

Supplementary table 1: Weighted mean (SD)* of metabolite measures in children and parents.

Metabolic subgroup	Children								Adults									
	Male			Female			All		Male			Female			All			
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD
Lipoprotein subclass lipids																		
Total lipids in chylomicrons & ex.large VLDL (mmol/L)*	575	0.005	4.826	605	0.011	3.260	1180	0.007	4.054	177	0.040	2.101	1148	0.013	2.822	1325	0.015	2.777
Total lipids in very large VLDL (mmol/L)*	575	0.006	6.246	605	0.014	4.800	1180	0.010	5.521	177	0.087	2.419	1148	0.022	3.458	1325	0.027	3.398
Total lipids in large VLDL (mmol/L)*	575	0.059	3.945	605	0.121	2.488	1180	0.085	3.234	177	0.423	1.287	1148	0.161	1.666	1325	0.182	1.665
Total lipids in medium VLDL (mmol/L)	575	0.441	0.270	605	0.478	0.272	1180	0.460	0.271	177	0.959	0.630	1148	0.548	0.366	1325	0.602	0.432
Total lipids in small VLDL (mmol/L)	575	0.381	0.153	605	0.405	0.146	1180	0.393	0.149	177	0.690	0.279	1148	0.494	0.216	1325	0.520	0.234
Total lipids in very small VLDL (mmol/L)	575	0.325	0.070	605	0.342	0.076	1180	0.334	0.073	177	0.451	0.111	1148	0.426	0.110	1325	0.429	0.110
Total lipids in IDL (mmol/L)	575	0.804	0.176	605	0.834	0.183	1180	0.819	0.180	177	0.985	0.261	1148	0.999	0.240	1325	0.997	0.242
Total lipids in large LDL (mmol/L)	575	0.917	0.220	605	0.941	0.228	1180	0.929	0.224	177	1.162	0.327	1148	1.155	0.298	1325	1.156	0.301
Total lipids in medium LDL (mmol/L)	575	0.511	0.136	605	0.519	0.140	1180	0.515	0.138	177	0.676	0.214	1148	0.655	0.185	1325	0.658	0.189
Total lipids in small LDL (mmol/L)	575	0.338	0.083	605	0.340	0.087	1180	0.339	0.085	177	0.439	0.135	1148	0.425	0.114	1325	0.427	0.117
Total lipids in very large HDL (mmol/L)	575	0.482	0.196	605	0.495	0.184	1180	0.488	0.189	177	0.320	0.189	1148	0.497	0.229	1325	0.474	0.232
Total lipids in large HDL (mmol/L)	575	0.874	0.291	605	0.859	0.275	1180	0.866	0.282	177	0.509	0.335	1148	0.900	0.382	1325	0.849	0.399
Total lipids in medium HDL (mmol/L)	575	0.917	0.127	605	0.871	0.126	1180	0.894	0.128	177	0.828	0.241	1148	0.971	0.175	1325	0.952	0.191
Total lipids in small HDL (mmol/L)	575	1.039	0.103	605	0.997	0.115	1180	1.018	0.111	177	1.055	0.254	1148	1.085	0.138	1325	1.081	0.157
Lipoprotein particle size																		
Mean diameter for VLDL particles (nm)	575	37.063	1.633	605	37.238	1.557	1180	37.152	1.591	177	38.527	1.737	1148	36.943	1.599	1325	37.152	1.701
Mean diameter for LDL particles (nm)	575	23.587	0.103	605	23.628	0.109	1180	23.608	0.107	177	23.487	0.093	1148	23.573	0.100	1325	23.562	0.104
Mean diameter for HDL particles (nm)	575	10.081	0.233	605	10.102	0.221	1180	10.092	0.226	177	9.798	0.244	1148	10.068	0.262	1325	10.032	0.275
Cholesterol																		
Serum total cholesterol (mmol/L)	575	3.576	0.620	605	3.596	0.643	1180	3.586	0.629	177	4.161	0.885	1148	4.234	0.828	1325	4.225	0.835
Total cholesterol in VLDL (mmol/L)*	575	0.438	0.188	605	0.472	0.189	1180	0.455	0.189	177	0.826	0.395	1148	0.592	0.265	1325	0.623	0.295
Remnant cholesterol (nonHDL, nonLDL cholesterol) (mmol/L)*	575	0.944	0.269	605	0.994	0.271	1180	0.970	0.270	177	1.452	0.472	1148	1.219	0.383	1325	1.250	0.402
Total cholesterol in LDL (mmol/L)	575	1.130	0.330	605	1.149	0.341	1180	1.139	0.334	177	1.492	0.498	1148	1.460	0.442	1325	1.464	0.449
Total cholesterol in HDL (mmol/L)	575	1.503	0.274	605	1.453	0.266	1180	1.477	0.270	177	1.217	0.350	1148	1.556	0.363	1325	1.511	0.379
Total cholesterol in HDL2 (mmol/L)	575	1.035	0.254	605	0.988	0.246	1180	1.011	0.250	177	0.751	0.327	1148	1.072	0.335	1325	1.030	0.351
Total cholesterol in HDL3 (mmol/L)	575	0.468	0.024	605	0.466	0.024	1180	0.467	0.024	177	0.466	0.035	1148	0.483	0.033	1325	0.481	0.034
Esterified cholesterol (mmol/L)	572	2.516	0.447	604	2.517	0.460	1176	2.517	0.452	176	2.941	0.636	1147	2.975	0.593	1323	2.971	0.597
Free cholesterol (mmol/L)	572	1.062	0.179	604	1.079	0.186	1176	1.070	0.182	176	1.211	0.273	1147	1.260	0.239	1323	1.253	0.244
Glycerides and phospholipids																		
Serum total triglycerides (mmol/L)*	575	0.918	0.709	605	1.005	0.681	1180	0.962	0.696	177	1.686	0.809	1148	1.129	0.755	1325	1.190	0.782
Triglycerides in VLDL (mmol/L)*	575	0.582	0.885	605	0.648	0.830	1180	0.615	0.858	177	1.249	0.927	1148	0.694	0.945	1325	0.750	0.972
Triglycerides in LDL (mmol/L)	575	0.113	0.024	605	0.123	0.027	1180	0.118	0.026	177	0.153	0.040	1148	0.158	0.044	1325	0.157	0.043
Triglycerides in HDL (mmol/L)	575	0.129	0.030	605	0.136	0.030	1180	0.133	0.030	177	0.161	0.047	1148	0.151	0.040	1325	0.153	0.041
Total phosphoglycerides (mmol/L)	572	1.632	0.240	604	1.620	0.261	1176	1.626	0.250	176	1.865	0.354	1147	1.926	0.340	1323	1.918	0.342
Ratio of triglycerides to phosphoglycerides	572	0.526	0.253	604	0.569	0.277	1176	0.548	0.265	176	0.946	0.587	1147	0.580	0.279	1323	0.628	0.355
Phosphatidylcholine & other cholines (mmol/L)	572	1.691	0.240	604	1.687	0.267	1176	1.689	0.253	175	1.877	0.320	1147	1.978	0.336	1322	1.965	0.335
Sphingomyelins (mmol/L)	572	0.348	0.061	604	0.349	0.064	1176	0.348	0.062	175	0.370	0.070	1147	0.397	0.078	1322	0.394	0.077
Total cholines (mmol/L)	572	2.005	0.256	604	1.997	0.264	1176	2.001	0.259	175	2.185	0.334	1147	2.317	0.351	1322	2.299	0.351
Apolipoproteins																		
Apolipoprotein A1 (g/L)	575	1.509	0.159	605	1.484	0.151	1180	1.497	0.155	177	1.461	0.178	1148	1.589	0.205	1325	1.572	0.206
Apolipoprotein B (g/L)	575	0.682	0.135	604	0.706	0.136	1179	0.694	0.135	177	0.955	0.245	1148	0.812	0.196	1325	0.831	0.208
Ratio of apolipoprotein B to apolipoprotein A	575	0.455	0.097	604	0.479	0.098	1179	0.467	0.098	177	0.660	0.178	1148	0.518	0.136	1325	0.537	0.150
Fatty acids																		
Total fatty acids (mmol/L)	570	9.215	1.697	604	9.370	1.730	1174	9.294	1.709	173	11.850	2.723	1145	10.917	2.392	1318	11.034	2.446
Estimated degree of unsaturation	570	1.212	0.056	604	1.196	0.065	1174	1.204	0.061	173	1.179	0.070	1145	1.212	0.066	1318	1.208	0.068
22:6, docosahexaenoic acid (mmol/L)	570	0.078	0.028	604	0.074	0.029	1174	0.076	0.028	173	0.118	0.051	1145	0.111	0.039	1318	0.112	0.041
18:2, linoleic acid (mmol/L)	570	2.539	0.456	604	2.592	0.464	1174	2.566	0.459	173	2.919	0.567	1145	2.880	0.584	1318	2.885	0.580
Omega3 fatty acids (mmol/L)	570	0.309	0.086	604	0.296	0.083	1174	0.302	0.085	173	0.451	0.160	1145	0.400	0.117	1318	0.406	0.124
Omega6 fatty acids (mmol/L)	570	3.077	0.493	604	3.094	0.492	1174	3.086	0.491	173	3.553	0.648	1145	3.507	0.627	1318	3.513	0.628
Polyunsat. fatty acids (mmol/L)	570	3.386	0.565	604	3.390	0.561	1174	3.388	0.560	173	4.004	0.775	1145	3.907	0.721	1318	3.919	0.726
Monounsat. fatty acids; 16:1, 18:1 (mmol/L)	570	2.500	0.632	604	2.587	0.661	1174	2.544	0.646	173	3.520	1.058	1145	3.080	0.917	1318	3.135	0.943
Saturated fatty acids (mmol/L)	570	3.328	0.642	604	3.393	0.682	1174	3.362	0.661	173	4.325	1.088	1145	3.930	0.932	1318	3.979	0.958

Fatty acid ratios																				
Ratio of 22:6 docosahexaenoic acid to total fatty acids (%)'	570	0.841	0.239	604	0.790	0.269	1174	0.815	0.255	173	0.984	0.315	1145	1.023	0.284	1318	1.018	0.287		
Ratio of 18:2 linoleic acid to total fatty acids (%)'	570	27.741	3.127	604	27.867	3.274	1174	27.805	3.191	173	25.038	3.570	1145	26.656	3.417	1318	26.453	3.467		
Ratio of omega3 fatty acids to total fatty acids (%)	570	3.329	0.579	604	3.150	0.600	1174	3.238	0.594	173	3.763	0.799	1145	3.659	0.697	1318	3.672	0.709		
Ratio of omega6 fatty acids to total fatty acids (%)	570	33.650	3.047	604	33.308	3.228	1174	33.475	3.133	173	30.468	3.757	1145	32.502	3.311	1318	32.247	3.424		
Ratio of polyunsat. fatty acids to total fatty acids (%)	570	36.979	3.235	604	36.459	3.514	1174	36.713	3.377	173	34.231	3.878	1145	36.161	3.588	1318	35.918	3.669		
Ratio of monounsat. fatty acids to total fatty acids (%)	570	26.911	2.569	604	27.375	2.678	1174	27.148	2.625	173	29.366	2.968	1145	27.889	2.842	1318	28.075	2.891		
Ratio of saturated fatty acids to total fatty acids (%)	570	36.110	1.675	604	36.167	1.802	1174	36.139	1.734	173	36.402	2.027	1145	35.950	2.032	1318	36.007	2.031		
Glycolysis related																				
Glucose (mmol/L)*	574	1.350	0.115	605	1.336	0.105	1179	1.342	0.11	176	1.415	0.205	1148	1.334	0.176	1324	1.344	0.182		
Lactate (mmol/L)	575	1.770	0.459	605	1.718	0.434	1180	1.743	0.446	177	1.696	0.472	1148	1.562	0.480	1325	1.580	0.480		
Pyruvate (mmol/L)	574	0.100	0.024	605	0.098	0.023	1179	0.099	0.023	177	0.101	0.031	1147	0.093	0.034	1324	0.094	0.033		
Citrate (nmol/L)	575	0.125	0.017	604	0.131	0.018	1179	0.128	0.018	177	0.110	0.016	1148	0.111	0.016	1325	0.111	0.016		
Glycerol (mmol/L)†	240	0.078	0.021	283	0.083	0.022	523	0.081	0.021	84	0.073	0.021	470	0.071	0.023	554	0.071	0.023		
Amino acids																				
Alanine (mmol/L)	575	0.387	0.061	605	0.396	0.060	1180	0.391	0.060	176	0.423	0.065	1147	0.399	0.060	1323	0.402	0.061		
Glutamine (mmol/L)	575	0.474	0.050	605	0.497	0.051	1180	0.485	0.051	177	0.490	0.063	1148	0.456	0.066	1325	0.461	0.066		
Glycine (mmol/L)	574	0.261	0.032	604	0.270	0.034	1178	0.265	0.033	176	0.243	0.029	1148	0.274	0.061	1324	0.270	0.059		
Histidine (mmol/L)	574	0.065	0.009	605	0.065	0.008	1179	0.065	0.008	176	0.066	0.008	1148	0.065	0.009	1324	0.065	0.009		
Isoleucine (mmol/L)	574	0.054	0.019	605	0.053	0.019	1179	0.054	0.019	174	0.072	0.021	1146	0.055	0.020	1320	0.057	0.021		
Leucine (mmol/L)	575	0.073	0.019	605	0.071	0.019	1180	0.072	0.019	177	0.097	0.029	1148	0.074	0.021	1325	0.077	0.023		
Valine (mmol/L)	575	0.162	0.037	604	0.156	0.035	1179	0.159	0.036	177	0.192	0.036	1147	0.162	0.042	1324	0.166	0.042		
Phenylalanine (mmol/L)	575	0.068	0.009	605	0.066	0.009	1180	0.067	0.009	177	0.073	0.011	1148	0.072	0.011	1325	0.073	0.011		
Tyrosine (mmol/L)	574	0.054	0.014	605	0.055	0.014	1179	0.055	0.014	176	0.060	0.013	1148	0.054	0.015	1324	0.055	0.015		
Ketone bodies																				
Acetate (mmol/L)*	575	0.031	0.423	605	0.030	0.404	1180	0.030	0.413	177	0.037	0.655	1146	0.033	0.600	1323	0.034	0.609		
Acetoacetate (mmol/L)*	575	0.025	1.310	605	0.023	1.429	1180	0.024	1.367	177	0.023	2.116	1147	0.024	1.278	1324	0.024	1.403		
3hydroxybutyrate (mmol/L)*#	555	0.100	0.786	580	0.103	0.826	1135	0.101	0.805	170	0.104	0.669	1098	0.096	0.781	1268	0.097	0.769		
Fluid balance																				
Albumin (signal area)	574	0.093	0.005	605	0.092	0.005	1179	0.093	0.005	177	0.090	0.005	1148	0.088	0.005	1325	0.089	0.005		
Creatinine (mmol/L)	570	0.040	0.006	600	0.040	0.006	1170	0.040	0.006	173	0.066	0.015	1139	0.054	0.009	1312	0.055	0.010		
Inflammation																				
Glycoprotein acetyls, mainly α1acid glycoprotein (mmol/L)	575	1.170	0.191	605	1.173	0.186	1180	1.172	0.188	177	1.375	0.366	1148	1.242	0.233	1325	1.260	0.258		

* geometric mean [relative SD] when skewed variable

Note: The presence of ethanol in a sample can affect quantification of glycerol and on some occasions 3hydroxybutyrate.

Ethanol can be introduced to a sample from disinfectants used during blood collection/processing of sample.

Supplementary table 2: Mean difference in metabolite levels in adults compared to children in absolute concentration unit

Metabolic subgroup	Differences by age (Adults - Child)				
	Estimate	95% CI	P-value	Adj_p-value^	Conversion factor (SD) #
Lipoprotein subclass lipids					
Total lipids in chylomicrons & ex.large VLDL (mmol/L)*	0.704	(0.519, 0.890)	<0.001	<0.001	2.534
Total lipids in very large VLDL (mmol/L)*	0.922	(0.700, 1.145)	<0.001	<0.001	3.031
Total lipids in large VLDL (mmol/L)*	0.648	(0.502, 0.795)	<0.001	<0.001	1.950
Total lipids in medium VLDL (mmol/L)	0.105	(0.080, 0.129)	<0.001	<0.001	0.348
Total lipids in small VLDL (mmol/L)	0.107	(0.094, 0.121)	<0.001	<0.001	0.199
Total lipids in very small VLDL (mmol/L)	0.093	(0.086, 0.099)	<0.001	<0.001	0.104
Total lipids in IDL (mmol/L)	0.181	(0.166, 0.196)	<0.001	<0.001	0.230
Total lipids in large LDL (mmol/L)	0.229	(0.211, 0.247)	<0.001	<0.001	0.286
Total lipids in medium LDL (mmol/L)	0.144	(0.132, 0.155)	<0.001	<0.001	0.178
Total lipids in small LDL (mmol/L)	0.089	(0.082, 0.096)	<0.001	<0.001	0.110
Total lipids in very large HDL (mmol/L)	0.012	(-0.003, 0.027)	0.128	0.132	0.217
Total lipids in large HDL (mmol/L)	0.032	(0.007, 0.057)	0.011	0.012	0.353
Total lipids in medium HDL (mmol/L)	0.076	(0.064, 0.089)	<0.001	<0.001	0.166
Total lipids in small HDL (mmol/L)	0.068	(0.058, 0.078)	<0.001	<0.001	0.137
Lipoprotein particle size					
Mean diameter for VLDL particles (nm)	-0.147	(-0.263, -0.031)	0.013	0.014	1.633
Mean diameter for LDL particles (nm)	-0.044	(-0.052, -0.037)	<0.001	<0.001	0.106
Mean diameter for HDL particles (nm)	-0.027	(-0.045, -0.010)	0.002	0.003	0.256
Cholesterol					
Serum total cholesterol (mmol/L)	0.670	(0.619, 0.721)	<0.001	<0.001	0.805
Total cholesterol in VLDL (mmol/L)	0.146	(0.129, 0.163)	<0.001	<0.001	0.249
Remnant cholesterol (nonHDL, nonLDL cholesterol) (mmol/L)	0.261	(0.237, 0.284)	<0.001	<0.001	0.357
Total cholesterol in LDL (mmol/L)	0.327	(0.300, 0.354)	<0.001	<0.001	0.424
Total cholesterol in HDL (mmol/L)	0.082	(0.058, 0.106)	<0.001	<0.001	0.337
Total cholesterol in HDL2 (mmol/L)	0.064	(0.042, 0.086)	<0.001	<0.001	0.311
Total cholesterol in HDL3 (mmol/L)	0.018	(0.016, 0.020)	<0.001	<0.001	0.031
Esterified cholesterol (mmol/L)	0.474	(0.437, 0.511)	<0.001	<0.001	0.576
Free cholesterol (mmol/L)	0.195	(0.180, 0.210)	<0.001	<0.001	0.234
Glycerides and phospholipids					
Serum total triglycerides (mmol/L)*	0.176	(0.145, 0.206)	<0.001	<0.001	0.443
Triglycerides in VLDL (mmol/L)*	0.140	(0.096, 0.183)	<0.001	<0.001	0.615
Triglycerides in LDL (mmol/L)	0.040	(0.038, 0.043)	<0.001	<0.001	0.042
Triglycerides in HDL (mmol/L)	0.020	(0.017, 0.022)	<0.001	<0.001	0.037
Total phosphoglycerides (mmol/L)	0.311	(0.290, 0.332)	<0.001	<0.001	0.337
Ratio of triglycerides to phosphoglycerides	0.049	(0.027, 0.071)	<0.001	<0.001	0.299
Phosphatidylcholine & other cholines (mmol/L)	0.295	(0.274, 0.316)	<0.001	<0.001	0.329
Sphingomyelins (mmol/L)	0.052	(0.047, 0.057)	<0.001	<0.001	0.075
Total cholines (mmol/L)	0.323	(0.302, 0.345)	<0.001	<0.001	0.347
Apolipoproteins					
Apolipoprotein A1 (g/L)	0.099	(0.086, 0.112)	<0.001	<0.001	0.191
Apolipoprotein B (g/L)	0.125	(0.113, 0.137)	<0.001	<0.001	0.182
Ratio of apolipoprotein B to apolipoprotein A1	0.055	(0.046, 0.064)	<0.001	<0.001	0.127
Fatty acids					
Total fatty acids (mmol/L)	1.738	(1.592, 1.885)	<0.001	<0.001	2.245
Estimated degree of unsaturation	0.005	(0.000, 0.009)	0.030	0.031	0.063
22:6, docosahexaenoic acid (mmol/L)	0.037	(0.035, 0.040)	<0.001	<0.001	0.040
18:2, linoleic acid (mmol/L)	0.347	(0.310, 0.384)	<0.001	<0.001	0.545
Omega3 fatty acids (mmol/L)	0.105	(0.098, 0.113)	<0.001	<0.001	0.118
Omega6 fatty acids (mmol/L)	0.453	(0.414, 0.492)	<0.001	<0.001	0.597
Polyunsat. fatty acids (mmol/L)	0.558	(0.513, 0.603)	<0.001	<0.001	0.695
Monounsat. fatty acids; 16:1, 18:1 (mmol/L)	0.568	(0.512, 0.625)	<0.001	<0.001	0.850
Saturated fatty acids (mmol/L)	0.612	(0.554, 0.669)	<0.001	<0.001	0.862

Fatty acid ratios					
Ratio of 22:6 docosahexaenoic acid to total fatty acids (%)	0.209	(0.190, 0.228)	<0.001	<0.001	0.292
Ratio of 18:2 linoleic acid to total fatty acids (%)	-1.079	(-1.331, -0.827)	<0.001	<0.001	3.387
Ratio of omega3 fatty acids to total fatty acids (%)	0.446	(0.403, 0.490)	<0.001	<0.001	0.693
Ratio of omega6 fatty acids to total fatty acids (%)	-0.992	(-1.227, -0.757)	<0.001	<0.001	3.296
Ratio of polyunsat. fatty acids to total fatty acids (%)	-0.546	(-0.794, -0.298)	<0.001	<0.001	3.507
Ratio of monounsat. fatty acids to total fatty acids (%)	0.741	(0.547, 0.934)	<0.001	<0.001	2.797
Ratio of saturated fatty acids to total fatty acids (%) ^a	-0.195	(-0.328, -0.062)	0.004	0.005	1.863
Glycolysis related					
Glucose (mmol/L)*	-0.002	(-0.014, 0.009)	0.700	0.709	0.147
Lactate (mmol/L)	-0.180	(-0.215, -0.144)	<0.001	<0.001	0.471
Pyruvate (mmol/L)	-0.007	(-0.009, -0.005)	<0.001	<0.001	0.029
Citrate (mmol/L)	-0.017	(-0.018, -0.016)	<0.001	<0.001	0.019
Glycerol (mmol/L)	-0.011	(-0.015, -0.008)	<0.001	<0.001	0.023
Amino acids					
Alanine (mmol/L)	0.013	(0.009, 0.017)	<0.001	<0.001	0.060
Glutamine (mmol/L)	-0.023	(-0.027, -0.019)	<0.001	<0.001	0.060
Glycine (mmol/L)	0.007	(0.003, 0.010)	<0.001	<0.001	0.049
Histidine (mmol/L)	0.001	(0.000, 0.002)	0.005	0.006	0.009
Isoleucine (mmol/L)	0.003	(0.002, 0.004)	<0.001	<0.001	0.019
Leucine (mmol/L)	0.004	(0.003, 0.006)	<0.001	<0.001	0.021
Valine (mmol/L)	0.009	(0.006, 0.011)	<0.001	<0.001	0.039
Phenylalanine (mmol/L)	0.005	(0.005, 0.006)	<0.001	<0.001	0.010
Tyrosine (mmol/L)	0.001	(-0.000, 0.002)	0.100	0.105	0.014
Ketone bodies					
Acetate (mmol/L)*	0.101	(0.084, 0.117)	<0.001	<0.001	0.235
Acetoacetate (mmol/L)*	-0.004	(-0.086, 0.078)	0.922	0.922	1.022
3hydroxybutyrate (mmol/L)*	-0.064	(-0.100, -0.028)	0.001	0.001	0.493
Fluid balance					
Albumin (signal area)	-0.004	(-0.004, -0.004)	<0.001	<0.001	0.005
Creatinine (mmol/L)	0.016	(0.015, 0.017)	<0.001	0.001	0.012
Inflammation					
Glycoprotein acetyls, mainly α1acid glycoprotein (mmol/L)	0.062	(0.047, 0.078)	<0.001	<0.001	0.217

* Metabolite has been log transformed

^ Benjamini-Hochberg adjusted p-value

Associations in Figure 2 are presented in SD-units. The conversion factor provided (unweighted standard deviation of each metabolite measure) can be used to convert the association in absolute concentration to SD units by dividing by the conversion factor. Where metabolite has been log transformed conversion factor is standard deviation of log transformed metabolite

Supplementary table 3: Differences in mean metabolite levels in girls compared to boys in absolute concentration units.

Metabolic subgroup	Differences for children (Female - Male)				
	Estimate	95% CI	pvalue	Adj_p-value^	Conversion factor (SD) #
Lipoprotein subclass lipids					
Total lipids in chylomicrons & ex.large VLDL (mmol/L)*	0.737	(0.414, 1.059)	<0.001	<0.001	2.845
Total lipids in very large VLDL (mmol/L)*	0.744	(0.355, 1.134)	<0.001	0.001	3.428
Total lipids in large VLDL (mmol/L)*	0.663	(0.390, 0.936)	<0.001	<0.001	2.411
Total lipids in medium VLDL (mmol/L)	0.049	(0.018, 0.080)	0.002	0.004	0.269
Total lipids in small VLDL (mmol/L)	0.032	(0.015, 0.048)	<0.001	0.001	0.146
Total lipids in very small VLDL (mmol/L)	0.018	(0.010, 0.027)	<0.001	<0.001	0.074
Total lipids in IDL (mmol/L)	0.025	(0.004, 0.046)	0.017	0.035	0.182
Total lipids in large LDL (mmol/L)	0.020	(-0.006, 0.046)	0.132	0.187	0.227
Total lipids in medium LDL (mmol/L)	0.008	(-0.008, 0.024)	0.338	0.416	0.139
Total lipids in small LDL (mmol/L)	0.001	(-0.008, 0.011)	0.788	0.822	0.086
Total lipids in very large HDL (mmol/L)	-0.002	(-0.023, 0.020)	0.882	0.882	0.190
Total lipids in large HDL (mmol/L)	-0.033	(-0.066, -0.001)	0.044	0.074	0.283
Total lipids in medium HDL (mmol/L)	-0.045	(-0.059, -0.030)	<0.001	<0.001	0.131
Total lipids in small HDL (mmol/L)	-0.035	(-0.048, -0.022)	<0.001	<0.001	0.116
Lipoprotein particle size					
Mean diameter for VLDL particles (nm)	0.215	(0.035, 0.395)	0.019	0.038	1.580
Mean diameter for LDL particles (nm)	0.035	(0.023, 0.047)	<0.001	0.000	0.108
Mean diameter for HDL particles (nm)	0.003	(-0.023, 0.028)	0.847	0.870	0.226
Cholesterol					
Serum total cholesterol (mmol/L)	0.007	(-0.066, 0.079)	0.857	0.869	0.634
Total cholesterol in VLDL (mmol/L)	0.040	(0.019, 0.061)	<0.001	0.001	0.184
Remnant cholesterol (nonHDL, nonLDL cholesterol) (mmol/L)	0.053	(0.023, 0.083)	0.001	0.002	0.265
Total cholesterol in LDL (mmol/L)	0.016	(-0.023, 0.054)	0.427	0.518	0.336
Total cholesterol in HDL (mmol/L)	-0.062	(-0.093, -0.031)	<0.001	<0.001	0.273
Total cholesterol in HDL2 (mmol/L)	-0.059	(-0.087, -0.030)	<0.001	<0.001	0.253
Total cholesterol in HDL3 (mmol/L)	-0.003	(-0.006, -0.001)	0.013	0.027	0.024
Esterified cholesterol (mmol/L)	-0.008	(-0.060, 0.044)	0.755	0.798	0.455
Free cholesterol (mmol/L)	0.013	(-0.008, 0.034)	0.211	0.284	0.184
Glycerides and phospholipids					
Serum total triglycerides (mmol/L)*	0.101	(0.056, 0.145)	<0.001	<0.001	0.390
Triglycerides in VLDL (mmol/L)*	0.125	(0.062, 0.187)	<0.001	<0.001	0.551
Triglycerides in LDL (mmol/L)	0.009	(0.006, 0.012)	<0.001	<0.001	0.026
Triglycerides in HDL (mmol/L)	0.007	(0.004, 0.011)	<0.001	<0.001	0.029
Total phosphoglycerides (mmol/L)	-0.018	(-0.047, 0.010)	0.206	0.282	0.249
Ratio of triglycerides to phosphoglycerides	0.051	(0.020, 0.083)	0.001	0.003	0.274
Phosphatidylcholine & other cholines (mmol/L)	-0.011	(-0.040, 0.018)	0.447	0.534	0.251
Sphingomyelins (mmol/L)	-0.001	(-0.009, 0.006)	0.706	0.757	0.063
Total cholines (mmol/L)	-0.017	(-0.046, 0.013)	0.268	0.354	0.257
Apolipoproteins					
Apolipoprotein A1 (g/L)	-0.030	(-0.048, -0.013)	0.001	0.002	0.155
Apolipoprotein B (g/L)	0.027	(0.012, 0.042)	0.001	0.002	0.133
Ratio of apolipoprotein B to apolipoprotein A1	0.027	(0.016, 0.038)	<0.001	<0.001	0.098
Fatty acids					
Total fatty acids (mmol/L)	0.200	(0.011, 0.389)	0.038	0.065	1.650
Estimated degree of unsaturation	-0.016	(-0.022, -0.009)	<0.001	<0.001	0.060
22:6, docosahexaenoic acid (mmol/L)	-0.004	(-0.007, -0.000)	0.033	0.059	0.028
18:2, linoleic acid (mmol/L)	0.068	(0.015, 0.120)	0.011	0.024	0.458
Omega3 fatty acids (mmol/L)	-0.008	(-0.018, 0.001)	0.083	0.128	0.084
Omega6 fatty acids (mmol/L)	0.031	(-0.024, 0.087)	0.271	0.352	0.485
Polyunsat. fatty acids (mmol/L)	0.023	(-0.041, 0.086)	0.483	0.567	0.553
Monounsat. fatty acids; 16:1, 18:1 (mmol/L)	0.105	(0.034, 0.176)	0.004	0.009	0.623
Saturated fatty acids (mmol/L)	0.073	(-0.000, 0.146)	0.052	0.085	0.638
Fatty acid ratios					
Ratio of 22:6 docosahexaenoic acid to total fatty acids (%)	-0.049	(-0.078, -0.019)	0.001	0.003	0.255
Ratio of 18:2 linoleic acid to total fatty acids (%)	0.197	(-0.173, 0.567)	0.297	0.379	3.233
Ratio of omega3 fatty acids to total fatty acids (%)	-0.145	(-0.213, -0.078)	<0.001	0.000	0.593
Ratio of omega6 fatty acids to total fatty acids (%)	-0.302	(-0.658, 0.054)	0.096	0.142	3.109
Ratio of polyunsat. fatty acids to total fatty acids (%)	-0.447	(-0.830, -0.065)	0.022	0.042	3.346
Ratio of monounsat. fatty acids to total fatty acids (%)	0.499	(0.202, 0.796)	0.001	0.003	2.606
Ratio of saturated fatty acids to total fatty acids (%)	-0.051	(-0.251, 0.148)	0.614	0.689	1.743
Glycolysis related					
Glucose (mmol/L)*	-0.013	(-0.026, 0.001)	0.061	0.098	0.118
Lactate (mmol/L)	-0.045	(-0.097, 0.007)	0.088	0.133	0.456
Pyruvate (mmol/L)	-0.001	(-0.004, 0.002)	0.524	0.606	0.024
Citrate (mmol/L)	0.007	(0.005, 0.009)	<0.001	<0.001	0.018
Glycerol (mmol/L)	0.006	(0.002, 0.010)	0.004	0.009	0.023
Amino acids					
Alanine (mmol/L)	0.011	(0.004, 0.017)	0.002	0.004	0.058
Glutamine (mmol/L)	0.023	(0.018, 0.029)	<0.001	<0.001	0.051
Glycine (mmol/L)	0.010	(0.006, 0.014)	<0.001	<0.001	0.032
Histidine (mmol/L)	0.001	(-0.000, 0.002)	0.075	0.118	0.008
Isoleucine (mmol/L)	0.000	(-0.003, 0.002)	0.637	0.693	0.018

Leucine (mmol/L)	-0.002	(-0.005, -0.000)	0.022	0.041	0.018
Valine (mmol/L)	-0.007	(-0.011, -0.003)	0.001	0.003	0.036
Phenylalanine (mmol/L)	-0.002	(-0.003, -0.001)	0.003	0.007	0.009
Tyrosine (mmol/L)	0.000	(-0.001, 0.002)	0.582	0.663	0.014
Ketone bodies					
Acetate (mmol/L)*	-0.030	(-0.048, -0.011)	0.002	0.005	0.166
Acetoacetate (mmol/L)*	-0.058	(-0.172, 0.055)	0.313	0.393	0.992
3hydroxybutyrate (mmol/L)*	0.041	(-0.019, 0.101)	0.178	0.248	0.513
Fluid balance					
Albumin (signal area)	-0.001	(-0.001, -0.000)	0.037	0.064	0.005
Creatinine (mmol/L)	0.000	(-0.001, 0.001)	0.624	0.690	0.007
Inflammation					
Glycoprotein acetyls, mainly a1acid glycoprotein (mmol/L)	0.017	(-0.004, 0.038)	0.104	0.151	0.183

* Metabolite has been log transformed

^ Benjamini-Hochberg adjusted p-value

Associations for children in Figure 3 are presented in SD-units. The conversion factor provided (unweighted standard deviation of each metabolite measure in children) can be used to convert the association in absolute concentration to SD units by dividing by the conversion factor.

Where metabolite has been log transformed conversion factor is standard deviation of log transformed metabolite

Supplementary table 4: Differences in mean metabolite levels in female compared to male adults in absolute concentration units.

Metabolic subgroup	Differences for adults (Female - Male)				
	Estimate	95% CI	pvalue	Adj_p-value^	Conversion factor (SD) #
Lipoprotein subclass lipids					
Total lipids in chylomicrons & ex.large VLDL (mmol/L)*	-0.930	(-1.271, -0.589)	<0.001	<0.001	2.173
Total lipids in very large VLDL (mmol/L)*	-1.217	(-1.617, -0.818)	<0.001	<0.001	2.555
Total lipids in large VLDL (mmol/L)*	-0.900	(-1.107, -0.693)	<0.001	<0.001	1.343
Total lipids in medium VLDL (mmol/L)	-0.325	(-0.385, -0.264)	<0.001	<0.001	0.398
Total lipids in small VLDL (mmol/L)	-0.167	(-0.201, -0.133)	<0.001	<0.001	0.223
Total lipids in very small VLDL (mmol/L)	-0.022	(-0.039, -0.005)	0.013	0.018	0.107
Total lipids in IDL (mmol/L)	0.014	(-0.023, 0.051)	0.465	0.530	0.236
Total lipids in large LDL (mmol/L)	-0.011	(-0.058, 0.035)	0.634	0.671	0.293
Total lipids in medium LDL (mmol/L)	-0.028	(-0.057, 0.001)	0.058	0.076	0.182
Total lipids in small LDL (mmol/L)	-0.017	(-0.035, 0.001)	0.061	0.079	0.113
Total lipids in very large HDL (mmol/L)	0.195	(0.158, 0.231)	<0.001	<0.001	0.239
Total lipids in large HDL (mmol/L)	0.395	(0.334, 0.455)	<0.001	<0.001	0.405
Total lipids in medium HDL (mmol/L)	0.129	(0.101, 0.158)	<0.001	<0.001	0.184
Total lipids in small HDL (mmol/L)	0.002	(-0.021, 0.025)	0.850	0.874	0.145
Lipoprotein particle size					
Mean diameter for VLDL particles (nm)	-1.414	(-1.669, -1.159)	<0.001	<0.001	1.678
Mean diameter for LDL particles (nm)	0.081	(0.066, 0.096)	<0.001	<0.001	0.100
Mean diameter for HDL particles (nm)	0.278	(0.236, 0.320)	<0.001	<0.001	0.279
Cholesterol					
Serum total cholesterol (mmol/L)	0.112	(-0.018, 0.241)	0.091	0.116	0.817
Total cholesterol in VLDL (mmol/L)	-0.187	(-0.230, -0.145)	<0.001	<0.001	0.275
Remnant cholesterol (nonHDL, nonLDL cholesterol) (mmol/L)	-0.184	(-0.244, -0.124)	<0.001	<0.001	0.383
Total cholesterol in LDL (mmol/L)	-0.048	(-0.117, 0.021)	0.175	0.213	0.437
Total cholesterol in HDL (mmol/L)	0.344	(0.286, 0.401)	<0.001	<0.001	0.382
Total cholesterol in HDL2 (mmol/L)	0.324	(0.271, 0.378)	<0.001	<0.001	0.354
Total cholesterol in HDL3 (mmol/L)	0.019	(0.014, 0.025)	<0.001	<0.001	0.034
Esterified cholesterol (mmol/L)	0.070	(-0.023, 0.163)	0.139	0.172	0.586
Free cholesterol (mmol/L)	0.046	(0.009, 0.084)	0.016	0.023	0.238
Glycerides and phospholipids					
Serum total triglycerides (mmol/L)*	-0.344	(-0.416, -0.273)	<0.001	<0.001	0.468
Triglycerides in VLDL (mmol/L)*	-0.530	(-0.630, -0.429)	<0.001	<0.001	0.659
Triglycerides in LDL (mmol/L)	0.008	(0.001, 0.014)	0.033	0.044	0.044
Triglycerides in HDL (mmol/L)	-0.004	(-0.010, 0.002)	0.228	0.272	0.040
Total phosphoglycerides (mmol/L)	0.106	(0.052, 0.159)	<0.001	<0.001	0.340
Ratio of triglycerides to phosphoglycerides	-0.289	(-0.337, -0.241)	<0.001	<0.001	0.318
Phosphatidylcholine & other cholines (mmol/L)	0.138	(0.086, 0.190)	<0.001	<0.001	0.331
Sphingomyelins (mmol/L)	0.032	(0.020, 0.045)	<0.001	<0.001	0.078
Total cholines (mmol/L)	0.170	(0.115, 0.224)	<0.001	<0.001	0.349
Apolipoproteins					
Apolipoprotein A1 (g/L)	0.146	(0.114, 0.178)	<0.001	<0.001	0.209
Apolipoprotein B (g/L)	-0.115	(-0.146, -0.084)	<0.001	<0.001	0.198
Ratio of apolipoprotein B to apolipoprotein A1	-0.126	(-0.148, -0.105)	<0.001	<0.001	0.144
Fatty acids					
Total fatty acids (mmol/L)	-0.711	(-1.091, -0.330)	<0.001	<0.001	2.388
Estimated degree of unsaturation	0.031	(0.021, 0.042)	<0.001	<0.001	0.066
22:6, docosahexaenoic acid (mmol/L)	-0.002	(-0.008, 0.005)	0.622	0.667	0.041
18:2, linoleic acid (mmol/L)	0.004	(-0.087, 0.094)	0.934	0.947	0.566
Omega3 fatty acids (mmol/L)	-0.035	(-0.054, -0.016)	<0.001	0.001	0.122
Omega6 fatty acids (mmol/L)	0.004	(-0.094, 0.102)	0.936	0.936	0.612
Polyunsat. fatty acids (mmol/L)	-0.031	(-0.144, 0.082)	0.592	0.644	0.708
Monounsat. fatty acids; 16:1, 18:1 (mmol/L)	-0.372	(-0.520, -0.225)	<0.001	<0.001	0.930
Saturated fatty acids (mmol/L)	-0.307	(-0.455, -0.159)	<0.001	<0.001	0.932
Fatty acid ratios					
Ratio of 22:6 docosahexaenoic acid to total fatty acids (%)	0.064	(0.018, 0.110)	0.006	0.009	0.288
Ratio of 18:2 linoleic acid to total fatty acids (%)	1.527	(0.984, 2.070)	<0.001	<0.001	3.430
Ratio of omega3 fatty acids to total fatty acids (%)	-0.038	(-0.152, 0.075)	0.508	0.570	0.710
Ratio of omega6 fatty acids to total fatty acids (%)	1.882	(1.351, 2.412)	<0.001	<0.001	3.376
Ratio of polyunsat. fatty acids to total fatty acids (%)	1.843	(1.272, 2.414)	<0.001	<0.001	3.621
Ratio of monounsat. fatty acids to total fatty acids (%)	-1.456	(-1.914, -0.998)	<0.001	<0.001	2.904
Ratio of saturated fatty acids to total fatty acids (%)	-0.387	(-0.700, -0.074)	0.015	0.022	1.959
Glycolysis related					
Glucose (mmol/L)*	-0.071	(-0.097, -0.044)	<0.001	<0.001	0.168
Lactate (mmol/L)	-0.178	(-0.252, -0.105)	<0.001	<0.001	0.469
Pyruvate (mmol/L)	-0.007	(-0.013, -0.002)	0.004	0.006	0.032

Citrate (mmol/L)	-0.001	(-0.004, 0.001)	0.335	0.387	0.016
Glycerol (mmol/L)	-0.003	(-0.008, 0.002)	0.279	0.328	0.022
Amino acids					
Alanine (mmol/L)	-0.020	(-0.030, -0.011)	<0.001	<0.001	0.060
Glutamine (mmol/L)	-0.038	(-0.048, -0.028)	<0.001	<0.001	0.065
Glycine (mmol/L)	0.029	(0.020, 0.038)	<0.001	<0.001	0.059
Histidine (mmol/L)	-0.001	(-0.003, 0.000)	0.116	0.146	0.009
Isoleucine (mmol/L)	-0.016	(-0.019, -0.013)	<0.001	<0.001	0.021
Leucine (mmol/L)	-0.019	(-0.022, -0.016)	<0.001	<0.001	0.022
Valine (mmol/L)	-0.029	(-0.035, -0.022)	<0.001	<0.001	0.042
Phenylalanine (mmol/L)	0.000	(-0.002, 0.001)	0.576	0.637	0.010
Tyrosine (mmol/L)	-0.005	(-0.007, -0.003)	<0.001	<0.001	0.014
Ketone bodies					
Acetate (mmol/L)*	-0.076	(-0.119, -0.033)	0.001	0.001	0.273
Acetoacetate (mmol/L)*	0.018	(-0.148, 0.184)	0.828	0.863	1.048
3hydroxybutyrate (mmol/L)*	-0.087	(-0.163, -0.011)	0.025	0.035	0.472
Fluid balance					
Albumin (signal area)	-0.002	(-0.002, -0.001)	<0.001	<0.001	0.005
Creatinine (mmol/L)	-0.013	(-0.015, -0.012)	<0.001	<0.001	0.010
Inflammation					
Glycoprotein acetyls, mainly a1acid glycoprotein (mmol/L)	-0.098	(-0.136, -0.061)	<0.001	<0.001	0.239

* Metabolite has been log transformed

^ Benjamini-Hochberg adjusted p-value

Associations for parents in Figure 3 are presented in SD-units. The conversion factor provided (unweighted standard deviaton of each metabolite measure in adults/parents) can be used to convert the association in absolute concentration to SD units by dividing by the conversion factor.

Where metabolite has been log transformed conversion factor is standard deviation of log transformed metabolite

Supplementary table 5: Mother-child concordance; correlations and partial correlations between mothers and their sons, daughters and all children.

Metabolic subgroup	Mother												All Children					
	Boys			Girls			All Children											
n	CC	95% CI	n	PCC*	95% CI	n	CC	95% CI	n	PCC*	95% CI	n	CC	95% CI	n	PCC*	95% CI	
Lipoprotein subclass lipids																		
Total lipids in chylomicrons & ex-large VLDL (mmol/L)*	469	0.22	0.13 - 0.30	433	0.23	0.14 - 0.31	518	0.24	0.16 - 0.32	476	0.21	0.12 - 0.29	987	0.23	0.17 - 0.29	909	0.22	0.16 - 0.28
Total lipids in very large VLDL (mmol/L)*	469	0.25	0.16 - 0.33	433	0.25	0.16 - 0.34	518	0.22	0.14 - 0.30	476	0.20	0.12 - 0.29	987	0.24	0.18 - 0.29	909	0.23	0.17 - 0.29
Total lipids in large VLDL (mmol/L)*	469	0.22	0.13 - 0.30	433	0.24	0.15 - 0.33	518	0.23	0.14 - 0.31	476	0.22	0.14 - 0.31	987	0.22	0.16 - 0.28	909	0.23	0.17 - 0.29
Total lipids in medium VLDL (mmol/L)	469	0.26	0.17 - 0.34	433	0.28	0.19 - 0.36	518	0.29	0.21 - 0.37	476	0.30	0.21 - 0.38	987	0.28	0.22 - 0.34	909	0.29	0.23 - 0.35
Total lipids in small VLDL (mmol/L)	469	0.26	0.18 - 0.35	433	0.28	0.19 - 0.36	518	0.30	0.21 - 0.37	476	0.30	0.21 - 0.38	987	0.29	0.23 - 0.34	909	0.29	0.23 - 0.35
Total lipids in very small VLDL (mmol/L)	469	0.22	0.14 - 0.31	433	0.21	0.12 - 0.30	518	0.26	0.17 - 0.34	476	0.26	0.18 - 0.35	987	0.25	0.19 - 0.30	909	0.25	0.18 - 0.31
Total lipids in IDL (mmol/L)	469	0.27	0.18 - 0.35	433	0.23	0.14 - 0.32	518	0.29	0.21 - 0.37	476	0.31	0.23 - 0.39	987	0.29	0.23 - 0.34	909	0.28	0.22 - 0.34
Total lipids in large LDL (mmol/L)	469	0.28	0.19 - 0.36	433	0.24	0.15 - 0.33	518	0.30	0.22 - 0.37	476	0.32	0.24 - 0.40	987	0.29	0.23 - 0.35	909	0.29	0.23 - 0.35
Total lipids in medium LDL (mmol/L)	469	0.28	0.20 - 0.36	433	0.24	0.15 - 0.33	518	0.29	0.21 - 0.37	476	0.32	0.24 - 0.40	987	0.29	0.23 - 0.35	909	0.29	0.23 - 0.35
Total lipids in small LDL (mmol/L)	469	0.28	0.19 - 0.36	433	0.24	0.15 - 0.32	518	0.29	0.21 - 0.37	476	0.32	0.23 - 0.40	987	0.28	0.23 - 0.34	909	0.28	0.22 - 0.34
Total lipids in large HDL (mmol/L)	469	0.30	0.22 - 0.38	433	0.30	0.21 - 0.38	518	0.32	0.24 - 0.39	476	0.30	0.21 - 0.38	987	0.31	0.25 - 0.36	909	0.30	0.24 - 0.36
Total lipids in large HDL (mmol/L)	469	0.31	0.23 - 0.39	433	0.31	0.23 - 0.40	518	0.28	0.20 - 0.36	476	0.26	0.18 - 0.34	987	0.30	0.24 - 0.35	909	0.29	0.23 - 0.35
Total lipids in medium HDL (mmol/L)	469	0.22	0.13 - 0.30	433	0.20	0.11 - 0.29	518	0.12	0.03 - 0.20	476	0.13	0.04 - 0.22	987	0.17	0.11 - 0.23	909	0.17	0.10 - 0.23
Total lipids in small HDL (mmol/L)	469	0.23	0.14 - 0.31	433	0.22	0.13 - 0.31	518	0.20	0.12 - 0.29	476	0.20	0.11 - 0.28	987	0.21	0.15 - 0.27	909	0.21	0.15 - 0.27
Lipoprotein particle size																		
Mean diameter for VLDL particles (nm)	469	0.30	0.22 - 0.38	433	0.32	0.23 - 0.40	518	0.27	0.19 - 0.35	476	0.25	0.16 - 0.33	987	0.29	0.23 - 0.35	909	0.28	0.22 - 0.34
Mean diameter for LDL particles (nm)	469	0.22	0.13 - 0.31	433	0.20	0.11 - 0.29	518	0.30	0.22 - 0.38	476	0.32	0.24 - 0.40	987	0.26	0.20 - 0.31	909	0.26	0.20 - 0.32
Mean diameter for HDL particles (nm)	469	0.32	0.23 - 0.40	433	0.32	0.23 - 0.40	518	0.33	0.26 - 0.41	476	0.31	0.23 - 0.39	987	0.33	0.27 - 0.38	909	0.31	0.25 - 0.37
Cholesterol																		
Serum total cholesterol (mmol/L)	469	0.27	0.19 - 0.35	433	0.23	0.14 - 0.32	518	0.32	0.24 - 0.39	476	0.34	0.26 - 0.42	987	0.30	0.24 - 0.35	909	0.30	0.24 - 0.35
Total cholesterol in VLDL (mmol/L)	469	0.25	0.17 - 0.34	433	0.27	0.18 - 0.36	518	0.29	0.21 - 0.36	476	0.29	0.21 - 0.37	987	0.28	0.22 - 0.33	909	0.29	0.23 - 0.35
Remnant cholesterol [nonHDL, nonLDL cholesterol] (mmol/L)	469	0.25	0.17 - 0.34	433	0.26	0.17 - 0.34	518	0.29	0.21 - 0.37	476	0.31	0.22 - 0.39	987	0.28	0.22 - 0.34	909	0.29	0.23 - 0.35
Total cholesterol in LDL (mmol/L)	469	0.28	0.20 - 0.36	433	0.24	0.15 - 0.33	518	0.29	0.21 - 0.37	476	0.32	0.23 - 0.40	987	0.29	0.23 - 0.34	909	0.29	0.23 - 0.35
Total cholesterol in HDL (mmol/L)	469	0.30	0.22 - 0.38	433	0.30	0.21 - 0.39	518	0.25	0.16 - 0.33	476	0.23	0.15 - 0.32	987	0.28	0.22 - 0.33	909	0.27	0.20 - 0.33
Total cholesterol in HDL2 (mmol/L)	469	0.30	0.22 - 0.38	433	0.31	0.22 - 0.39	518	0.25	0.16 - 0.32	476	0.23	0.15 - 0.32	987	0.28	0.22 - 0.33	909	0.27	0.21 - 0.33
Total cholesterol in HDL3 (mmol/L)	469	0.25	0.16 - 0.33	433	0.23	0.14 - 0.32	518	0.25	0.16 - 0.33	476	0.24	0.16 - 0.33	987	0.25	0.19 - 0.31	909	0.24	0.17 - 0.30
Esterified cholesterol (mmol/L)	465	0.28	0.19 - 0.36	430	0.23	0.14 - 0.32	518	0.32	0.24 - 0.39	476	0.34	0.26 - 0.42	983	0.30	0.24 - 0.35	906	0.29	0.23 - 0.35
Free cholesterol (mmol/L)	465	0.26	0.18 - 0.34	430	0.22	0.13 - 0.31	518	0.32	0.24 - 0.40	476	0.35	0.27 - 0.43	983	0.30	0.24 - 0.35	906	0.30	0.24 - 0.35
Glycerides and phospholipids																		
Serum total triglycerides (mmol/L)*	469	0.28	0.20 - 0.36	433	0.30	0.21 - 0.38	518	0.29	0.21 - 0.37	476	0.29	0.20 - 0.37	987	0.29	0.23 - 0.35	909	0.30	0.24 - 0.36
Triglycerides in VLDL (mmol/L)*	469	0.30	0.22 - 0.38	433	0.31	0.23 - 0.40	518	0.28	0.20 - 0.36	476	0.27	0.18 - 0.35	987	0.29	0.23 - 0.35	909	0.29	0.23 - 0.35
Triglycerides in LDL (mmol/L)	469	0.19	0.10 - 0.28	433	0.18	0.09 - 0.27	518	0.26	0.18 - 0.34	476	0.27	0.18 - 0.35	987	0.23	0.17 - 0.29	909	0.23	0.17 - 0.29
Triglycerides in HDL (mmol/L)	469	0.21	0.12 - 0.30	433	0.23	0.14 - 0.32	518	0.26	0.18 - 0.34	476	0.26	0.18 - 0.34	987	0.24	0.18 - 0.30	909	0.25	0.19 - 0.31
Total phosphoglycerides (mmol/L)	465	0.26	0.17 - 0.34	430	0.23	0.14 - 0.32	518	0.26	0.17 - 0.34	476	0.27	0.18 - 0.35	983	0.26	0.20 - 0.32	906	0.25	0.18 - 0.31
Ratio of triglycerides to phosphoglycerides	465	0.23	0.15 - 0.32	430	0.26	0.16 - 0.34	518	0.26	0.18 - 0.34	476	0.27	0.19 - 0.35	983	0.25	0.20 - 0.31	906	0.27	0.20 - 0.33
Phosphatidylethanolamine & other cholines (mmol/L)	465	0.27	0.18 - 0.35	430	0.24	0.14 - 0.32	518	0.25	0.17 - 0.33	476	0.27	0.18 - 0.35	983	0.26	0.20 - 0.32	906	0.25	0.19 - 0.31
Sphingomyelins (mmol/L)	465	0.23	0.15 - 0.32	430	0.22	0.12 - 0.30	518	0.29	0.21 - 0.37	476	0.31	0.23 - 0.39	983	0.27	0.21 - 0.32	906	0.27	0.21 - 0.33
Total cholines (mmol/L)	465	0.27	0.18 - 0.35	430	0.23	0.14 - 0.32	518	0.28	0.20 - 0.35	476	0.28	0.20 - 0.37	983	0.27	0.21 - 0.33	906	0.26	0.20 - 0.32
Apolipoproteins																		
Apolipoprotein A1 (g/L)	469	0.28	0.20 - 0.36	433	0.26	0.17 - 0.35	518	0.26	0.18 - 0.34	476	0.26	0.17 - 0.34	987	0.27	0.21 - 0.33	909	0.26	0.20 - 0.32
Apolipoprotein B (g/L)	469	0.26	0.18 - 0.35	433	0.27	0.18 - 0.35	517	0.30	0.22 - 0.38	475	0.32	0.24 - 0.40	986	0.29	0.23 - 0.35	908	0.31	0.25 - 0.36
Ratio of apolipoprotein B to apolipoprotein A1	469	0.28	0.20 - 0.36	433	0.30	0.21 - 0.38	517	0.25	0.17 - 0.33	475	0.25	0.16 - 0.33	986	0.27	0.21 - 0.33	908	0.28	0.22 - 0.34
Fatty acids																		
Total fatty acids (mmol/L)	462	0.22	0.13 - 0.30	427	0.22	0.13 - 0.31	517	0.31	0.23 - 0.39	475	0.33	0.25 - 0.41	979	0.27	0.22 - 0.33	902	0.29	0.22 - 0.34
Estimated degree of unsaturation	462	0.30	0.22 - 0.38	427	0.32	0.23 - 0.41	517	0.27	0.19 - 0.35	475	0.24	0.16 - 0.33	979	0.29	0.23 - 0.34	902	0.28	0.22 - 0.34
22:6 docosahexaenoic acid to total fatty acids (%)	462	0.18	0.11 - 0.29	427	0.18	0.09 - 0.27	517	0.34	0.26 - 0.41	475	0.32	0.24 - 0.40	979	0.27	0.21 - 0.32	902	0.25	0.19 - 0.31
18:2 linoleic acid to total fatty acids (%)	462	0.20	0.11 - 0.29	427	0.22	0.13 - 0.31	517	0.27	0.19 - 0.35	475	0.30	0.21 - 0.38	979	0.25	0.19 - 0.31	902	0.27	0.21 - 0.33
Omega3 fatty acids (mmol/L)	462	0.22	0.13 - 0.31	427	0.22	0.13 - 0.31	517	0.27	0.19 - 0.35	475	0.29	0.21 - 0.38	979	0.25	0.19 - 0.31	902	0.26	0.20 - 0.32
Omega6 fatty acids (mmol/L)	462	0.20	0.11 - 0.29	427	0.19	0.09 - 0.28	517	0.34	0.27 - 0.42	475	0.34	0.26 - 0.42	979	0.27	0.21 - 0.33	902	0.26	0.20 - 0.32
Omega5 fatty acids (mmol/L)	462	0.23	0.14 - 0.32	427	0.22	0.13 - 0.31	517	0.31	0.23 - 0.38	475	0.33	0.25 - 0.41	979	0.27	0.21 - 0.33	902	0.28	0.22 - 0.34
Palmitolein, fatty acids to total fatty acids (%)	462	0.27	0.19 - 0.36	427	0.22	0.12 - 0.30	517	0.32	0.24 - 0.39	475	0.34	0.26 - 0.42	979	0.28	0.22 - 0.33	902	0.28	0.22 - 0.34
Monounsat. fatty acids to total fatty acids (%)	462	0.24	0.15 - 0.33	427	0.25	0.16 - 0.34	517	0.33	0.25 - 0.40	475	0.32	0.23 - 0.40	979	0.29	0.24 - 0.35	902	0.30	0.24 - 0.36
Ratio of saturated fatty acids to total fatty acids (%)</																		

Supplementary table 6: Parent-child concordance; correlation and partial correlations between all parents and their sons, daughters and all children.

Metabolic subgroup	All Parents												All Children												
	Male Child				Female Child				Male Child				Female Child				Male Child				Female Child				
n	CC	95% CI	n	PCC*	95% CI	n	CC	95% CI	n	PCC*	95% CI	n	CC	95% CI	n	PCC*	95% CI	n	CC	95% CI	n	PCC*	95% CI		
Lipoprotein subclass lipids																									
Total lipids in chylomicrons & ex-large VLDL (mmol/L)*	547	0.22	0.14 - 0.30	505	0.23	0.14 - 0.31	586	0.20	0.12 - 0.28	544	0.17	0.08 - 0.25	1133	0.22	0.16 - 0.27	1049	0.20	0.15 - 0.26	1049	0.20	0.14 - 0.26	1049	0.20	0.14 - 0.26	
Total lipids in very large VLDL (mmol/L)*	547	0.23	0.15 - 0.31	505	0.23	0.15 - 0.31	586	0.17	0.10 - 0.25	544	0.16	0.08 - 0.24	1133	0.21	0.15 - 0.26	1049	0.20	0.14 - 0.26	1049	0.20	0.14 - 0.26	1049	0.20	0.14 - 0.26	
Total lipids in large VLDL (mmol/L)*	547	0.20	0.12 - 0.28	505	0.22	0.13 - 0.30	586	0.20	0.12 - 0.28	544	0.19	0.11 - 0.27	1133	0.20	0.15 - 0.26	1049	0.21	0.15 - 0.26	1049	0.21	0.15 - 0.26	1049	0.21	0.15 - 0.26	
Total lipids in medium VLDL (mmol/L)	547	0.27	0.19 - 0.35	505	0.28	0.20 - 0.36	586	0.25	0.17 - 0.32	544	0.24	0.16 - 0.32	1133	0.26	0.21 - 0.31	1049	0.26	0.20 - 0.32	1049	0.26	0.20 - 0.32	1049	0.26	0.20 - 0.32	
Total lipids in small VLDL (mmol/L)	547	0.27	0.19 - 0.34	505	0.27	0.19 - 0.35	586	0.26	0.18 - 0.33	544	0.26	0.17 - 0.33	1133	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	
Total lipids in very small VLDL (mmol/L)	547	0.23	0.15 - 0.31	505	0.22	0.13 - 0.30	586	0.25	0.17 - 0.33	544	0.26	0.18 - 0.34	1133	0.25	0.19 - 0.30	1049	0.24	0.19 - 0.30	1049	0.24	0.19 - 0.30	1049	0.24	0.19 - 0.30	
Total lipids in IDL (mmol/L)	547	0.28	0.20 - 0.35	505	0.25	0.16 - 0.33	586	0.29	0.21 - 0.36	544	0.31	0.23 - 0.38	1133	0.29	0.23 - 0.34	1049	0.28	0.23 - 0.34	1049	0.28	0.23 - 0.34	1049	0.28	0.23 - 0.34	
Total lipids in large LDL (mmol/L)	547	0.28	0.20 - 0.36	505	0.25	0.17 - 0.33	586	0.29	0.21 - 0.36	544	0.31	0.23 - 0.38	1133	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	
Total lipids in medium LDL (mmol/L)	547	0.29	0.21 - 0.36	505	0.25	0.17 - 0.33	586	0.28	0.21 - 0.36	544	0.31	0.23 - 0.38	1133	0.28	0.23 - 0.34	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	
Total lipids in small LDL (mmol/L)	547	0.28	0.20 - 0.35	505	0.24	0.16 - 0.32	586	0.28	0.20 - 0.35	544	0.31	0.23 - 0.38	1133	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	
Total lipids in very large HDL (mmol/L)	547	0.29	0.21 - 0.37	505	0.28	0.20 - 0.36	586	0.29	0.21 - 0.36	544	0.27	0.19 - 0.35	1133	0.29	0.24 - 0.34	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	
Total lipids in large HDL (mmol/L)	547	0.29	0.21 - 0.36	505	0.28	0.19 - 0.36	586	0.24	0.17 - 0.32	544	0.22	0.14 - 0.30	1133	0.27	0.21 - 0.32	1049	0.25	0.19 - 0.30	1049	0.25	0.19 - 0.30	1049	0.25	0.19 - 0.30	
Total lipids in medium HDL (mmol/L)	547	0.15	0.07 - 0.24	505	0.13	0.04 - 0.21	586	0.10	0.02 - 0.18	544	0.10	0.02 - 0.19	1133	0.12	0.07 - 0.18	1049	0.11	0.05 - 0.17	1049	0.11	0.05 - 0.17	1049	0.11	0.05 - 0.17	
Total lipids in small HDL (mmol/L)	547	0.19	0.10 - 0.27	505	0.16	0.08 - 0.25	586	0.18	0.10 - 0.26	544	0.17	0.09 - 0.25	1133	0.18	0.12 - 0.23	1049	0.17	0.11 - 0.22	1049	0.17	0.11 - 0.22	1049	0.17	0.11 - 0.22	
Lipoprotein particle size																									
Mean diameter for VLDL particles (nm)	547	0.29	0.21 - 0.36	505	0.30	0.22 - 0.38	586	0.22	0.14 - 0.29	544	0.19	0.11 - 0.27	1133	0.25	0.20 - 0.31	1049	0.24	0.19 - 0.30	1049	0.23	0.17 - 0.28	1049	0.23	0.17 - 0.28	
Mean diameter for LDL particles (nm)	547	0.19	0.11 - 0.27	505	0.17	0.08 - 0.25	586	0.27	0.19 - 0.34	544	0.29	0.21 - 0.36	1133	0.23	0.17 - 0.28	1049	0.23	0.17 - 0.28	1049	0.23	0.17 - 0.28	1049	0.23	0.17 - 0.28	
Mean diameter for HDL particles (nm)	547	0.31	0.23 - 0.38	505	0.30	0.22 - 0.38	586	0.30	0.22 - 0.37	544	0.27	0.19 - 0.35	1133	0.30	0.25 - 0.35	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	1049	0.29	0.23 - 0.34	
Cholesterol																									
Serum total cholesterol (mmol/L)	547	0.28	0.20 - 0.36	505	0.24	0.16 - 0.32	586	0.31	0.24 - 0.38	544	0.33	0.26 - 0.41	1133	0.30	0.24 - 0.35	1049	0.29	0.24 - 0.35	1049	0.27	0.21 - 0.32	1049	0.27	0.21 - 0.32	
Total cholesterol in VLDL (mmol/L)	547	0.26	0.18 - 0.34	505	0.27	0.19 - 0.35	586	0.26	0.18 - 0.33	544	0.26	0.18 - 0.34	1133	0.26	0.21 - 0.32	1049	0.27	0.21 - 0.32	1049	0.27	0.21 - 0.32	1049	0.27	0.21 - 0.32	
Remnante cholesterol (nonHDL, nonLDL cholesterol) (mmol/L)	547	0.27	0.19 - 0.34	505	0.26	0.18 - 0.34	586	0.28	0.20 - 0.35	544	0.29	0.21 - 0.37	1133	0.27	0.22 - 0.33	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	1049	0.28	0.22 - 0.33	
Total cholesterol in LDL (mmol/L)	547	0.29	0.21 - 0.36	505	0.26	0.17 - 0.34	586	0.28	0.21 - 0.35	544	0.30	0.23 - 0.38	1133	0.29	0.23 - 0.34	1049	0.28	0.23 - 0.34	1049	0.28	0.23 - 0.34	1049	0.28	0.23 - 0.34	
Total cholesterol in HDL (mmol/L)	547	0.27	0.19 - 0.35	505	0.25	0.17 - 0.33	586	0.22	0.14 - 0.29	544	0.20	0.12 - 0.28	1133	0.24	0.19 - 0.30	1049	0.22	0.17 - 0.28	1049	0.22	0.17 - 0.28	1049	0.22	0.17 - 0.28	
Total cholesterol in HDL2 (mmol/L)	547	0.27	0.19 - 0.34	505	0.25	0.17 - 0.33	586	0.21	0.14 - 0.29	544	0.20	0.11 - 0.28	1133	0.24	0.18 - 0.29	1049	0.22	0.16 - 0.28	1049	0.22	0.16 - 0.28	1049	0.22	0.16 - 0.28	
Total cholesterol in HDL3 (mmol/L)	547	0.25	0.17 - 0.33	502	0.24	0.15 - 0.32	584	0.31	0.24 - 0.38	542	0.29	0.21 - 0.40	1127	0.30	0.24 - 0.35	1044	0.29	0.21 - 0.32	1044	0.29	0.21 - 0.32	1044	0.29	0.21 - 0.32	
Free cholesterol (mmol/L)	543	0.27	0.19 - 0.34	502	0.23	0.14 - 0.31	584	0.32	0.24 - 0.39	542	0.34	0.26 - 0.41	1127	0.29	0.24 - 0.35	1044	0.29	0.23 - 0.34	1044	0.29	0.23 - 0.34	1044	0.29	0.23 - 0.34	
Glycerides and phospholipids																									
Serum total triglycerides (mmol/L)*	547	0.28	0.20 - 0.35	505	0.29	0.20 - 0.36	586	0.25	0.17 - 0.32	544	0.24	0.16 - 0.32	1133	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	1049	0.26	0.21 - 0.32	
Triglycerides in VLDL (mmol/L)*	547	0.28	0.20 - 0.36	505	0.29	0.21 - 0.37	586	0.23	0.15 - 0.30	544	0.21	0.13 - 0.29	1133	0.26	0.20 - 0.31	1049	0.25	0.20 - 0.31	1049	0.25	0.20 - 0.31	1049	0.25	0.20 - 0.31	
Triglycerides in LDL (mmol/L)*	547	0.20	0.12 - 0.28	505	0.19	0.10 - 0.27	586	0.27	0.19 - 0.34	544	0.28	0.20 - 0.35	1133	0.24	0.18 - 0.29	1049	0.24	0.18 - 0.29	1049	0.24	0.18 - 0.29	1049	0.24	0.18 - 0.29	
Triglycerides in HDL (mmol/L)	547	0.25	0.17 - 0.33	505	0.26	0.18 - 0.34	586	0.27	0.19 - 0.34	544	0.29	0.21 - 0.36	1127	0.27	0.22 - 0.33	1044	0.26	0.20 - 0.32	1044	0.26	0.20 - 0.32	1044	0.26	0.20 - 0.32	
Total phosphoglycerides (mmol/L)	543	0.28	0.20 - 0.36	502	0.24	0.16 - 0.32	584	0.27	0.19 - 0.34	542	0.29	0.21 - 0.36	1127	0.27	0.22 - 0.33	1044	0.26	0.20 - 0.32	1044	0.26	0.20 - 0.32	1044	0.26	0.20 - 0.32	
Ratio of triglycerides to phosphoglycerides	543	0.23	0.15 - 0.31	502	0.24	0.16 - 0.32	584	0.21	0.13 - 0.28	542	0.20	0.12 - 0.28	1127	0.22	0.16 - 0.27	1044	0.21	0.16 - 0.27	1044	0.21	0.16 - 0.27	1044	0.21	0.16 - 0.27	
Phosphatidylcholine & other cholines (mmol/L)	542	0.28	0.20 - 0.36	501	0.23	0.15 - 0.32	584	0.26	0.19 - 0.34	542	0.28	0.20 - 0.36	1126	0.27	0.21 - 0.32	1043	0.26	0.20 - 0.31	1043	0.26	0.20 - 0.31	1043	0.26	0.20 - 0.31	
Sphingomyelins (mmol/L)	542	0.23	0.15 - 0.31	501	0.20	0.12 - 0.29	584	0.28	0.21 - 0.36	542	0.30	0.22 - 0.37	1126	0.26	0.20 - 0.31	1043	0.26	0.20 - 0.31	1043	0.26	0.20 - 0.31	1043	0.26	0.20 - 0.31	
Total cholines (mmol/L)	542	0.27	0.19 - 0.35	501	0.23	0.14 - 0.31	584	0.28																	