**SUPPLEMENTARY MATERIALS**

**Interaction of Maternal Choline Levels and Prenatal Marijuana’s Effects on the Offspring**

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Figure A1. Marijuana usage by gestational week; 98 mothers did not use marijuana. The total number of women using at each gestational time is shown. The gestational times selected for further analysis--0 (at conception) 4 weeks gestation, and 10 or more weeks gestation--each had a significantly different proportion of maternal use compared to the preceding gestational time (Fishers Exact Test *P* < 0.05).

Table A1. Factor Analysis of Maternal and Neonatal Covariates.

|  |  |  |  |
| --- | --- | --- | --- |
| PCA, Varimax rotation, Kaiser normalization | Component | | |
| Socio-economic | Neonatal Status | Maternal Health |
| Maternal age | .621 | -.256 | -.083 |
| Years of education | .745 | .398 | .102 |
| Socio-economic status | .648 | .458 | .079 |
| Living with father | .524 | -.175 | .093 |
| Bipolar mood disorder | -.077 | -.136 | .423 |
| Major depressive disorder | -.145 | .157 | -.645 |
| Anxiety disorder | -.383 | .160 | -.031 |
| Schizophrenia | .074 | -.178 | -.014 |
| Alcohol use disorder | -.280 | -.022 | .342 |
| Tobacco user | -.362 | -.014 | .044 |
| Pre-pregnancy BMI | -.208 | -.502 | .166 |
| Infection | -.425 | -.005 | .051 |
| Prenatal vitamins | -.066 | .281 | .668 |
| Premature labor | .115 | .232 | -.223 |
| Vaginal delivery | .008 | -.364 | .243 |
| Meconium in fluid | .178 | .051 | .467 |
| APGAR: 5 minute | -.032 | .411 | -.018 |
| Gestational age at birth | -.242 | .625 | .205 |
| Variance explained % | 13.1 | 9.1 | 8.9 |

Table A2. Effect of maternal choline on Newborn P50S2 μV with socio-economic, maternal health, and neonatal covariate factors.

|  |  |  |  |
| --- | --- | --- | --- |
| Effects on  Newborn P50S2 μV | Type III | | |
| Wald Chi-Square | df | Sig. |
| Model | 109.040 | 12 | <.001 |
| (Intercept) | 4.718 | 1 | .030 |
| Marijuana use1 | 14.372 | 3 | .002 |
| Choline μM 16 wks | 4.524 | 1 | .033 |
| Child sex | .817 | 1 | .366 |
| Socio-economic factor | 113.707 | 1 | .000 |
| Neonatal Status factor | .001 | 1 | .975 |
| Maternal Health factor | .879 | 1 | .349 |
| P50S1 μV | 2.294 | 1 | .130 |
| Marijuana\*Choline | 9.209 | 3 | .027 |
| 1none, conception, 4 wks, >10 wks | | | |

Table A3. Effect of maternal choline on Newborn P50S2 μV: Sex effects.

|  |  |  |  |
| --- | --- | --- | --- |
| Effects on  Newborn P50S2 μV | Type III | | |
| Wald Chi-Square | df | Sig. |
| Model | 107.727 | 13 | <.001 |
| (Intercept) | 4.235 | 1 | .040 |
| Marijuana use1 | 17.666 | 3 | .001 |
| Child sex | 3.751 | 1 | .053 |
| Choline μM 16 wks | 1.907 | 1 | .167 |
| P50S1 μV | 100.292 | 1 | <.001 |
| Marijuana\*Choline\*Sex | 15.392 | 7 | .031 |
| 1none, conception, 4 wks, >10 wks | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Child sex | Marijuana use | P50S2 amplitude (μV)  Estimated Marginal Mean | Std. Error | Δ None  LSD *P* |
| Female | None | .70 | .06 |  |
| Conception only | .87 | .12 |  |
| 4 weeks only | .84 | .20 |  |
| 10 weeks or more | 1.17 | .15 | <.05 |
| Male | None | .78 | .07 |  |
| Conception only | .94 | .13 |  |
| 4 weeks only | 1.02 | .18 |  |
| 10 weeks or more | 1.02 | .11 | <.05 |

Table A4. Effect of maternal choline on Newborn P50S2 μV: Alcohol use

|  |  |  |  |
| --- | --- | --- | --- |
| Effects on  Newborn P50S2 μV | Type III | | |
| Wald Chi-Square | df | Sig. |
| Model | 103.253 | 12 | <.001 |
| (Intercept) | 1.682 | 1 | .195 |
| Marijuana use1 | 8.611 | 3 | .035 |
| Alcohol use2 | 2.472 | 3 | .480 |
| Choline μM 16 wks | 1.040 | 1 | .308 |
| Child sex | .636 | 1 | .425 |
| P50S1 μV | 101.538 | 1 | <.001 |
| Marijuana\*Choline | 9.466 | 3 | .024 |
| 1none, conception, 4 wks, >10 wks  2none, through 13 wks, 26 wks, term |  |  |  |

Table A5. Effect of maternal choline on Newborn P50S2 μV: Maternal pre-pregnancy BMI.

|  |  |  |  |
| --- | --- | --- | --- |
| Effects on  Newborn P50S2 μV | Type III | | |
| Wald Chi-Square | df | Sig. |
| Model | 103.939 | 10 | <.001 |
| (Intercept) | 3.782 | 1 | .052 |
| Marijuana use1 | 14.764 | 3 | .002 |
| Maternal BMI | 1.412 | 1 | .235 |
| Choline μM 16 wks | 1.232 | 1 | .267 |
| Child sex | .432 | 1 | .511 |
| P50S1 μV | 104.632 | 1 | <.001 |
| Marijuana\*Choline | 9.895 | 3 | .019 |
| 1none, conception, 4 wks, >10 wks |  |  |  |

Table A6. Effect of maternal choline on IBQ-Regulation at 3 months of age.

|  |  |  |  |
| --- | --- | --- | --- |
| Effects on IBQ-R Regulation | Type III | | |
| Wald Chi-Square | df | Sig. |
| Model | 50.308 | 9 | <.001 |
| (Intercept) | 146.691 | 1 | <.001 |
| Marijuana use1 | 8.640 | 3 | .034 |
| Choline μM 16 wks | .002 | 1 | .961 |
| Child sex | .032 | 1 | .859 |
| IBQ-R Surgency | 51.876 | 1 | <.001 |
| Marijuana\*Choline | 9.603 | 3 | .022 |
| 1none, conception, 4 wks, >10 wks |  |  |  |