

Supplementary Material

Attentional set-shifting task

To assess whether experimental subjects differed in cognitive flexibility and attentional capabilities, we performed the attentional set-shifting task. In the experiment 1, during the SD phase, MILK subjects committed more errors of CTRL group (offspring genotype: $F_{1,32}=0.017$ p-value=0.89; maternal genotype: $F_{1,32}=0.66$ p-value=0.44; interaction between offspring and maternal genotype: $F_{1,32}=11.91$ p-value=0.001, $p<0.05$ in post-hoc tests). In CD phase, MILK subjects committed more errors during the stage (offspring genotype: $F_{1,32}=0.17$ p-value=0.78; maternal genotype: $F_{1,32}=1.08$ p-value=0.31; interaction between offspring and maternal genotype: $F_{1,32}=5.86$ p-value=0.02, $p<0.05$ in post-hoc tests). During CDR, IDs and EDs phases, there was no difference between groups in errors (data not shown, see supplementary figure 4a). Albeit these results, in the experiment 2 we did not observe any differences between groups during all the phases of the test in errors committed (see supplementary figure 4b).

Novel object recognition task

Group	Time with novel object	Time with familiar object
CTRL	88 ± 12.26	36 ± 5.9
MILK	86.5 ± 20.63	49.7 ± 9.5
GENE	84.38 ± 15.77	47.87 ± 8.7
GENE + MILK	106 ± 11.66	41.21 ± 8.03

Supplementary Table 1. Time spent (seconds) with novel and familiar object during the test phase of the novel object recognition task for experiment 1 (data are expressed with mean \pm SEM).

Group	Time with novel object	Time with familiar object
CTRL - H ₂ O	167.3 ± 14.24	185.19 ± 16.09

MILK - H ₂ O	160.26 ± 12.29	166.41 ± 12.79
CTRL - SL	171.26 ± 12.29	176.65 ± 18.75
MILK - SL	169.28 ± 16.19	156.26 ± 11.29

Supplementary Table 2. Time spent (seconds) with novel and familiar object during the test phase of the novel object recognition task for experiment 2 (data are expressed with mean ± SEM).

Supplementary Figure 1. Maternal care was assessed, during the first 10 days of life, through focal sampling over two one-hour periods. In each one-hour period, dams were observed 20 times at regular 3-min intervals. Data are expressed as average hourly frequency of nursing. Inset: main effect of the genotype.

Supplementary Figure 2. Main effect of the maternal genotype of experiment 1 in percentage of alternations during the T-maze. - $p < 0.05$ significantly different from WT genotype in post-hoc tests.

Supplementary Figure 3. Main effect of the offspring genotype of experiment 1 in time spent in target zone during one week probe trial of the Barnes maze. - $p < 0.05$ significantly different from WT genotype in post-hoc tests.

Supplementary Figure 4. Number of errors committed in all phases in experiments 1 (a) and 2 (b). * $p < 0.05$ significantly different from CTRL group.

Supplementary Figure 5. Main effect of the offspring genotype of experiment 1 in the blood glucose concentration. - $p < 0.05$ significantly different from WT genotype in post-hoc tests.

Supplementary Figure 6. Main effect of the maternal genotype of experiment 2 in the blood glucose concentration. - $p < 0.05$ significantly different from WT genotype in post-hoc tests.