*Twin Research and Human Genetics*

Eating behaviours in healthy young adult twin pairs discordant for body mass index

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**Supplementary material**

Supplementary Text S1: Food intake regulation question.

Which of the following four alternatives best describes you?

1. It is easy for me to eat about the amount I need to 🡪 Optimal eating

2. I quite often eat more than I actually need 🡪 Frequent overeating

3. I often try to restrict my eating 🡪 Frequent restricted eating

4. At times, I’m on a strict diet, at others I overeat 🡪 Alternating overeating and restriction

Supplementary Text S2: Co-twin comparison questionnaire.

Which of you (you or your co-twin), …

– Eats more?

– Eats more snacks?

– Eats more fatty foods?

– Eats more sweet & fatty delicacies (chocolate, pastries, ice cream)?

– Eats more sweets (candies or jellies)?

– Selects food more according to healthiness?

– Eats more regularly?

– Eats more slowly?

– Is more worried about appearance?

– Goes on diets more often?

Response alternatives: Me, My co-twin, There is no difference between us, Do not know.

Supplementary Table S1: Number of twin pairs for whom data is available for the eating behavior questionnaires.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | BMI-discordant twin pairs | |  | BMI-concordant twin pairs | |
|  | MZ (n=29) | DZ (n=46) |  | MZ (n=28) | DZ (n=31) |
| **Anthropometry** | 29 | 46 |  | 28 | 31 |
| **TFEQ** |  |  |  |  |  |
| Cognitive restraint | 28 | 31 |  | 15 | 15 |
| Disinhibited eating | 28 | 31 |  | 14 | 15 |
| Hunger susceptibility | 28 | 31 |  | 14 | 15 |
| **DEBQ** |  |  |  |  |  |
| Restrained eating | 28 | 35 |  | 28 | 30 |
| External eating | 29 | 36 |  | 28 | 31 |
| Emotional eating | 29 | 36 |  | 28 | 30 |
| **BES** |  |  |  |  |  |
| Binge-eating score | 29 | 46 |  | 28 | 31 |
| **EDI** |  |  |  |  |  |
| Drive for thinness | 26 | 40 |  | 24 | 31 |
| Body dissatisfaction | 25 | 44 |  | 26 | 29 |
| Bulimia | 26 | 40 |  | 25 | 30 |
| **Food diary** | 28 | 35 |  | 28 | 30 |
| **Food intake regulation** | 29 | 36 |  | 24 | 30 |
| **Co-twin comparison** | 29 | 35 |  | 26 | 30 |

BMI=body mass index, MZ=monozygotic, DZ=dizygotic, n=total available number of pairs, TFEQ=Three Factor Eating Questionnaire, DEBQ=Dutch Eating Behavior Questionnaire, BES=Binge-Eating Scale, EDI-2=Eating Disorder Inventory-2.

Supplementary Table S2: Intra-pair differences in characteristics of MZ and DZ twin pairs concordant for BMI.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | BMI-concordant twin pairs | | | | | |  | |
|  | MZ (n=28) | |  | | DZ (n=31) | |  | |
|  | Leaner | Heavier | Δ% | p-value | Leaner | Heavier | Δ% | p-value |
| Age, y | 30.3±0.5 | 30.3±0.5 | - | - | 28.3±0.4 | 28.4±0.4 | - | - |
| Female/male, freq. | 11/17 | 11/17 | - | - | 14/17 | 14/17 | - | - |
| Height, cm | 173.0±1.9 | 173.5±1.9 | 0.3 | 0.26 | 173.4±1.7 | 171.8±1.5 | -0.9 | 0.23 |
| Weight, kg | 73.7±2.5 | 77.7±2.5 | 5.4 | <0.001 | 71.0±2.6 | 74.6±2.7 | 5.1 | 0.002 |
| BMI, kg/m2 | 24.5±0.6 | 25.7±0.6 | 4.9 | <0.001 | 23.5±0.6 | 25.2±0.7 | 7.2 | <0.001 |
| Fat mass, kg | 19.9±1.4 | 22.7±1.5 | 14.1 | <0.001\* | 19.7±1.3 | 21.6±1.5 | 9.6 | 0.02 |
| Body fat, % | 26.7±1.7 | 28.9±1.6 | 8.2 | 0.001\* | 27.4±1.6 | 28.6±1.7 | 4.4 | 0.16 |

Values are mean±standard error. BMI=body mass index, MZ=monozygotic, n=number of pairs, DZ=dizygotic, Δ%=difference in percentages [(heavier-leaner)/leaner×100], freq.=frequency, \*n=27 pairs.

Supplementary Table S3: Frequencies of BMI category comparisons within twin pairs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **All twin pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight | 1 | 2 | 3 | 1 |  |  |
| Healthy weight |  | 39 | 37 | 10 | 2 |  |
| Overweight |  |  | 14 | 12 | 5 | 1 |
| Obesity class I |  |  |  | 2 | 3 |  |
| Obesity class II |  |  |  |  |  | 1 |
| Obesity class III |  |  |  |  |  | 1 |
|  |  |  |  |  |  |  |
|  |  | **BMI-discordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight |  |  | 3 | 1 |  |  |
| Healthy weight |  | 9 | 31 | 10 | 2 |  |
| Overweight |  |  | 1 | 8 | 5 | 1 |
| Obesity class I |  |  |  |  | 2 |  |
| Obesity class II |  |  |  |  |  | 1 |
| Obesity class III |  |  |  |  |  | 1 |
|  |  |  |  |  |  |  |
|  |  | **MZ BMI-discordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight |  |  |  |  |  |  |
| Healthy weight |  | 1 | 11 | 3 |  |  |
| Overweight |  |  | 1 | 6 | 2 | 1 |
| Obesity class I |  |  |  |  | 2 |  |
| Obesity class II |  |  |  |  |  | 1 |
| Obesity class III |  |  |  |  |  | 1 |

BMI=body mass index (kg/m2), MZ=monozygotic, DZ=dizygotic, underweight: BMI<18.5; healthy weight: 18.5≤BMI<25; overweight: 25≤BMI<30; obesity class I: 30≤BMI<35; obesity class II: 35≤BMI<40; obesity class III: BMI≥40.

Supplementary Table S3 (continued): Frequencies of BMI category comparisons within twin pairs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **DZ BMI-discordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight |  |  | 3 | 1 |  |  |
| Healthy weight |  | 8 | 20 | 7 | 2 |  |
| Overweight |  |  |  | 2 | 3 |  |
| Obesity class I |  |  |  |  |  |  |
| Obesity class II |  |  |  |  |  |  |
| Obesity class III |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  | **BMI-concordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight | 1 | 2 |  |  |  |  |
| Healthy weight |  | 30 | 6 |  |  |  |
| Overweight |  |  | 13 | 4 |  |  |
| Obesity class I |  |  |  | 2 | 1 |  |
| Obesity class II |  |  |  |  |  |  |
| Obesity class III |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  | **MZ BMI-concordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight |  | 1 |  |  |  |  |
| Healthy weight |  | 13 | 4 |  |  |  |
| Overweight |  |  | 8 | 1 |  |  |
| Obesity class I |  |  |  |  | 1 |  |
| Obesity class II |  |  |  |  |  |  |
| Obesity class III |  |  |  |  |  |  |

BMI=body mass index (kg/m2), MZ=monozygotic, DZ=dizygotic, underweight: BMI<18.5; healthy weight: 18.5≤BMI<25; overweight: 25≤BMI<30; obesity class I: 30≤BMI<35; obesity class II: 35≤BMI<40; obesity class III: BMI≥40.

Supplementary Table S3 (continued): Frequencies of BMI category comparisons within twin pairs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **DZ BMI-concordant pairs** | | |  |  |
|  | Underweight | Healthy weight | Overweight | Obesity class I | Obesity class II | Obesity class III |
| Underweight | 1 | 1 |  |  |  |  |
| Healthy weight |  | 17 | 2 |  |  |  |
| Overweight |  |  | 5 | 3 |  |  |
| Obesity class I |  |  |  | 2 |  |  |
| Obesity class II |  |  |  |  |  |  |
| Obesity class III |  |  |  |  |  |  |

BMI=body mass index (kg/m2), MZ=monozygotic, DZ=dizygotic, underweight: BMI<18.5; healthy weight: 18.5≤BMI<25; overweight: 25≤BMI<30; obesity class I: 30≤BMI<35; obesity class II: 35≤BMI<40; obesity class III: BMI≥40.

Supplementary Table S4: P-values, from an independent samples Mann-Whitney U test for continuous variables and the Fisher’s exact test for categorical variables, of monozygotic versus dizygotic co-twins (leaner vs. leaner, and heavier vs. heavier) separately for co-twins from body mass index discordant and concordant pairs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | BMI-discordant | |  | BMI-concordant | |
|  | Leaner MZ vs. DZ co-twins | Heavier MZ vs. DZ co-twins |  | Leaner MZ vs. DZ co-twins | Heavier MZ vs. DZ co-twins |
| Age, y | 0.03 | 0.04 |  | 0.02 | 0.02 |
| Female/male, freq. | 0.10 | 0.10 |  | 0.79 | 0.79 |
| Height, cm | 0.73 | 0.37 |  | 0.96 | 0.43 |
| Weight, kg | 0.005 | 0.19 |  | 0.34 | 0.20 |
| BMI, kg/m2 | <0.001 | 0.02 |  | 0.17 | 0.41 |
| Fat mass, kg | <0.001 | 0.007 |  | 0.76 | 0.56 |
| Body fat, % | <0.001 | 0.01 |  | 0.56 | 0.87 |

BMI=body mass index, MZ=monozygotic, DZ=dizygotic.

Supplementary Table S5: Dietary components in BMI-discordant and -concordant MZ and DZ twins.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | BMI-discordant twin pairs | | | | |  |
|  | MZ (n=28) | |  | DZ (n=30) | |  |
|  | Leaner | Heavier | *P*-value | Leaner | Heavier | p-value |
| Total calories, kcal/d | 2008±104 | 2082±115 | 0.96 | 2046±91 | 2201±121 | 0.31 |
| Carbohydrate, g/d | 218.6±11.9 | 219.1±14.0 | 0.91 | 240.0±11.9 | 266.3±19.4 | 0.40 |
| Carbohydrate, % energy | 43.9±1.3 | 42.4±1.6 | 0.18 | 47.2±1.4 | 47.5±1.3 | 0.87 |
| Sugar, g/d | 101.4±8.2 | 103.5±11.8 | 0.63 | 100.5±6.5 | 103.8±8.6 | 0.90 |
| Sucrose, g/d | 51.0±6.0 | 53.5±9.3 | 0.80 | 52.9±5.1 | 47.9±4.3 | 0.44 |
| Fructose, g/d | 12.6±1.8 | 14.6±2.0 | 0.41 | 11.9±1.3 | 16.8±2.4 | 0.28 |
| Protein, g/d | 89.7±7.2 | 89.1±5.8 | 0.96 | 88.0±4.4 | 90.8±5.3 | 0.73 |
| Protein, % energy | 17.8±0.9 | 17.3±0.6 | 0.89 | 17.2±0.5 | 16.8±0.7 | 0.68 |
| Fat, g/d | 81.1±5.8 | 84.7±5.2 | 0.82 | 78.4±5.5 | 79.5±4.5 | 0.62 |
| Fat, % energy | 35.7±1.3 | 36.6±1.3 | 0.73 | 33.8±1.4 | 32.5±1.1 | 0.53 |
| Saturated fats, g/d | 32.6±2.6 | 31.2±2.1 | 0.32 | 30.1±2.4 | 28.9±1.6 | 0.96 |
| Alcohol, g/d | 7.6±2.2 | 13.7±3.9 | 0.53 | 5.1±1.4 | 9.5±2.4 | 0.21 |
| Alcohol, % energy | 2.7±1.0 | 3.8±1.0 | 0.63 | 1.8±0.5 | 3.2±0.8 | 0.23 |
| Dietary fiber, g/d | 17.9±1.7 | 17.4±1.2 | 0.84 | 19.1±1.3 | 21.9±1.9 | 0.38 |
|  | BMI-concordant twin pairs | | | | |  |
|  | MZ (n=28) | |  | DZ (n=31) | |  |
|  | Leaner | Heavier | *P*-value | Leaner | Heavier | p-value |
| Total calories, kcal/d | 1950±94 | 2158±101 | 0.12 | 2014±108 | 2279±184 | 0.50 |
| Carbohydrate, g/d | 228.6±13.4 | 243.0±12.9 | 0.23 | 242.9±15.3 | 272.6±23.3 | 0.56 |
| Carbohydrate, % energy | 46.7±1.6 | 45.0±1.5 | 0.23 | 48.2±1.5 | 48.0±1.3 | 0.67 |
| Sugar, g/d | 101.9±8.5 | 97.9±7.6 | 0.66 | 100.6±6.9 | 113.9±9.0 | 0.31 |
| Sucrose, g/d | 53.5±5.5 | 49.0±4.7 | 0.49 | 47.4±5.0 | 59.2±5.5 | 0.18 |
| Fructose, g/d | 13.4±1.6 | 11.4±1.3 | 0.09 | 13.4±1.6 | 15.2±2.0 | 0.53 |
| Protein, g/d | 88.3±6.2 | 96.9±5.1 | 0.08 | 84.6±5.1 | 97.5±12.6 | 0.83 |
| Protein, % energy | 18.0±1.0 | 18.4±0.9 | 0.70 | 17.0±0.7 | 16.5±0.7 | 0.36 |
| Fat, g/d | 73.3±4.4 | 81.9±5.0 | 0.14 | 72.1±5.0 | 79.3±6.0 | 0.39 |
| Fat, % energy | 33.5±1.2 | 33.9±1.5 | 10.0 | 31.9±1.2 | 31.5±1.0 | 0.67 |
| Saturated fats, g/d | 29.6±2.0 | 29.7±1.9 | 0.98 | 26.1±1.9 | 30.9±2.6 | 0.08 |
| Alcohol, g/d | 4.3±1.8 | 10.1±4.3 | 0.59 | 9.0±2.0 | 13.3±3.3 | 0.45 |
| Alcohol, % energy | 1.7±0.7 | 2.7±1.1 | 0.66 | 2.9±0.6 | 4.0±1.0 | 0.48 |
| Dietary fiber, g/d | 18.7±2.0 | 18.2±1.7 | 0.95 | 18.4±1.5 | 17.9±1.8 | 0.34 |

Values are mean±standard error. MZ=monozygotic, BMI=body mass index, n=number of pairs, DZ=dizygotic, kcal/d=kilocalories per day, g/d=grams per day, % energy=percentage of total energy intake.

****Supplementary Figure S1: Percentages of food intake regulation categories in leaner and heavier monozygotic (MZ) and dizygotic (DZ) twins concordant for body mass index (BMI).



Supplementary Figure S2: Overlay bar graph with mean±standard error scores on eating behavioral traits in leaner and heavier (panel A) monozygotic (MZ) and (panel B) dizygotic (DZ) co-twins in pairs concordant for body mass index (BMI). TFEQ=Three Factor Eating Questionnaire, DEBQ=Dutch Eating Behavior Questionnaire, BES=Binge-eating Scale, EDI-2=Eating Disorder Inventory-2.

Supplementary Table S6: Intra-pair differences of characteristics and behavioral traits between MZ and DZ BMI-discordant and -concordant male and female twin pairs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | MZ BMI-discordant twin pairs | | | DZ BMI-discordant twin pairs | | |
|  | Male (n=10) | Female (n=19) | p-value | Male (n=25) | Female (n=21) | p-value |
| BMI, kg/m2 | 5.7±0.7 | 6.2±0.7 | 0.82 | 6.6±0.7 | 7.9±0.7 | 0.08 |
| Fat mass, kg | 12.7±2.0 | 14.2±1.4 | 0.61 | 14.8±1.8 | 18.0±1.9 | 0.21 |
| Body fat, % | 8.2±2.3 | 9.5±1.1 | 0.55 | 12.3±1.7 | 13.6±1.6 | 0.87 |
| **TFEQ** |  |  |  |  |  |  |
| Cognitive restraint | -7.1±5.5 | -5.3±6.3 | 0.79 | 7.8±5.0 | -5.4±7.6 | 0.47 |
| Disinhibited eating | 4.4±4.6 | 12.5±6.8 | 0.30 | 5.9±4.7 | 16.5±5.5 | 0.24 |
| Hunger susceptibility | 1.4±6.0 | 2.0±6.6 | 0.55 | -3.8±7.6 | -1.5±6.7 | 0.45 |
| **DEBQ** |  |  |  |  |  |  |
| Restrained eating | 4.3±4.1 | 0.8±4.5 | 0.44 | 12.6±4.4 | 8.6±6.5 | 0.65 |
| External eating | -2.8±3.5 | 0.5±2.8 | 0.43 | -4.5±3.9 | 6.0±4.6 | 0.11 |
| Emotional eating | -.2±7.8 | 6.6±5.8 | 0.96 | -0.6±3.8 | 9.4±5.6 | 0.23 |
| **BES** |  |  |  |  |  |  |
| Binge-eating score | 4.3±4.0 | 6.6±4.6 | 0.93 | 3.7±2.3 | 7.7±3.2 | 0.28 |
| **EDI-2** |  |  |  |  |  |  |
| Drive for thinness | 3.6±3.6 | 9.5±7.2 | 0.34 | 4.2±2.8 | 12.2±5.8 | 0.08 |
| Body dissatisfaction | 14.6±7.0 | 9.6±7.0 | 0.77 | 8.5±3.5 | 31.3±8.5 | 0.01 |
| Bulimia | 0.6±1.1 | -1.1±2.8 | 0.75 | -0.6±0.6 | 2.3±1.0 | 0.02 |
|  | MZ BMI-concordant twin pairs | | | DZ BMI-concordant twin pairs | | |
|  | Male (n=17) | Female (n=11) | p-value | Male (n=17) | Female (n=14) | p-value |
| BMI, kg/m2 | 1.1±0.1 | 1.5±0.3 | 0.17 | 1.9±0.2 | 1.4±0.2 | 0.09 |
| Fat mass, kg | 2.8±0.6 | 2.7±0.9 | 1.00 | 1.6±1.3 | 2.2±0.7 | 0.72 |
| Body fat, % | 2.2±0.5 | 2.1±1.4 | 0.58 | .6±1.3 | 2.0±1.1 | 0.45 |
| **TFEQ** |  |  |  |  |  |  |
| Cognitive restraint | -11.6±8.4 | 8.6±8.2 | 0.12 | 7.4±7.2 | -1.2±5.3 | 0.69 |
| Disinhibited eating | 4.2±8.2 | -1.3±4.1 | 0.74 | 1.1±5.0 | 0±9.9 | 0.95 |
| Hunger susceptibility | 2.4±5.6 | -5.7±5.2 | 0.26 | 1.3±6.9 | -7.1±12.4 | 0.69 |
| **DEBQ** |  |  |  |  |  |  |
| Restrained eating | 1.0±4.7 | 4.1±6.8 | 0.33 | 4.3±4.6 | -3.3±7.6 | 0.36 |
| External eating | -4.7±4.0 | -5.±3.8 | 0.71 | 0±3.7 | 1.3±3.0 | 0.97 |
| Emotional eating | 1.9±3.7 | -9.4±6.0 | 0.17 | 8.0±3.7 | -1.9±6.0 | 0.16 |
| **BES** |  |  |  |  |  |  |
| Binge-eating score | 3.3±2.1 | -0.4±3.3 | 0.16 | 1.8±3.1 | 0.8±3.2 | 0.69 |
| **EDI-2** |  |  |  |  |  |  |
| Drive for thinness | -2.7±3.8 | 5.7±4.2 | 0.14 | 1.4±2.1 | 4.8±5.4 | 0.84 |
| Body dissatisfaction | 2.8±2.7 | 6.3±7.6 | 1.00 | 1.6±3.6 | 13.4±6.4 | 0.33 |
| Bulimia | 2.7±1.9 | -1.4±1.6 | 0.18 | -0.3±0.3 | 1.5±1.0 | 0.07 |

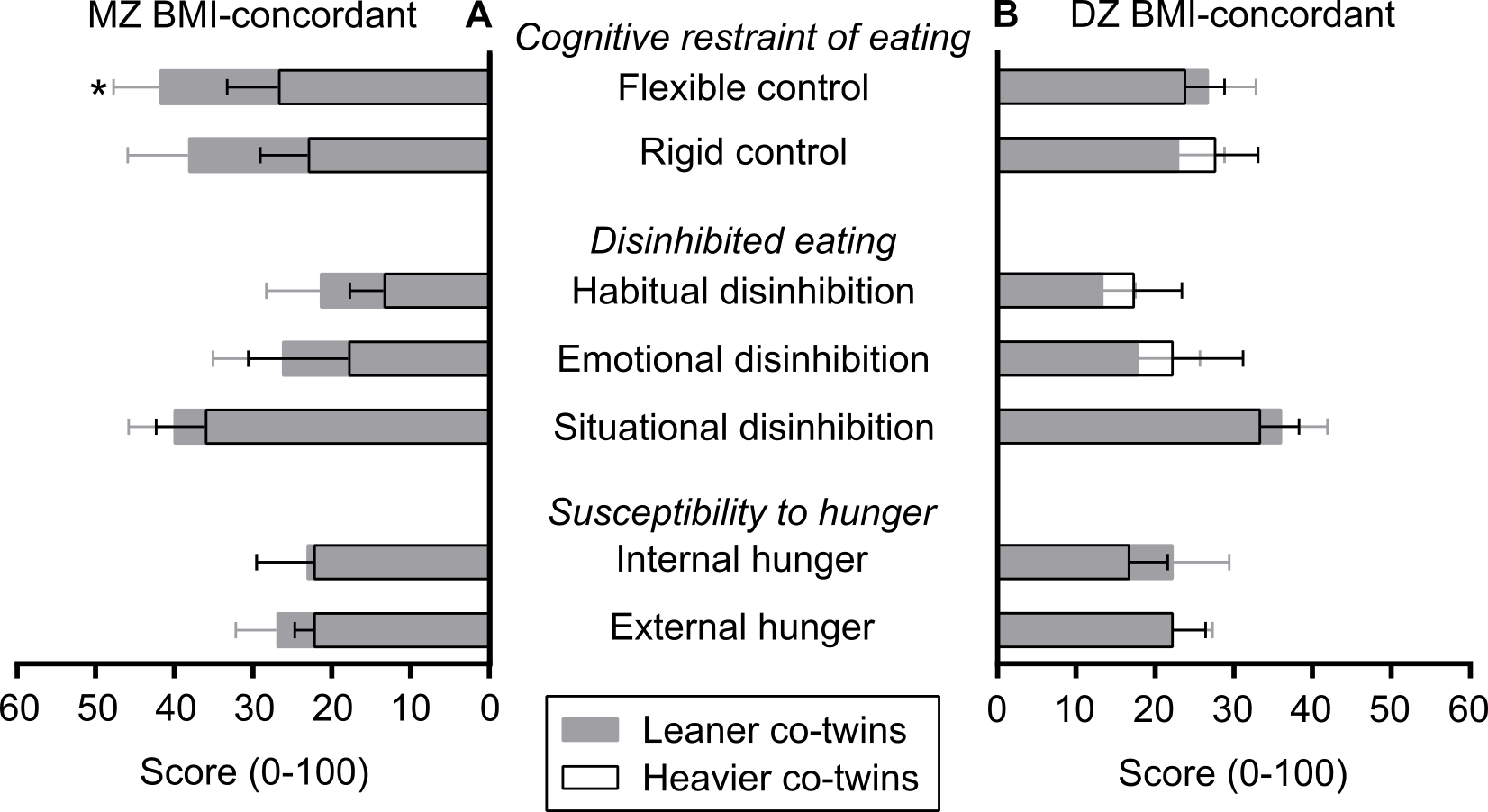
Values are mean±standard error. MZ=monozygotic, BMI=body mass index, n=number of pairs, DZ=dizygotic, TFEQ=Three Factor Eating Questionnaire, DEBQ=Dutch Eating Behavior Questionnaire, BES=Binge-eating Scale, EDI-2=Eating Disorder Inventory-2.

Supplementary Table S7: Correlation matrix of individual eating behavioral traits.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Survey* |  | *TFEQ* | | |  | *DEBQ* | | |  | *BES* |  | *EDI-2* | | | |
|  |  | Cognitive restraint | Disinhibited eating | Hunger susceptibility |  | Restrained eating | External eating | Emotional eating |  | Binge  eating  score |  | Drive for thinness | Body dissatisfaction | Bulimia |
| *TFEQ* | Cognitive restraint | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| Disinhibited eating | 0.03\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| Hunger susceptibility | 0.0008 | 0.28\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *DEBQ* | Restrained eating | 0.53\*\*\* | 0.17\*\*\* | 0.007 |  | 1.00 |  |  |  |  |  |  |  |  |
| External eating | 0.02 | 0.26\*\*\* | 0.20\*\*\* |  | 0.19\*\*\* | 1.00 |  |  |  |  |  |  |  |
| Emotional eating | 0.03\*\*\* | 0.54\*\*\* | 0.15 |  | 0.16\*\*\* | 0.33\*\*\* | 1.00 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *BES* | Binge-eating score | 0.03\* | 0.61\*\*\* | 0.22\*\*\* |  | 0.21\*\*\* | 0.28\*\*\* | 0.32\*\*\* |  | 1.00 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *EDI-2* | Drive for thinness | 0.15\*\*\* | 0.29\*\*\* | 0.04\* |  | 0.26\*\*\* | 0.12\*\*\* | 0.18\*\*\* |  | 0.39\*\*\* |  | 1.00 |  |  |
| Body dissatisfaction | 0.05\*\* | 0.28\*\*\* | 0.01 |  | 0.22\*\*\* | 0.08\*\*\* | 0.16\*\*\* |  | 0.34\*\*\* |  | 0.38\*\*\* | 1.00 |  |
| Bulimia | 0.0001 | 0.33\*\*\* | 0.11\*\*\* |  | 0.02\* | 0.07\*\*\* | 0.18 |  | 0.31\*\*\* |  | 0.18\*\* | 0.11\*\* | 1.00 |

TFEQ: Three Factor Eating Questionnaire; DEBQ: Dutch Eating Behavior Questionnaire; BES: Binge-eating Scale; EDI-2: Eating Disorder Inventory-2. Correlation coefficient size (Hinkle et al. 2003): negligible, r=0.00-0.30; low, r=0.30-0.50; moderate, r=0.50-0.70; high, r=0.70-0.90; very high, r=0.90-1.00. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001.

Reference: Hinkle DE, Wiersma W, Jurs SG (2003) Applied statistics for the behavioral sciences. Houghton Mifflin, Boston, Mass.; London



Supplementary Figure S3: Overlay bar graph with mean±standard error scores on subscales of the Three Factor Eating Questionnaire in leaner and heavier (panel A) monozygotic (MZ) and (panel B) dizygotic (DZ) co-twins in pairs who are concordant for body mass index (BMI). Wilcoxon signed-rank test \*p<0.05.