**Supplementary Table 1.** Parent-Child Agreement on Autistic Traits, Sleep Parameters, and Real-World Executive Functions of Participants in children with different grades level.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total Sample (n=6832) | Total Sample | Grade 3 | Grade 5 | Grade 7 |
| Variables | Parent-reported | Child-report | Correlation |
| Sleep duration (hours) | 8.09 (0.88) | 8.06 (1.38) | 0.36 | 0.18 | 0.24 | 0.41 |
| Sleep need (hours) | 8.45 (0.91) | 8.47 (1.69) | 0.17 | 0.10 | 0.15 | 0.22 |
| Sleep deficits (hours) | 0.56 (0.76) | 0.89 (1.09) | 0.17 | 0.08 | 0.15 | 0.19 |

SRS, Social Responsiveness Scale.

*P*-values for all the correlation coefficients are small than 0.001.

**Supplementary Table 2.** Results of the Mediation of Autistic-Like Social Deficits, Sleep Deficits and Real-world Executive Functions for All Subscales of BRIEF

|  |  |
| --- | --- |
|  | Mediation model |
|  | Unstandardized estimates (S.E) |  | Indirect effects (S.E) |
| **BRIEF** | a | b | c | c' |  | ab | 95% BCa CI | Effect size(ab/c) |
| Inhibition | 0.02 (0.015)\*\*\* | 0.39 (0.07)\*\*\* | 0.27 (0.09)\*\*\* | 0.27 (0,09)\*\*\* |  | 0.006 (0.001) | 0.0040, 0.0090 | 0.02 |
| Shift |  | 0.29(0.05)\*\*\* | 0.18 (0.01)\*\*\* | 0.17 (0.01)\*\*\* |  | 0.005 (0.001) | 0.0030, 0.0067 | 0.03 |
| Emotional Control |  | 0.62 (0.09)\*\*\* | 0.33 (0.01)\*\*\* | 0.32 (0.01)\*\*\* |  | 0.010 (0.002) | 0.0070, 0.0137 | 0.03 |
| Self-monitor |  | 0.30 (0.05)\*\*\* | 0.19 (0.01)\*\*\* | 0.19 (0.01)\*\*\* |  | 0.005 (0.001) | 0.0031, 0.0070 | 0.03 |
| Initiate |  | 0.35 (0.07)\*\*\* | 0.24 (0.01)\*\*\* | 0.24 (0.01)\*\*\* |  | 0.006 (0.001) | 0.0035, 0.0082 | 0.02 |
| Working Memory |  | 0.57 (0.07)\*\*\* | 0.25 (0.01)\*\*\* | 0.24 (0.01)\*\*\* |  | 0.009 (0.001) | 0.0065, 0.0121 | 0.04 |
| Plan/Organize |  | 0.55 (0.08)\*\*\* | 0.33 (0.01)\*\*\* | 0.32 (0.01)\*\*\* |  | 0.009 (0.001) | 0.0060, 0.0124 | 0.03 |
| Task Monitor |  | 0.33 (0.05)\*\*\* | 0.21 (0.01)\*\*\* | 0.20 (0.01)\*\*\* |  | 0.005 (0.001) | 0.0035, 0.0074 | 0.03 |
| Organization of Materials |  | 0.41 (0.07)\*\*\* | 0.24 (0.01)\*\*\* | 0.23 (0.01)\*\*\* |  | 0.007 (0.001) | 0.0044, 0.0094 | 0.03 |

Indirect effects (ab), direct effect (c'), total effect (c). If the 95% BCa CI of ab does not include zero, it is suggested that autistic traits exerted indirect effects on executive functions through sleep deficits.

Sex and age were covariates.

BCa CI, bias-corrected bootstrap confidence intervals; BRIEF, Behavior Rating Inventory of Executive Function; SE, standard error

\**p* < 0.05, \*\*\**p* < 0.001.