**Online Supplemental Materials for**

**Longitudinal relations among family dysfunction, depressive symptoms and cyberbullying involvement in Chinese early adolescents: Disentangling between‑ and within-person associations**

**Table S1**

Pearson correlations and descriptive statistics for the main variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 1. Gender | - | - | - |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. Age | 9.92 | 0.51 | 0.03\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. SES | 3.68 | 0.60 | -0.04\* | -0.10\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4. T1 FD | 1.52 | 0.27 | 0.15\*\*\* | -0.06\*\*\* | -0.16\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5. T2 FD | 1.39 | 0.22 | 0.12\*\*\* | -0.02 | -0.16\*\*\* | 0.39\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6. T3 FD | 1.37 | 0.22 | 0.11\*\*\* | 0.01 | -0.16\*\*\* | 0.37\*\*\* | 0.51\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7. T4 FD | 1.37 | 0.23 | 0.12\*\*\* | -0.010 | -0.13\*\*\* | 0.31\*\*\* | 0.44\*\*\* | 0.53\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8. T5 FD | 1.39 | 0.25 | 0.10\*\*\* | -0.010 | -0.13\*\*\* | 0.28\*\*\* | 0.41\*\*\* | 0.47\*\*\* | 0.56\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9. T1 DP | 0.34 | 0.12 | 0.06\*\*\* | -0.010 | -0.06\*\*\* | 0.25\*\*\* | 0.21\*\*\* | 0.23\*\*\* | 0.18\*\*\* | 0.14\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10. T2 DP | 0.29 | 0.12 | 0.05\*\* | 0.01 | -0.09\*\*\* | 0.20\*\*\* | 0.36\*\*\* | 0.32\*\*\* | 0.28\*\*\* | 0.25\*\*\* | 0.41\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11. T3 DP | 0.27 | 0.12 | 0.02 | 0.06\*\*\* | -0.06\*\*\* | 0.18\*\*\* | 0.28\*\*\* | 0.38\*\*\* | 0.33\*\*\* | 0.28\*\*\* | 0.36\*\*\* | 0.52\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |
| 12. T4 DP | 0.27 | 0.13 | -0.02 | 0.03 | -0.06\*\*\* | 0.13\*\*\* | 0.22\*\*\* | 0.31\*\*\* | 0.38\*\*\* | 0.31\*\*\* | 0.30\*\*\* | 0.43\*\*\* | 0.58\*\*\* |  |  |  |  |  |  |  |  |  |  |  |
| 13. T5 DP | 0.26 | 0.14 | -0.09\*\*\* | 0.02 | -0.03 | 0.09\*\*\* | 0.17\*\*\* | 0.23\*\*\* | 0.29\*\*\* | 0.33\*\*\* | 0.26\*\*\* | 0.36\*\*\* | 0.48\*\*\* | 0.60\*\*\* |  |  |  |  |  |  |  |  |  |  |
| 14. T1 CB | 1.11 | 0.14 | 0.11\*\*\* | -0.02 | -0.07\*\*\* | 0.18\*\*\* | 0.14\*\*\* | 0.15\*\*\* | 0.10\*\*\* | 0.11\*\*\* | 0.21\*\*\* | 0.12\*\*\* | 0.07\*\*\* | 0.05\* | 0.02 |  |  |  |  |  |  |  |  |  |
| 15. T2 CB | 1.08 | 0.11 | 0.08\*\*\* | 0.01 | -0.07\*\*\* | 0.10\*\*\* | 0.20\*\*\* | 0.16\*\*\* | 0.14\*\*\* | 0.12\*\*\* | 0.15\*\*\* | 0.24\*\*\* | 0.13\*\*\* | 0.13\*\*\* | 0.09\*\*\* | 0.14\*\*\* |  |  |  |  |  |  |  |  |
| 16. T3 CB | 1.07 | 0.10 | 0.10\*\*\* | 0.02 | -0.08\*\*\* | 0.13\*\*\* | 0.15\*\*\* | 0.18\*\*\* | 0.16\*\*\* | 0.11\*\*\* | 0.14\*\*\* | 0.17\*\*\* | 0.18\*\*\* | 0.14\*\*\* | 0.08\*\*\* | 0.21\*\*\* | 0.32\*\*\* |  |  |  |  |  |  |  |
| 17. T4 CB | 1.06 | 0.10 | 0.11\*\*\* | 0.04\* | -0.08\*\*\* | 0.08\*\*\* | 0.13\*\*\* | 0.15\*\*\* | 0.17\*\*\* | 0.14\*\*\* | 0.11\*\*\* | 0.15\*\*\* | 0.10\*\*\* | 0.18\*\*\* | 0.09\*\*\* | 0.12\*\*\* | 0.29\*\*\* | 0.30\*\*\* |  |  |  |  |  |  |
| 18. T5 CB | 1.06 | 0.10 | 0.10\*\*\* | 0.04\* | -0.08\*\*\* | 0.09\*\*\* | 0.15\*\*\* | 0.13\*\*\* | 0.15\*\*\* | 0.17\*\*\* | 0.08\*\*\* | 0.11\*\*\* | 0.10\*\*\* | 0.19\*\*\* | 0.16\*\*\* | 0.08\*\*\* | 0.18\*\*\* | 0.23\*\*\* | 0.32\*\*\* |  |  |  |  |  |
| 19. T1 CV | 1.18 | 0.28 | 0.09\*\*\* | -0.01 | -0.07\*\*\* | 0.22\*\*\* | 0.16\*\*\* | 0.14\*\*\* | 0.16\*\*\* | 0.13\*\*\* | 0.30\*\*\* | 0.14\*\*\* | 0.13\*\*\* | 0.11\*\*\* | 0.11\*\*\* | 0.34\*\*\* | 0.14\*\*\* | 0.17\*\*\* | 0.11\*\*\* | 0.11\*\*\* |  |  |  |  |
| 20. T2 CV | 1.13 | 0.20 | 0.09\*\*\* | 0.02 | -0.09\*\*\* | 0.15\*\*\* | 0.26\*\*\* | 0.19\*\*\* | 0.17\*\*\* | 0.14\*\*\* | 0.17\*\*\* | 0.30\*\*\* | 0.19\*\*\* | 0.15\*\*\* | 0.12\*\*\* | 0.17\*\*\* | 0.38\*\*\* | 0.20\*\*\* | 0.15\*\*\* | 0.10\*\*\* | 0.22\*\*\* |  |  |  |
| 21. T3 CV | 1.12 | 0.18 | 0.11\*\*\* | 0.05\*\* | -0.06\*\* | 0.12\*\*\* | 0.18\*\*\* | 0.25\*\*\* | 0.19\*\*\* | 0.15\*\*\* | 0.17\*\*\* | 0.23\*\*\* | 0.33\*\*\* | 0.23\*\*\* | 0.18\*\*\* | 0.12\*\*\* | 0.22\*\*\* | 0.35\*\*\* | 0.24\*\*\* | 0.20\*\*\* | 0.20\*\*\* | 0.28\*\*\* |  |  |
| 22. T4 CV | 1.13 | 0.20 | 0.10\*\*\* | 0.00 | -0.07\*\*\* | 0.11\*\*\* | 0.16\*\*\* | 0.19\*\*\* | 0.25\*\*\* | 0.17\*\*\* | 0.16\*\*\* | 0.19\*\*\* | 0.22\*\*\* | 0.34\*\*\* | 0.24\*\*\* | 0.08\*\*\* | 0.23\*\*\* | 0.17\*\*\* | 0.32\*\*\* | 0.24\*\*\* | 0.19\*\*\* | 0.26\*\*\* | 0.32\*\*\* |  |
| 23. T5 CV | 1.12 | 0.17 | 0.08\*\*\* | 0.01 | -0.04\* | 0.11\*\*\* | 0.13\*\*\* | 0.17\*\*\* | 0.19\*\*\* | 0.20\*\*\* | 0.12\*\*\* | 0.15\*\*\* | 0.19\*\*\* | 0.26\*\*\* | 0.33\*\*\* | 0.09\*\*\* | 0.15\*\*\* | 0.14\*\*\* | 0.17\*\*\* | 0.40\*\*\* | 0.15\*\*\* | 0.17\*\*\* | 0.23\*\*\* | 0.41\*\*\* |

*Note.* FD = Family Dysfunction; DP = Depressive Symptoms; CB = Cyberbullying; CV = Cybervictimization. T1-T5 represents Time 1-Time 5 respectively.

\**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001.

**T****able S2**

Standardized autoregressive, within-person concurrent associations, and within-person cross-lagged coefficients for final RI-CLPM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Within-person concurrent associations*** | | | | | | | | | | | | | | | |
|  | T1 | | | T2 | | | T3 | | | T4 | | | T5 | | |
|  | β | SE | *p* | β | SE | *p* | β | SE | *p* | β | SE | *p* | β | SE | *p* |
| FD↔DP | 0.15 | 0.02 | <0.001 | 0.25 | 0.03 | <0.001 | 0.22 | 0.03 | <0.001 | 0.22 | 0.03 | <0.001 | 0.19 | 0.02 | <0.001 |
| FD↔CB | 0.11 | 0.02 | <0.001 | 0.12 | 0.03 | <0.001 | 0.06 | 0.02 | <0.01 | 0.07 | 0.02 | <0.01 | 0.05 | 0.02 | <0.05 |
| FD↔CV | 0.14 | 0.02 | <0.001 | 0.18 | 0.03 | <0.001 | 0.12 | 0.03 | <0.001 | 0.13 | 0.03 | <0.001 | 0.07 | 0.02 | <0.001 |
| DP↔CB | 0.17 | 0.03 | <0.001 | 0.18 | 0.03 | <0.001 | 0.1 | 0.03 | <0.01 | 0.13 | 0.03 | <0.01 | 0.07 | 0.03 | <0.01 |
| DP↔CV | 0.24 | 0.02 | <0.001 | 0.22 | 0.03 | <0.001 | 0.24 | 0.03 | <0.001 | 0.24 | 0.03 | <0.001 | 0.22 | 0.03 | <0.001 |
| CB↔CV | 0.28 | 0.03 | <0.001 | 0.3 | 0.05 | <0.001 | 0.23 | 0.04 | <0.001 | 0.21 | 0.05 | <0.001 | 0.31 | 0.05 | <0.001 |
| ***Autoregressive paths coefficients*** | | | | | | | | | | | | | | | |
|  | T1→T2 | | |  | T2→T3 | | |  | T3→T4 | | |  | T4→T5 | | |
|  | β | SE | *p* |  | β | SE | *p* |  | β | SE | *p* |  | β | SE | *p* |
| FD→FD | 0.07 | 0.02 | <0.01 |  | 0.13 | 0.03 | <0.001 |  | 0.18 | 0.03 | <0.001 |  | 0.27 | 0.03 | <0.001 |
| DP→DP | 0.13 | 0.03 | <0.01 |  | 0.23 | 0.04 | <0.001 |  | 0.34 | 0.03 | <0.001 |  | 0.4 | 0.03 | <0.001 |
| CB→CB | -0.06 | 0.04 | >0.05 |  | 0.11 | 0.06 | <0.05 |  | 0.09 | 0.06 | >0.05 |  | 0.15 | 0.05 | <0.01 |
| CV→CV | 0.06 | 0.03 | >0.05 |  | 0.08 | 0.04 | >0.05 |  | 0.09 | 0.04 | <0.05 |  | 0.2 | 0.04 | <0.001 |
| ***Within-person cross-lagged coefficients*** | | | | | | | | | | | | | | | |
|  | T1→T2 | | |  | T2→T3 | | |  | T3→T4 | | |  | T4→T5 | | |
| FD→CB | 0 | 0.02 | >0.05 |  | 0 | 0.02 | >0.05 |  | 0 | 0.02 | >0.05 |  | 0 | 0.02 | >0.05 |
| CB→FD | 0.02 | 0.02 | >0.05 |  | 0.01 | 0.01 | >0.05 |  | 0.01 | 0.01 | >0.05 |  | 0.01 | 0.01 | >0.05 |
| FD→CV | 0.03 | 0.01 | >0.05 |  | 0.03 | 0.01 | >0.05 |  | 0.03 | 0.01 | >0.05 |  | 0.03 | 0.01 | >0.05 |
| CV→FD | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.01 | >0.05 |  | 0.01 | 0.01 | >0.05 |
| FD→DP | 0.06 | 0.02 | <0.001 |  | 0.06 | 0.01 | <0.001 |  | 0.05 | 0.01 | <0.001 |  | 0.05 | 0.01 | <0.001 |
| DP→FD | 0.11 | 0.02 | <0.001 |  | 0.11 | 0.02 | <0.001 |  | 0.11 | 0.02 | <0.001 |  | 0.11 | 0.02 | <0.001 |
| DP→CB | 0.06 | 0.02 | <0.01 |  | 0.06 | 0.02 | <0.01 |  | 0.06 | 0.02 | <0.01 |  | 0.06 | 0.02 | <0.01 |
| CB→DP | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.02 | >0.05 |
| DP→CV | 0.07 | 0.02 | <0.001 |  | 0.08 | 0.02 | <0.001 |  | 0.07 | 0.02 | <0.001 |  | 0.08 | 0.02 | <0.001 |
| CV→DP | 0.02 | 0.02 | >0.05 |  | 0.01 | 0.02 | >0.05 |  | 0.01 | 0.01 | >0.05 |  | 0.01 | 0.01 | >0.05 |
| CB→CV | 0.02 | 0.02 | >0.05 |  | 0.02 | 0.02 | >0.05 |  | 0.02 | 0.02 | >0.05 |  | 0.02 | 0.02 | >0.05 |
| CV→CB | 0.06 | 0.02 | <0.05 |  | 0.05 | 0.02 | <0.05 |  | 0.05 | 0.02 | <0.05 |  | 0.05 | 0.02 | <0.05 |

*Note.* FD = Family Dysfunction; DP = Depressive Symptoms; CB = Cyberbullying; CV = Cybervictimization

**Table S3**

The Final RI-CLPM model Controlled for Covariates

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Gender | |  | Age | |  | SES | |
|  | β | *p* |  | β | *p* |  | β | *p* |
| RI-FD | 0.17 | <0.001 |  | -0.04 | 0.122 |  | -0.23 | <0.001 |
| RI-DP | -0.01 | 0.542 |  | 0.04 | 0.08 |  | -0.11 | <0.001 |
| RI-CP | 0.21 | <0.001 |  | 0.04 | 0.147 |  | -0.16 | <0.001 |
| RI-CV | 0.21 | <0.001 |  | 0.03 | 0.232 |  | -0.13 | <0.001 |
| T1 FD | 0.05 | <0.001 |  | -0.06 | <0.001 |  | -0.03 | 0.098 |
| T1 DP | 0.06 | <0.001 |  | -0.04 | <0.05 |  | 0.00 | 0.87 |
| T1 CP | 0.02 | 0.168 |  | -0.04 | <0.05 |  | -0.01 | 0.52 |
| T1 CV | 0.01 | 0.401 |  | -0.03 | 0.082 |  | -0.01 | 0.462 |

*Note.* FD = Family Dysfunction; DP = Depressive Symptoms; CB = Cyberbullying;

CV = Cybervictimization.