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Table S1. Prenatal maternal stress exposure items in the Generation R sample

	Valid Range	<i>M (SD)</i>	Scale	Time Points	Measurement Unit	
Life Stress n = 886	0.00-5.37	1.47 (1.20)	Life events scale	20-25w gestation	Dichotomous	Your partner or child died
			Life events scale	20-25w gestation		A friend or relative died
			Life events scale	20-25w gestation		Child, partner or relative was seriously ill
			Quality of life scale	30w gestation		You were admitted to hospital (>24 hours)
			Quality of life scale	20-25w gestation		You were ill (moderate or poor health)
			Life events scale	20-25w gestation		You lost your job
			Life events scale	20-25w gestation		You had problems at work or school
			Life events scale	20-25w gestation		You moved house
			Quality of life scale	20-25w gestation		You experienced vaginal bleeding
			Quality of life scale	30w gestation		You had a test to see if your baby was abnormal
			Life events scale	20-25w gestation		Your house or car was burgled
			Quality of life scale	12-20w gestation		This pregnancy was unplanned
			Pregnancy outcome questionnaire	12-20w gestation		You were often worried about the health of the baby
			Quality of life scale	30w gestation		You were unhappy about the obstetric care
Pregnancy outcome questionnaire	12-20w gestation	You were often worried about the pregnancy				
Contextual Stress n = 839	0.00-3.61	0.58 (0.93)	Quality of life scale	30w gestation	Dichotomous	Housing basic living (inadequate heating, no washing machine, or no refrigerator)
			Quality of life scale	30w gestation		Housing defects (cold or draught, windows are damp inside, or walls or furniture are damp)
			Long lasting difficulties questionnaire	20-25w gestation		Housing adequacy (e.g., too small, lack of privacy)
			Long lasting difficulties questionnaire	20-25w gestation		You had a major financial problem
			Quality of life scale	30w gestation		Financial difficulties
Life events scale	20-25w gestation	Your income was reduced				
Personal Stress n = 902	0.00-1.41	0.16 (0.38)	Moral values questionnaire	20-25w gestation	Dichotomous	You were in trouble with the law
			Family background question	Pregnancy composite		Early parenthood (age mother < 19 years)
			Family background question	Pregnancy composite		Maternal education
			Brief symptom inventory	20-25w gestation		Psychopathology of mother
			Lifestyle questionnaire	20-25w gestation		Substance abuse
			Moral values questionnaire	20-25w gestation		Violence offence
			Moral values questionnaire	20-25w gestation		Public order offence
Interpersonal Stress n = 884	0.00-6.36	1.04 (1.44)	Long lasting difficulties questionnaire	20-25w gestation	Dichotomous	You argued with your partner
			Long lasting difficulties questionnaire	20-25w gestation		You had arguments with your family or friends
			Family background question	Pregnancy composite		Partner status (single)
			Family assessment device	20-25w gestation		Family affection problems
			Social circumstances questionnaire	20-25w gestation		Family size (>3)
			Life events scale	20-25w gestation		You were divorced
			Family assessment device	20-25w gestation		Family major problems: difficult making plans
			Family assessment device	20-25w gestation		Family major problems: do not accept each other
			Family assessment device	20-25w gestation		Family major problems: cannot talk about sadness
			Family assessment device	20-25w gestation		Family major problems: avoid talking about worries and problems
			Family assessment device	20-25w gestation		Family major problems: feel unaccepted
			Family assessment device	20-25w gestation		Family major problems: unpleasant and painful feelings
			Family assessment device	20-25w gestation		Family major problems: cannot solve problems
			Family assessment device	20-25w gestation		Family major problems: decision-making is a problem
			Family assessment device	20-25w gestation		Family major problems: do not trust each other
			Family assessment device	20-25w gestation		Family major problems: conflict, argued
			Family assessment device	20-25w gestation		Family support problems
Long lasting difficulties questionnaire	20-25w gestation	Difficulties in contact with others				

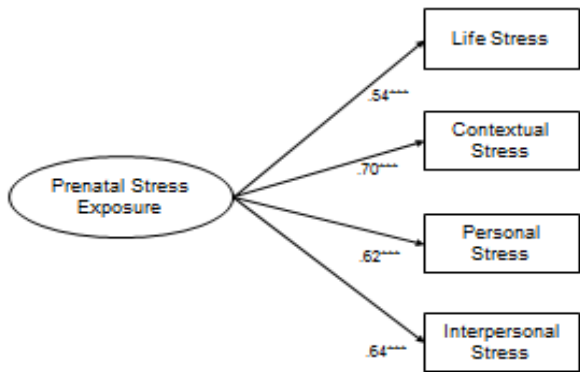
Confirmatory factor analysis model fit indices: (i) *life stress*: RMSEA=0.039; CFI=0.834; TLI=0.806; (ii) *contextual stress*: RMSEA=0.056; CFI=0.982; TLI=0.971; (iii) *personal stress*: RMSEA=0.026; CFI=0.941; TLI=0.911; (iv) *interpersonal stress*: RMSEA=0.051; CFI=0.922; TLI=0.912.

Table S2. Intercorrelations between the prenatal stress domains in the Generation R sample

	Life Stress	Contextual Stress	Personal Stress	Interpersonal Stress
Life Stress	-			
Contextual Stress	.22***	-		
Personal Stress	.16***	.26***	-	
Interpersonal Stress	.22***	.31***	.24***	-

*** $p < 0.001$

Figure S1. Confirmatory factor analysis measurement model of prenatal maternal stress exposure in the Generation R sample



Note. Values represent standardized factor loadings for the confirmatory factor analysis of prenatal maternal stress exposure.

*** $p < 0.001$

CFA model fit indices $\chi^2(2) = 5.07, p = 0.079$;

RMSEA = 0.014; CFI = 0.999; TLI = 0.997

Table S3. Top CpG probes ($p < 1.00e-04$) derived from the EWAS of prenatal maternal stress exposure in neonates, sorted by ascending p , in the Generation R sample ($N = 912$)

Probe name	Effect	SE	p	Chromosome	Position	Nearest gene
cg25937149	-.01	.001	2.10e-07	5	175788949	<i>KIAA1191</i>
cg19510604	-.03	.006	1.83e-06	15	74901076	<i>CLK3</i>
cg13529437	-.03	.008	3.31e-06	6	43607635	<i>MAD2L1BP</i>
cg27331471	.07	.015	5.34e-06	19	45809725	<i>CKM</i>
cg18094366	.01	.001	5.90e-06	22	24237343	<i>MIF</i>
cg24822696	.01	.002	6.48e-06	6	125283245	<i>RNF217</i>
cg26251101	.01	.003	6.64e-06	2	46768944	<i>RHOQ</i>
cg21888241	-.01	.001	1.39e-05	11	14541921	<i>PSMA1</i>
cg25829945	.03	.005	1.40e-05	3	159706383	<i>IL12A</i>
cg20969194	.04	.008	1.50e-05	2	223163175	<i>PAX3</i>
cg27106909	.04	.009	1.63e-05	16	30106897	<i>YPEL3</i>
cg18721212	-.02	.004	1.67e-05	19	36827430	<i>ZFP14</i>
cg03166236	-.05	.010	1.89e-05	2	7062351	<i>RNF144A</i>
cg15423613	.01	.001	2.07e-05	7	66093349	<i>KCTD7</i>
cg20026939	.04	.010	2.13e-05	18	44788898	NA
cg18026026	-.01	.002	2.35e-05	10	131265411	<i>MGMT</i>

Note: NA- not available

Table S4. Top CpG probes ($p < 1.00e-04$) derived from the EWAS of prenatal maternal stress exposure in neonates, sorted by ascending p , in the ALSPAC sample ($N = 828$)

Probe name	Effect	SE	p	Chromosome	Position	Nearest gene
cg18383538	0,03	0,006	9,74E-06	6	28557823	NA
cg04166304	0,01	0,002	1,36E-05	14	45722617	<i>C14orf106</i>
cg03932361	0,06	0,014	1,88E-05	17	72667394	<i>RAB37</i>
cg00912926	0,08	0,018	2,42E-05	10	134775610	NA
cg13636189	0,02	0,006	5,26E-05	9	102587074	<i>NR4A3</i>
cg24446586	0,01	0,004	5,69E-05	7	27225078	<i>HOXA11AS</i>
cg26291519	-0,08	0,019	6,43E-05	15	76640005	NA
cg01978368	0,01	0,002	6,64E-05	1	16563189	<i>C1orf89</i>
cg23335255	-0,05	0,012	8,41E-05	19	37858855	NA
cg17319136	0,02	0,006	8,67E-05	6	32098233	<i>FKBP1</i>
cg22856512	0,01	0,003	8,91E-05	2	217497890	<i>IGFBP2</i>
cg08979136	0,01	0,003	8,95E-05	5	114504983	<i>TRIM36</i>
cg06362985	-0,06	0,016	9,41E-05	12	70132208	<i>RAB31P</i>
cg20011562	0,01	0,003	9,98E-05	6	12749352	<i>PHACTR1</i>

Note: NA- not available

Table S5. Top CpG probes (meta $p < 1.00e-04$) derived from the EWAS meta-analysis of prenatal maternal stress exposure in neonates, sorted by ascending meta p , in the fixed-effects EWAS meta-analysis (N = 1,740)

Probe name	Chromosome	Position	Effect (SE)	Direction [*]	Meta P	Heterogeneity P	Nearest gene (s)
cg13529437	6	43607635	-0.04 (.007)	--	1.00e-06	.47	<i>MAD2L1BP</i>
cg01978368	1	16563189	0.01 (.002)	++	3.48e-06	.78	<i>C1orf89</i>
cg04129946	2	201753996	0.02 (.004)	+	7.59e-06	.73	<i>PPIL3;NIF3L1</i>
cg20959676	1	23696021	0.01 (.003)	++	8.67e-06	.09	<i>C1orf213;ZNF436</i>
cg17631424	4	69312514	-0.06 (.013)	--	1.13e-05	.81	<i>TMPRSS11E</i>
cg19459675	4	166249239	0.02 (.004)	++	1.59e-05	.76	<i>SCAMOL</i>
cg12947485	4	25310668	-0.04 (.009)	--	1.71e-05	.75	NA
cg20011562	6	12749352	0.01 (.002)	++	1.85e-05	.18	<i>PHACTR1</i>
cg02644494	19	6412686	0.03 (.006)	++	1.88e-05	.82	<i>PVRL1</i>
cg01686933	11	119596104	-0.02 (.006)	--	2.12e-05	.81	NA
cg00409356	5	1879525	0.04 (.009)	++	2.17e-05	.17	<i>IRX4</i>
cg17332603	4	7326576	0.03 (.008)	++	2.19e-05	.35	<i>SORCS2</i>
cg15150970	2	25473529	0.03 (.007)	++	2.44e-05	.55	<i>DNMT3A</i>
cg08272572	19	35953646	0.01 (.003)	++	2.47e-05	.32	NA
cg01625242	18	56886915	0.04 (.009)	++	2.62e-05	.87	<i>GRP</i>
cg27518692	7	61627470	0.02 (.003)	++	2.67e-05	.49	<i>DCAF7</i>
cg27106909	16	30106897	0.03 (.008)	++	2.79e-05	.08	<i>YPEL3</i>
cg02011374	19	1761780	0.04 (.008)	++	2.81e-06	.79	<i>ONECUT3</i>
cg14783581	3	137482478	0.03 (.006)	++	2.81e-05	.24	<i>SOX14</i>
cg04921109	14	69952104	0.04 (.010)	++	2.86e-05	.25	<i>FLJ44817</i>
cg26548653	19	42829042	0.02 (.005)	++	3.08e-05	.91	<i>MEGF8;TMEM145</i>
cg00716660	1	224543513	-0.03 (.007)	--	3.15e-05	.31	<i>CNIH4</i>
cg19732144	5	166403816	-0.03 (.006)	--	3.21e-05	.68	NA
cg19227710	3	151285666	-0.04 (.010)	--	3.28e-05	.80	NA
cg09314421	8	21771252	0.01 (.003)	++	3.42e-05	.36	<i>DOK2</i>
cg13722419	2	160088036	-0.05 (.012)	--	3.46e-05	.72	<i>TANC1</i>
cg09972192	12	72667326	0.02 (.006)	++	3.72e-05	.29	<i>LOC283392;TRHDE</i>
cg14620593	17	10326392	-0.057 (.014)	--	3.92e-05	.80	<i>MYH8</i>
cg08339172	17	63692987	-0.05 (.012)	--	9.30e-05	.85	<i>CCDC46</i>
cg20759626	13	74250870	-0.03 (.008)	--	4.30e-05	.74	NA
cg11442280	2	164461604	-0.03 (.008)	--	4.72e-05	.35	NA
cg00321480	8	143533853	0.02 (.004)	++	4.75e-05	.93	NA
ch.X.16390	X	113225430	0.03 (.007)	++	4.96e-05	.11	NA
cg03224850	1	19199155	-0.05 (.013)	--	5.01e-05	.31	<i>ALDH4A1</i>
cg05012697	15	88798331	0.03 (.006)	++	5.50e-05	.68	<i>NTRK3</i>
cg22146312	19	47852819	0.02 (.005)	++	5.78e-05	.33	<i>DHX34</i>
cg13332172	19	37178884	0.02 (.004)	++	5.85e-05	.80	<i>ZNF567</i>
cg16670155	19	18557220	-0.01 (.002)	--	6.02e-05	.53	<i>ELL</i>
cg02760218	6	31866586	0.05 (.014)	++	6.10e-05	.13	<i>EHMT2</i>
cg24620673	4	66535655	0.03 (.007)	++	6.26e-05	.42	<i>EPHA5</i>
cg11382417	11	41481655	0.03 (.009)	++	7.03e-05	.88	NA
cg17087669	6	36099123	0.03 (.008)	++	7.11e-05	.38	<i>MAPK13</i>
cg15558675	3	195163052	0.02 (.004)	++	7.30e-05	.87	<i>ACAP2</i>
cg18260343	3	50606637	0.01 (.003)	++	7.31e-05	.85	<i>HEMK1;C3orf18</i>
cg18947995	14	101350739	-0.01 (.004)	--	7.34e-05	.06	<i>MIR136;RTL1</i>
cg23998381	2	73114610	0.02 (.004)	++	7.53e-05	.10	<i>SPR</i>
cg07515250	8	141873509	-0.03 (.007)	--	7.69e-05	.91	<i>PTK2</i>
cg23033906	14	21769332	0.01 (.002)	++	7.81e-05	.30	<i>RPGRIP1</i>
cg26821498	1	28415421	0.02 (.005)	++	7.84e-05	.95	<i>EYA3</i>
cg18588052	6	111408752	0.01 (.003)	++	8.26e-05	.58	<i>SLC16A10</i>
cg15867197	19	46196291	0.01 (.003)	++	8.28e-05	.82	<i>QPCTL;SNRPD2</i>
cg00682734	20	55200973	0.03 (.008)	++	8.43e-05	.80	NA
cg14817758	11	32914605	-0.01 (.002)	--	8.53e-05	.42	<i>QSER1</i>
cg03995156	6	32122864	0.03 (.008)	++	8.73e-05	.42	<i>PPT2</i>
cg18026026	10	131265411	-0.01 (.002)	--	9.46e-05	.36	<i>MGMT</i>
cg15233611	12	122244660	0.03 (.008)	++	9.50e-05	.08	<i>SETD1B</i>
cg12359592	3	138048777	0.01 (.001)	++	9.73e-05	.81	<i>TXNDC6</i>
cg23207305	11	15012901	-0.03 (.009)	--	9.77e-05	.86	NA
cg09579151	12	41043074	-0.02 (.005)	--	9.88e-05	.67	NA

^{*} input order: ALSPAC, Generation R
Note: NA- not available

Table S6. Top CpG probes (meta $p < 1.00e-04$) derived from the EWAS meta-analysis of prenatal maternal stress exposure in neonates, sorted by ascending meta p , in the random-effects EWAS meta-analysis (N = 1,740)

Probe name	Chromosome	Position	Effect(SE)	Direction*	Meta P	Heterogeneity P	Nearest gene(s)
cg13529437	6	43607635	-0.04 (.007)	--	1.00e-06	.47	MAD2L1BP
cg02011374	19	1761780	0.04 (.008)	++	2.81e-06	.79	ONECUT3
cg01978368	1	16563189	0.01 (.002)	++	3.48e-06	.78	C1orf89
cg04129946	2	201753996	0.02 (.004)	++	7.58e-06	.73	PPLI3;NIF3L1
cg18026026	10	131265411	-0.01 (.002)	--	9.46e-06	.36	MGMT
cg17631424	4	69312514	-0.06 (.013)	--	1.13e-05	.81	TMPPRSS11E
cg19459675	4	166249239	0.02 (.004)	++	1.59e-05	.77	SC4MOL
cg12947485	4	25310668	-0.04 (.009)	--	1.71e-05	.74	NA
cg02644494	19	6412686	0.03 (.006)	++	1.88e-05	.81	NA
cg01686933	11	119596104	-0.02 (.006)	--	2.12e-05	.80	PVRL1
cg17332603	4	7326576	0.03 (.008)	++	2.18e-05	.35	SORCS2
cg15150970	2	25473529	0.03 (.007)	++	2.44e-05	.55	DNMT3A
cg08272572	19	35953646	0.01 (.003)	++	2.47e-05	.32	NA
cg01625242	18	56886915	0.04 (.008)	++	2.62e-05	.87	GRP
cg27518692	17	61627470	0.01 (.003)	++	2.67e-05	.49	DCAF7
cg26548653	19	42829042	0.02 (.005)	++	3.08e-05	.91	MEGF8;TMEM145
cg19732144	5	166403816	-0.03 (.006)	--	3.21e-05	.68	NA
cg19227710	3	151285666	-0.04 (.010)	--	3.28e-05	.80	NA
cg09314421	8	21771252	0.01 (.003)	++	3.41e-05	.36	DOK2
cg13722419	2	160088036	-0.05 (.011)	--	3.46e-05	.72	TANC1
cg14620593	17	10326392	-0.06 (.014)	--	3.92e-05	.80	MYH8
cg20759626	13	74250870	-0.03 (.008)	--	4.30e-05	.74	NA
cg11442280	2	164461604	-0.03 (.008)	--	4.70e-05	.35	NA
cg00321480	8	143533853	0.02 (.004)	++	4.74e-05	.93	NA
cg00716660	1	224543513	-0.03 (.007)	--	5.33e-05	.31	CNIH4
cg05012697	15	88798331	0.03 (.006)	++	5.50e-05	.68	NTRK3
cg22146312	19	47852819	0.02 (.005)	++	5.78e-05	.33	DHX34
cg13332172	19	37178884	0.02 (.004)	++	5.85e-05	.80	ZNF567
cg16670155	19	18557220	-0.01 (.002)	--	6.02e-05	.53	ELL
cg24620673	4	66535655	0.03 (.007)	++	6.26e-05	.42	EPHA5
cg11382417	11	41481655	0.03 (.009)	++	7.02e-05	.89	NA
cg17087669	6	36099123	0.03 (.008)	++	7.11e-05	.38	MAPK13
cg15558675	3	195163052	0.02 (.004)	++	7.30e-05	.87	ACAP2
cg18260343	3	50606637	0.01 (.003)	++	7.30e-05	.85	HEMK1;C3orf18
cg03224850	1	19199155	-0.05 (.013)	--	7.61e-05	.91	ALDH4A1
cg07515250	8	141873509	-0.03 (.007)	--	7.68e-05	.91	PTK2
cg26821498	1	28415421	0.02 (.005)	++	7.83e-05	.95	EYA3
cg18588052	6	111408752	0.01 (.002)	++	8.26e-05	.58	SLC16A10
cg15867197	19	46196291	0.01 (.003)	++	8.28e-05	.82	SNRPD2;QPCTL
cg00682734	20	55200973	0.03 (.008)	++	8.43e-05	.80	NA
cg14817758	11	32914605	-0.01 (.002)	--	8.53e-05	.42	QSER1
cg03995156	6	32122864	0.03 (.008)	++	8.73e-05	.42	PPT2
cg02907021	1	230986696	-0.02 (.005)	--	9.13e-05	.42	C1orf198
cg08339172	17	63692987	-0.05 (.012)	--	9.30e-05	.85	CCDC46
cg12359592	3	138048777	0.01 (.001)	++	9.73e-05	.81	TXNDC6
cg23207305	11	15012901	-0.04 (.009)	--	9.78e-05	.86	NA
cg09579151	12	41043074	-0.02 (.005)	--	9.89e-05	.68	NA

* input order: ALSPAC, GEN-R

Note: NA= not available

Table S7. Annotation of top DMRs associated with gPMSE score in cord blood, in the Generation R sample (N = 912)

Cluster Name	CpG probes	Chromosome	Position	Nearest gene(s)	
90946	cg09141953	20	62948235	<i>MYT1;LINC00266-1;CICP4</i>	
	cg19192585	20	62948037	<i>MYT1;LINC00266-1;CICP4</i>	
	cg24189721	20	62948134	<i>MYT1;LINC00266-1;CICP4</i>	
135488	cg07355590	7	133812072	<i>LRGUK</i>	
	cg10839521	7	133811911	<i>LRGUK</i>	
	cg12531972	7	133811940	<i>LRGUK</i>	
	cg14455998	7	133811808	<i>LRGUK</i>	
	cg14706178	7	133812217	<i>LRGUK</i>	
	cg15280728	7	133812269	<i>LRGUK</i>	
	cg15955731	7	133812369	<i>LRGUK</i>	
	cg16776231	7	133812041	<i>LRGUK</i>	
	cg17676607	7	133811837	<i>LRGUK</i>	
	cg19967800	7	133811828	<i>LRGUK</i>	
	cg22578125	7	133812031	<i>LRGUK</i>	
	66361	cg01906998	17	73974972	<i>ACOX1; C17orf106</i>
		cg02701084	17	73975226	<i>ACOX1; C17orf106</i>
cg02760553		17	73975121	<i>ACOX1; C17orf106</i>	
cg10931252		17	73975914	<i>ACOX1; C17orf106</i>	
cg11507926		17	73975697	<i>ACOX1; C17orf106</i>	
cg12452675		17	73975215	<i>ACOX1</i>	
cg14770570		17	73975813	<i>ACOX1</i>	
cg15269548		17	73975372	<i>ACOX1</i>	
cg16419345		17	73976089	<i>ACOX1; C17orf106</i>	
cg19198791		17	73975107	<i>ACOX1; C17orf106</i>	
cg19652678		17	73975160	<i>ACOX1; C17orf106</i>	
cg21356179		17	73974861	<i>ACOX1; C17orf106</i>	
cg21697561		17	73974931	<i>ACOX1; C17orf106</i>	
cg24015057		17	73975129	<i>ACOX1; C17orf106</i>	
cg24357503		17	73975484	<i>ACOX1; C17orf106</i>	