**Supplemental Table 1** Percentage agreement (%) and weighted kappa coefficients (based on Bonferroni Test) of parent-child weight status (normal weight, overweight, and obesity) by dyad type and characteristics in the Childhood Obesity Study in China Mega-cities \*

|  |  |
| --- | --- |
| **Characteristics** | **Parent-child dyads** |
|  | **Observed agreement****(%)**† | **Weighted kappa****coefficient (SEM)** ‡ |
| All | 62·7 | **0·11 (0·02)****p=0·0000** |
| Child age (years) |  |  |
| 6–9  | 61·1 | **0·11 (0·04)****p=0·0015** |
| 10–14 | 63·3 | **0·11 (0·02)****p=0·0000** |
| 15–17 | 59·8 | 0·11 (0·07)p=0·0614 |
| Child residence in the current semester |  |  |
| Home  | 62·6 | **0·10 (0·02)****p=0·0000** |
| School  | 63·5 | **0·20 (0·07)****p=0·0012** |
| Other place  | N/A | N/A |
| Parental highest education level, % |  |  |
| ≤Middle school | 57·3 | 0·02 (0·04)p=0·2792 |
| High or vocational schools | 65·5 | **0·17 (0·03)****p=0·0000** |
| ≥ College | 64·6 | **0·11 (0·02)****p=0·0000** |
| Family homeownership, % |  |  |
| Rent/share residency with relatives | 62·4 | **0·12 (0·03)****p=0·0002** |
| Own apartment | 65·1 | **0·12 (0·02)****p=0·0000** |
| Own house | 57·7 | 0·07 (0·04)p=0·0482 |
| Who decided what food to eat/buy for the whole household |  |  |
| Mother  | 63·8 | **0·12 (0·02)****p=0·0000** |
| Father  | 60·6 | 0·06 (0·05)p=0·1039 |
| Grandparents  | 64·8 | **0·15 (0·04)****p=0·0004** |
| Child | 58·8 | 0·05 (0·09)p=0·2678 |
| Primary caregiver of children  |  |  |
| Mother  | 64·0 | **0·14 (0·02)****p=0·0000** |
| Father  | 59·2 | 0·03 (0·05)p=0·3138 |
| Grandparents  | 60·2 | 0·05 (0·05)p=0·1521 |
| Baby-sitter/others | 55·6 | 0·08 (0·26)p=0·3854 |
| Whether children ate the same food as their parents? |  |  |
|  Yes, most times  | 64·5 | **0·13 (0·02)****p=0·0000** |
|  Yes, sometimes  | 58·2 | -0·01 (0·05)p=0·5636 |
|  No | 54·6 | -0·08 (0·17)p=0·6753 |
| Whether children had dinner together with their parents? |  |  |
| Yes, most times  | 64·7 | **0·13 (0·02)****p=0·0000** |
|  Yes, sometimes  | 58·8 | 0·03 (0·04)p=0·2375 |
|  No | 77·3 | 0·47 (0·20)p=0·0106 |

The five mega-cities across China are Beijing, Shanghai, Xi’an, Nanjing, and Chengdu.

Child overweight and obesity were defined according to the “WS/T 586-2018 Screening for overweight and obesity among school-aged adolescents and adolescents”. Parental overweight and obesity was defined according to: normal-weight and underweight BMI ≤ 23·9 kg/m2; overweight 24·0 kg/m2 ≤ BMI ≤ 27·9 kg/m2; obese BMI ≥ 28·0 kg/m2.

\* For children and parents, weight status (normal weight, overweight, and obesity) were used· For parents, parent with overweight was defined as: 1) either child’s mother or father was overweight; 2) both child’s mother and father were overweight. Parent with obesity was defined as: 1) either child’s mother or father was obese; 2) both child’s mother and father were obese. Parents with normal weight was defined as both child’s mother and father were normal weight. Weighted kappa values can be interpreted as follows: k＜0·20 = poor agreement, k between 0·20–0·40 = fair agreement, k between 0·40–0·60 = moderate agreement, k between 0·60–0·80 = good agreement, and k ≥ 0·80 = very good agreement. We used Bonferroni Test to adjust for the multiple comparison testing effect, *p*<0·05/26=0·0019 indicates statistical significance.

† The expected percent of agreement is 33·3%.

‡ Weighted kappa coefficients were calculated using the Cicchetti-Allison weight matrix (see methods); SEM was reported in parentheses and were obtained through Fay’s balanced repeated replication (BRR) method of estimation.

Numbers in bold indicated statistical significance.

**Supplemental Table 2** Associations (OR, 95%CI) of socio-demographic and childcare characteristics with patterns of parent-child body weight status (Normal weight, overweight, obesity) concordance in the Childhood Obesity Study in China Mega-cities: multinomial logistic regression models \*

|  |  |
| --- | --- |
|  | **Dependent variables in adjusted model: Parent-child dyads (Compared to a normal weight parent and child, 24·6%)** † |
| **Characteristic** **(vs. reference group)** | **Overweight or obese parents and child (16·3%)** ‡ | **Overweight or obese parents,****normal weight child (51·0%)**‡ | **Normal weight parents, overweight or obese child (8·1%)**‡ |
| Boy (vs. girl) | **2·45 (1·71, 3·52)****p=0·000** | 1·23 (0·94, 1·60)p=0·134 | **2·66 (1·68, 4·20)****p=0·000** |
| Child age (years)  | **0·82 (0·73, 0·91)****p=0·000** | 0·95 (0·88, 1·03)p=0·194 | 0·89 (0·78, 1·02)p=0·099 |
| Child residence in the current semester (vs. Home) |  |  |  |
| School and other place  | 1·00 (0·46, 2·18) p=0·994  | 0·87 (0·49, 1·54)p=0·629 | 0·92 (0·36, 2·35)p=0·854 |
| Family homeownership (vs. Own apartment) |  |  |  |
| Rent or share residency with relatives | 1·30 (0·83, 2·06)p=0·255 | 1·26 (0·90, 1·77)p=0·180 | 1·06 (0·58, 1·92)p=0·849 |
| Own house | 1·60 (0·89, 2·88)p=0·113 | **1·69 (1·10, 2·61)****p=0·018** | 1·19 (0·55, 2·58)p=0·654 |
| Paternal age (years) | 1·06 (1·00, 1·11)p=0·042 | 1·00 (0·96, 1·04)p=0·945 | 0·99 (0·92, 1·06)p=0·769 |
| Maternal age (years) | 0·97 (0·91, 1·03)p=0·363 | 1·02 (0·97, 1·07)p=0·462 | 0·97 (0·89, 1·05)p=0·441 |
| Parental highest education level(vs. ≥ College) |  |  |  |
| ≤Middle school | 0·52 (0·25, 1·05)p=0·068 | 0·92 (0·59, 1·43)p=0·715 | 0·66 (0·30, 1·47)p=0·310 |
| High or vocational schools | 1·20 (0·79, 1·83)p=0·382 | 0·88 (0·64, 1·21)p=0·423 | 0·60 (0·34, 1·08)p=0·089 |
| Who decided what food to eat/buy for the whole household (vs. Mother)  |  |  |  |
| Father  | 0·78 (0·40, 1·52)p=0·468 | 1·37 (0·87, 2·16)p=0·169 | 1·40 (0·69, 2·84)p=0·347 |
| Grandparents | 0·81 (0·47, 1·38)p=0·432 | 0·84 (0·56, 1·26)p=0·394 | **0·29 (0·13, 0·64)****p=0·002** |
| Child  | 0·56 (0·17, 1·84)p=0·340 | 0·76 (0·36, 1·61)p=0·474 | 0·47 (0·10, 2·25)p=0·344 |
| Primary caregiver of children(vs. Mother)  |  |  |  |
| Father | 0·73 (0·38, 1·40)p=0·346 | 0·68 (0·43, 1·08)p=0·102 | 0·92 (0·43, 1·99)p=0·834 |
| Grandparents | 1·06 (0·60, 1·87)p=0·846 | 1·03 (0·67, 1·58)p=0·896 | **2·31 (1·21, 4·44)****p=0·012** |
| Baby-sitter/others | 0·64 (0·05, 7·44)p=0·721 | 1·52 (0·30, 7·65)p=0·144 | 1·87 (0·16· 21·80)p=0·619 |
| Whether children ate the same food as their parents?(vs. Yes, most times)  |  |  |  |
|  Yes, sometimes | 0·91 (0·46, 1·77)p=0·770 | 1·00 (0·60, 1·65)p=0·993 | 1·09 (0·50, 2·41)p=0·824 |
|  No | N/A | N/A | N/A |
| Whether children had dinner together with their parents?(vs. Yes, most times) |  |  |  |
| Yes, sometimes | 1·56 (0·89, 2·73)p=0·121 | 0·91 (0·58, 1·41)p=0·663 | 1·75 (0·89, 3·44)p=0·102 |
|  No | 0·47 (0·03, 5·89)p=0·997 | 0·17 (0·02, 1·73)p=0·134 | N/A |

The five mega-cities across China are Beijing, Shanghai, Xi’an, Nanjing, and Chengdu.

\* The odds ratio (OR) for specific patterns of concordance in parent-child dyad weight status was observed across socio-demographic and child care characteristics.

† For the adjusted model for parent-child dyads, the reference group for the dependent variable was normal weight parent (both child’s mother and father had normal weight) and normal weight child dyads, and independent variables were all socio-demographic and child care characteristic, including child age, gender, child residence in the current semester, family homeownership, parental age and education, who decided what food to eat/buy for the whole household, primary caregiver of children, whether children ate the same food as their parents, and whether children had dinner together with their parents.

‡ Overweight: 24·0 kg/m2 ≤ BMI ≤ 27·9 kg/m2, Obese: BMI ≥ 28·0 kg/m2 for adults, for child’s overweight and obesity status was defined according to the “WS/T 586-2018 Screening for overweight and obesity among school-aged children and adolescents”. Overweight or obese parents was defined as: 1) either child’s mother or father was overweight or obese; 2) both child’s mother and father were overweight or obese. Parents with normal weight was defined as both child’s mother and father were normal weight.

\*: p<0·05; \*\*: p<0·01; \*\*\*: p<0·001. Numbers in bold indicated statistical significance.