**The role of child diets in the association between pre-pregnancy diets and childhood behavioral problems: a mediational analysis**

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**Supplementary Table 1.** Each component of pre-pregnancy HEI-2015 score with mean (SD) score and percentage (n= 1448)

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| --- |
|  Components  |

 | Standard formaximum score | Standard for minimumscore of zero | Maximum points  | Mean (SD) | Percentage (%) |
| Total HEI-2015 score |  |  | 100 | 58.6 (12.3) |  |
| **Adequacy:** |  |  |  |  |  |
| Total Fruits | > 0.8 C eq./1,000 kcal | No fruit | 5 | 4.3 (1.2) | 86 |
| Whole Fruits | >0.4 Ceq./1,000 kcal | No whole fruit | 5 | 4.3 (1.1) | 86 |
| Total Vegetables | >1.1 C eq./1,000 kcal | No vegetables | 5 | 3.6 (1.3) | 72 |
| Greens and Beans | >0.2 C eq./1,000 kcal | No Greens and Beans | 5 | 4.7 (0.7) | 94 |
| Whole Grains | >1.5 oz. eq./1,000 kcal | No whole grains | 10 | 5.1 (4.1) | 51 |
| Dairy | >1.3 C eq./1,000 kcal | No dairy | 10 | 5.6 (3.3) | 56 |
| Total Protein | >2.5 oz. eq./1,000 kcal | No protein foods | 5 | 4.8 (0.6) | 96 |
| Seafood and Plant Proteins | >0.8 C eq./1,000 kcal | No seafood or plant proteins | 5 | 1.6 (1.04) | 32 |
| Fatty Acids | (PUFA + MUFA)/SFA (g/day) > 2.5 | (PUFA + MUFA)/SFA (g/day) <1.2 | 10 | 2.8 (3.1) | 28 |
| **Moderation:** |  |  |  |  |  |
| Refined Grains | <1.8 oz. eq./1,000 kcal | >4.3 oz. eq./1,000 kcal | 10 | 6.4 (3.4) | 64 |
| Sodium | <1.1 g/1,000 kcal | >2.0 g/1,000 kcal | 10 | 0.04 (0.6) | 0.4 |
| Added Sugars | <6.5% of energy | >26% of energy | 10 | 9.6 (1.4) | 96 |
| Saturated Fats | <8% of energy | >16% of energy | 10 | 5.5 (3.9) | 55 |

Polyunsaturated fatty acids (PUFAs), monounsaturated fatty acids (MUFAs), saturated fatty acids (SFAs), cup (C), ounce (oz.).

**Supplementary Table 2.** Factor loading matrix for the three childhood dietary patterns extracted with the use of 25 non-overlapping food groups (n= 1448) a

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|  **Child dietary patterns** | **Factor loading** | **Variance Explained (%)**  |
| **High fats and sugar**  |  | 12 % |
| Potato chips/crisps or savory biscuits  | 0.37 |  |
| Take-away b  | 0.33 |  |
| Soft drink/cordial | 0.32 |  |
| French fries | 0.31 |  |
| Ice-cream/ice blocks | 0.31 |  |
| lollies, muesli, or fruit bars | 0.31 |  |
| Chocolates  | 0.30 |  |
| **Prudent diets**  |  | 21% |
| Vegetables (raw or cooked) | 0.42 |  |
| Fruits  | 0.41 |  |
| Bread and grain (cereals) | 0.38 |  |
| Cheese and/or cheese spreads | 0.37 |  |
| Meat, fish, and eggs  | 0.32 |  |
| **Dairy**  |  | 27% |
| Full cream/full-fat milk | 0.56 |  |
| Regular yogurt  | 0.33 |  |
| Reduced-fat milk | -0.57 |  |
| Reduced fat/ low fat yogurt/ custard | -0.34 |  |

 a Values are correlation coefficients between each food group and the dietary pattern derived from PCA. Absolute values < 0.30 and – 0.30 were not listed. High fats and sugar; prudent diets; and dairy. b Take-away: McDonald's, KFC, fish, and chips/ chicken shop)

**Supplementary Table 3.** Factor loading coefficients for all 25 non-overlapping food groups (n= 1448) a

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| **Childhood dietary patterns** | **Component 1****High fats and sugar**  | **Component 2****Prudent diets**  | **Component 3****Dairy**  |
| Bread and grain (cereals) | 0.06 | **0.38** | -0.08 |
| Meat, fish, and eggs  | 0.04 | **0.32** | 0.04 |
| Non-meat (tofu, nuts, and seeds) | -0.09 | 0.24 | 0.08 |
| Fruit juice | 0.20 | -0.03 | 0.16 |
| Water  | -0.06 | 0.26 | -0.09 |
| Full cream/full-fat milk | 0.02 | 0.14 | **0.56** |
| Reduced-fat milk | 0.02 | 0.12 | **-0.57** |
| Cheese and/or cheese spreads | 0.05 | **0.37** | 0.07 |
| Regular yogurt  | -0.01 | 0.18 | **0.33** |
| Reduced fat/ low fat yogurt/ custard | 0.04 | 0.10 | **-0.34** |
| Vegetables (raw or cooked) | -0.07 | **0.42** | 0.04 |
| Fruits  | -0.01 | **0.42** | 0.01 |
| Peanut butter  | 0.04 | 0.08 | 0.02 |
| Pre-sugared cereals (coco pops, fruit loops) | 0.19 | -0.02 | 0.12 |
| Sweet biscuits, cakes, muffin, and doughnuts | 0.28 | 0.11 | -0.10 |
| Potato chips/crisps or savory biscuits  | **0.37** | 0.04 | -0.08 |
| lollies, muesli, or fruit bars | **0.31** | 0.08 | -0.04 |
| Chocolates  | **0.30** | 0.08 | -0.08 |
| Soft drink/cordial | **0.32** | -0.10 | 0.08 |
| Ice-cream/ice blocks | **0.31** | 0.00 | -0.02 |
| Pie, pasty or sausage roll | 0.18 | -0.04 | 0.08 |
| Pizza  | 0.15 | -0.01 | 0.04 |
| French fries | **0.31** | -0.08 | 0.06 |
| Hot dog, sausage, processed meat | 0.19 | 0.07 | -0.15 |
| Takeaway b | **0.33** | -0.08 | 0.07 |
| Variance Explained (%) | 12% | 21% | 27% |

a Values are correlation coefficients between each food group and the dietary pattern derived from PCA. Factor loading coeficients above 0.30 are shown in bold. b Take-away: McDonald's, KFC, fish, and chips/ chicken shop)

**Supplementary Table 4.** Childhood characteristics according to total behavioral problems (n=1448) a

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| **Child characteristics**  | **Child total behavioral problems** | ***p-*value b** |
| **No (n= 1250)** | **Yes (n= 198)** |
| Preterm birth (%) cNoYes  | 87.178.2 | 12.921.8 | 0.006 |
| Low birth weight (%) cNoYes | 86.977.9 | 13.122.1 | 0.01 |
| Child age (years), mean (SD) | 8.7 (0.1) | 8.3 (0.1) | 0.004 |
| Child sex (%) MaleFemale  | 83.789.4 | 16.310.6 | 0.002 |
| Child body mass index (%) Underweight Normal Overweight Obese  | 82.587.779.083.3 | 17.512.221.016.7 | 0.02 |
| Breastfeeding status (%) cNever received Received  | 91.986.2 | 8.113.7 | 0.32 |
| Multiple births (%) cNo Yes | 86.581.1 | 13.518.9 | 0.35 |
| Number of siblings (%) cNone One Two  | 79.187.187.6 | 20.912.912.4 | 0.02 |

a Values are mean (SD) or %, b *p*- values from Pearson chi-square or t- tests, c missing values (preterm birth: n= 6, breast feeding status: n= 29, multiple birth: n= 66).

**Supplementary Table 5.** Changes in HEI-2015 scores from preconception to during pregnancy (n= 621) a

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| Dietary patterns  | Time points(n= 621) | Mean (SD) | Spearman’s correlation coefficient (r)  |
| HEI-2015 score  | Preconception During pregnancyMean difference  | 58.4 (12.5)59.4 (10.9)1.0 (12.7) | 0.4 |
| *p-*value b | 0.06 | < 0.0001 |

a Values are mean (SD) and correlation coefficients (r), b *p*-values from and paired t-test and Spearman’s correlation test.