**Supplementary contents**

eAppendix1: Description of how zygosity was determined for MoBa participants and their children

Table S1: Path estimates for the best fitting models when C was included

Table S2: Proportions of the variance in the child phenotypes explained by the variance sources included in the best fitting models

Figure S1: Phenotypic correlations between mother and child explained by genetic vs direct environmental transmission

**eAppendix1**: Description of how zygosity was determined for MoBa participants and their children

We determined genetic relatedness between participants from kinship information in Statistics Norway for mothers, and from kinship information in MoBa for offspring. Zygosity (whether twins are monozygotic or dizygotic) for the parent generation was determined using linkage with the Norwegian Twin Registry, as well as questionnaire items administered by phone or mail. These questionnaire items have been shown to classify correctly more than 97% of twin pairs (Magnus *et al.*, 1983). For the offspring generation, maternal reports on zygosity were obtained using questionnaire items administered by phone or mail, and a sub-group of the same-sex offspring twins was also genotyped. A logistic regression model, regressing genotype classifications on the questionnaire items was fit to the twin pairs having both measurements. The fitted model was then used to classify the twin pairs that had not been genotyped, based on the questionnaire responses. The discrepancy between classification by questionnaire and genotyping had an expected misclassification rate of <4% in our sample.

**References**

**Magnus, P., Berg, K. & Nance, W. E.** (1983). Predicting zygosity in Norwegian twin pairs born 1915-1960. *Clinical Genetics* **24**, 103-112.

**Table S1**

Path estimates for the best fitting models when C was included

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **A1** | **C1** | **E1** | **A2** | **A1’** | **C2** | **E2** | **p** |
| **Emotional problems age 1.5** | 0.50 | 0 | 0.86 | 0.69 | 0.46 | 0 | 0.54 | 0.06 |
| **Emotional problems age 3** | 0.43 | 0 | 0.89 | 0 | 0.66 | 0.39 | 0.61 | 0.06 |
| **Emotional problems age 5** | 0.40 | 0 | 0.91 | 0.63 | 0.37 | 0 | 0.65 | 0.15 |
| **Behavioral problems age 1.5** | 0.48 | 0 | 0.87 | 0.79 | 0.37 | 0 | 0.45 | 0.09 |
| **Behavioral problems age 3** | 0.41 | 0 | 0.91 | 0.68 | 0.54 | 0 | 0.46 | 0.06 |
| **Behavioral problems age 5** | 0.45 | 0 | 0.88 | 0.64 | 0.44 | 0 | 0.59 | 0.15 |

**Table S2**

Proportions of the variance in the child phenotypes explained by the variance sources included in the best fitting models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Genetic** | | **Environmental** | |  |
|  | **Shared with maternal phenotype (a1’2)** | **Unique to child phenotype (a2)** | **Unique to child (e2)** | **Direct transmission (p2)** | **Passive rGE (maternally transmitted genes and environment)** |
| **Child emotional problems at age 1.5 years** | 21.1% | 47.7% | 29.5% | 0.3% | 1.4% |
| **Child emotional problems at age 3 years** | 28.5% | 34.9% | 34.1% | 0.6% | 1.9% |
| **Child emotional problems at age 5 years** | 14.0% | 39.4% | 42.1% | 2.2% | 2.2% |
| **Child behavioural problems at age 1.5 years** | 14.2% | 63.0% | 20.5% | 0.8% | 1.6% |
| **Child behavioural problems at age 3 years** | 29.3% | 47.2% | 21.7% | 0.4% | 1.4% |
| **Child behavioural problems at age 5 years** | 19.7% | 41.3% | 35.4% | 1.3% | 2.3% |

**Figure S1.**

Phenotypic correlations between mother and child explained by genetic vs direct environmental transmission

