		
Predominant breastfeeding duration (months)	4	0.4 (0.5)
LC-PUFA enrichment of infant formula consumed at 2 months	0	
Not enriched		62.5% (5,861)

DHA/ARA only		26.6% (2,496)
DHA/ARA and EPA		10.8% (1,015)
Trajectory of LC-PUFA enrichment from 2 to 10 months	2,290	
Never enriched		63.7% (4,510)
Enrichment up to 6 months		27.3% (1,935)
Enrichment from 2 to 10 months		9% (637)
Child neurodevelopment		
Exact age at 1 y follow-up (months)	351	13.0 (0.9)
CDI total score at age 1 year	392	36.8 (5.6)
Exact age at 2 y follow-up (months)	1,138	25.4 (1.1)
MacArthur-Bates Communicative Development Inventory score at age 2 year	1,410	71.6 (25.2)
Exact age at 3 y follow-up (months)	3,676	42.2 (1.9)
CDI total score at age 3 year	2,038	53.3 (5.3)
BAS percentile score at age 3 year	3,677	63.8 (29.3)

^aFrom maternity unit or from child and maternal protection centres

GA, gestational age; SGA, small for gestational age; AGA, average for gestational age; LGA, large for gestational age; LC-PUFA, long-chain polyunsaturated fatty acid; ARA, arachidonic acid; EPA, eicosapentaenoic acid; DHA, docosahexaenoic acid; CDI, Child Development Inventory; BAS, British Ability Scale

Table 2. Associations between consumption of LC-PUFA–enriched formula and child neurodevelopment up to 3.5 years (n=9,372).

	Child Development Inventory at 1 year	MacArthur Bates Communicative Development Inventory at 2 years	Child Development Inventory at 3.5 years	British Ability Scale at 3.5 years
2-month LC-PUFA enrichment				
Unadjusted analyses ¹	0.08	0.0008	0.2	0.4
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enriched	-0.20 [-0.43 ; 0.03]	1.81 [0.66 ; 2.96]	0.15 [-0.07 ; 0.37]	-0.02 [-1.92 ; 1.88]
Adjusted analyses ²	0.2	0.1	0.6	0.1
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enriched	-0.16 [-0.39 ; 0.07]	0.78 [-0.33 ; 1.89]	-0.05 [-0.27 ; 0.17]	-0.93 [-2.85 ; 0.98]
Weighted analyses ³	0.2	0.8	0.7	0.2
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enriched	-0.17 [-0.45 ; 0.11]	0.21 [-1.20 ; 1.63]	-0.01 [-0.29 ; 0.28]	-0.73 [-3.05 ; 1.60]
2-month LC-PUFA enrichment category				
Unadjusted analyses ¹	0.7	0.3	0.6	0.5
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
DHA/ARA only	0.01 [-0.25 ; 0.27]	0.92 [-0.31 ; 2.16]	-0.10 [-0.38 ; 0.18]	-0.03 [-1.81 ; 1.74]
DHA/ARA and EPA	-0.15 [-0.52 ; 0.22]	-0.14 [-1.86 ; 1.59]	-0.02 [-0.52 ; 0.47]	0.88 [-1.37 ; 3.12]
Adjusted analyses ²	0.6	0.4	0.4	0.5
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
DHA/ARA only	0.13 [-0.12 ; 0.38]	0.59 [-0.63 ; 1.81]	-0.14 [-0.41 ; 0.14]	-0.49 [-2.14 ; 1.15]
DHA/ARA and EPA	-0.05 [-0.40 ; 0.30]	-0.47 [-2.17 ; 1.24]	-0.08 [-0.56 ; 0.40]	0.32 [-1.96 ; 2.60]
Weighted analyses ³	0.7	0.6	0.4	0.4
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
DHA/ARA only	0.02 [-0.28 ; 0.32]	0.31 [-1.16 ; 1.78]	-0.16 [-0.49 ; 0.18]	-0.40 [-2.24 ; 1.44]
DHA/ARA and EPA	-0.14 [-0.55 ; 0.28]	-0.55 [-2.65 ; 1.55]	-0.12 [-0.69 ; 0.45]	1.26 [-1.90 ; 4.43]

2-to-10-month LC-PUFA enrichment

Unadjusted analyses ¹		0.3		0.3		0.3		0.4
Never enriched	0 [Ref]		0 [Ref]		0 [Ref]		0 [Ref]	
Enrichment up to 6 months	-0.10 [-0.37 ; 0.16]		0.54 [-0.71 ; 1.79]		-0.02 [-0.29 ; 0.24]		-0.62 [-2.40 ; 1.16]	
Enrichment from 2 to 10 months	-0.27 [-0.66 ; 0.11]		1.02 [-1.03 ; 3.07]		0.34 [-0.16 ; 0.84]		0.69 [-2.13 ; 3.52]	
Adjusted analyses ²		0.4		0.8		0.5		0.2
Never enriched	0 [Ref]		0 [Ref]		0 [Ref]		0 [Ref]	
Enrichment up to 6 months	-0.05 [-0.30 ; 0.21]		-0.05 [-1.24 ; 1.14]		-0.13 [-0.39 ; 0.14]		-1.11 [-2.88 ; 0.67]	
Enrichment from 2 to 10 months	-0.24 [-0.61 ; 0.14]		-0.42 [-2.29 ; 1.45]		0.09 [-0.37 ; 0.55]		-0.34 [-3.31 ; 2.64]	
Weighted analyses ³		0.7		0.6		0.4		0.5
Never enriched	0 [Ref]		0 [Ref]		0 [Ref]		0 [Ref]	
Enrichment up to 6 months	-0.03 [-0.34 ; 0.27]		-0.31 [-1.73 ; 1.10]		-0.11 [-0.47 ; 0.24]		-0.91 [-3.02 ; 1.20]	
Enrichment from 2 to 10 months	-0.15 [-0.58 ; 0.29]		-0.55 [-2.82 ; 1.72]		0.08 [-0.37 ; 0.53]		-0.24 [-3.56 ; 3.09]	

Data are estimates [95% confidence intervals] from ¹ simple linear regressions; ² linear regressions adjusted for familial characteristics (maternal age, education level, migration status, employment during pregnancy, smoking status, pre-pregnancy BMI, household income and, number of older children, rural/urban area and region of residence), maternal diet during pregnancy (fish intake, consumption of dietary supplements with LC-PUFA), infant characteristics (sex, gestational age, birth weight category, type of physician consulted after discharge), 2-month breastfeeding status, maternal stimulation and variables related to study design (maternity size and recruitment wave), as well as the child's exact age at neurodevelopmental assessment, except for the British Ability Scale; ³ linear regressions were adjusted for the same variables as the previous models, but applying weighting to take the inclusion procedure and biases related to non-consent and attrition into account.

Table 3. Adjusted associations between consumption of LC-PUFA–enriched formula and child neurodevelopment up to 3.5 years in specific subsamples.

	Child Development Inventory at 1 year	MacArthur Bates Communicative Development Inventory at 2 years	Child Development Inventory at 3.5 years	British Ability Scale at 3.5 years
Never-breastfed children (n=3,579)				
2-month LC-PUFA enrichment	0.6	0.4	0.2	0.05
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enriched	-0.08 [-0.48 ; 0.32]	0.70 [-1.07 ; 2.46]	-0.21 [-0.60 ; 0.18]	-1.89 [-4.90 ; 1.12]
2-month LC-PUFA enrichment category	0.3	0.5	0.3	0.4
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
DHA/ARA only	0.27 [-0.15 ; 0.69]	0.96 [-1.15 ; 3.06]	-0.19 [-0.71 ; 0.34]	-1.07 [-4.14 ; 2.01]
DHA/ARA and EPA	-0.11 [-0.70 ; 0.48]	-0.83 [-3.55 ; 1.89]	-0.33 [-1.04 ; 0.39]	-1.85 [-5.50 ; 1.81]
2-to-10-month LC-PUFA enrichment	0.9	0.8	0.2	0.04
Never enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enrichment up to 6 months	0.05 [-0.37 ; 0.48]	0.55 [-1.36 ; 2.45]	-0.30 [-0.77 ; 0.17]	-2.18 [-5.67 ; 1.32]
Enrichment from 2 to 10 months	0.13 [-0.60 ; 0.87]	0.30 [-2.74 ; 3.35]	0.23 [-0.47 ; 0.93]	1.10 [-4.38 ; 6.59]
Children consuming the same formula from birth or breastfeeding cessation to 2 months (n=4,892)				
2-month LC-PUFA enrichment	0.9	0.03	0.6	0.4
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enriched	0.00 [-0.31 ; 0.32]	1.55 [0.00 ; 3.09]	0.12 [-0.21 ; 0.44]	-0.75 [-3.06 ; 1.57]
2-month LC-PUFA enrichment category	0.1	0.1	0.7	0.7
Not enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
DHA/ARA only	0.30 [-0.05 ; 0.65]	1.29 [-0.33 ; 2.92]	0.09 [-0.28 ; 0.45]	-0.02 [-2.47 ; 2.42]
DHA/ARA and EPA	-0.18 [-0.64 ; 0.27]	-0.84 [-3.12 ; 1.45]	-0.12 [-0.74 ; 0.50]	-0.72 [-4.23 ; 2.78]
2-to-10-month LC-PUFA enrichment	0.6	0.8	0.7	0.6

Never enriched	0 [Ref]	0 [Ref]	0 [Ref]	0 [Ref]
Enrichment up to 6 months	0.04 [-0.34 ; 0.43]	0.62 [-1.08 ; 2.31]	0.00 [-0.37 ; 0.37]	-0.61 [-2.86 ; 1.65]
Enrichment from 2 to 10 months	-0.26 [-0.73 ; 0.21]	0.53 [-1.83 ; 2.90]	0.20 [-0.37 ; 0.76]	0.01 [-3.54 ; 3.56]

Data are estimates [95% confidence intervals] from linear regressions adjusted for familial characteristics (maternal age, education level, migration status, employment during pregnancy, smoking status, pre-pregnancy BMI, household income and, number of older children, rural/urban area and region of residence), maternal diet during pregnancy (fish intake, consumption of dietary supplements with LC-PUFA), infant characteristics (sex, gestational age, birth weight category, type of physician consulted after discharge), 2-month breastfeeding status, maternal stimulation and variables related to study design (maternity size and recruitment wave), as well as the child's exact age at neurodevelopmental assessment, except for the British Ability Scale.