*Moderating Effects of Age 9 Diurnal Slope on Development of Age 12 Internalizing Subscales*

The interaction between age 3 irritability and age 9 diurnal slope significantly predicted age 12 withdrawn/depression, anxiety/depression and somatic complaints (see Supplemental Table 1). For children with a steeper or more negative diurnal slope, greater early irritability predicted increases in anxiety/depression (b=0.55 (0.28), p < 0.05) and somatic complaints (b=0.83 (0.26) p < 0.01), but did not predict increases in withdrawn/depression (b=0.22 (0.19), p = 0.24). In contrast, among children with a less steep or more positive diurnal slope, greater early irritability significantly predicted decreases in withdrawn/depression (b =- 0.48 (0.22), *p* = 0.03), but did not significantly predict decreases in somatic complaints (b =-0.53 (0.31), p =0.09) or anxiety/depression (b = -0.32 (0.25), p = 0.20). The RoS revealed that when irritability was greater than -0.08 SD below, and 0.08 SD above the mean, a steeper, compared to a blunted diurnal, slope was associated with an increase in somatic complaints and anxiety/depression, respectively. When irritability was greater than a -0.23 SD below the mean, a blunted, compared to a steeper slope was associated with decreases in withdrawn/depression, respectively[[1]](#footnote-1).

*Moderating Effects of Age 9 Diurnal Slope on Development of Age 12 Externalizing Subscales*

The interaction between age 3 irritability and age 9 diurnal slope significantly predicted attention problems, rule breaking and aggressive behavior (see Supplemental Table 1). For children with a steeper or more negative diurnal slope, greater early irritability did not significantly predict attention problems (b=-0.35 (0.23), p = 0.13), rule breaking (b=-0.25 (0.17), p = 0.14) or aggressive behavior (b=-0.47 (0.27) p =.08). In contrast, among children with a more positive or blunted diurnal slope, greater early irritability significantly predicted increases in rule breaking (b =0.48 (0.19), *p* < 0.05) and aggressive behavior (b =0.91 (0.31), *p* < 0.01), but did not predict increases in attention problems (b =0.21 (0.22), *p* = 0.32). The RoS revealed that when irritability was greater than -0.19 and -0.15 SD below the mean, a blunted, compared to a steeper diurnal, slope was associated with an increase in rule breaking and aggressive behavior, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Age 12 Withdrawn/Depression* | | | | | | *Age 12 Somatic Complaints* | | | | | | *Age 12 Anxiety/Depression* | | | | | |
| *Predictor* | *B* | *SE* | | *95% CI* | | | *B)* | *SE* | | *95% CI* | | | *B* | *SE* | *95% CI* | | | |
|  |  |  | | *Lower* | *Upper* | |  |  | | *Lower* | | *Upper* |  |  | *Lower* | | *Upper* | |
| Gender | 0.01 | | 0.19 | -0.31 | | 0.32 | 0.05 | | 0.15 | -0.20 | | 0.29 | 0.53\* | 0.24 | | 0.14 | | 0.93 |
| Age 3 Irritability | -2.95\*\* | | 0.94 | -4.49 | | -1.41 | -5.37\*\* | | 1.66 | -8.10 | | -2.63 | -3.40\* | 1.36 | | -5.64 | | -1.17 |
| Age 3 Internalizing Symptoms | 0.08\*\*\* | | 0.02 | 0.04 | | 0.12 | 0.03\*\* | | 0.01 | 0.01 | | 0.05 | 0.09\*\* | 0.03 | | 0.04 | | 0.13 |
| Age 3 Externalizing Symptoms | 0.00 | | 0.02 | -0.04 | | 0.03 | -0.01 | | 0.01 | -0.03 | | 0.02 | 0.03 | 0.03 | | -0.02 | | 0.07 |
| Age 9 Diurnal Slope | -0.67\* | | 0.29 | -1.15 | | -0.20 | -0.34 | | 0.21 | -0.68 | | 0.01 | -0.69\* | 0.36 | | -1.29 | | -0.10 |
| Age 12 Externalizing Symptoms | 0.16\*\*\* | | 0.04 | 0.09 | | 0.22 | 0.08\*\* | | 0.03 | 0.04 | | 0.12 | 0.20\*\*\* | 0.05 | | 0.12 | | 0.28 |
| Age 12 Irritability | 0.18\*\* | | 0.07 | 0.07 | | 0.30 | 0.07 | | 0.05 | -0.01 | | 0.15 | 0.25\*\* | 0.09 | | 0.10 | | 0.39 |
| Age 3 Irritability X Age 9 Diurnal Slope | -0.41\*\* | | 0.13 | -0.62 | | -0.20 | -0.80\*\* | | 0.23 | -1.19 | | -0.41 | -0.51\* | 0.20 | | -0.84 | | -0.19 |
|  | *Age 12 Attention Problems* | | | | | | *Age 12 Rule Breaking* | | | | | | *Age 12 Aggression* | | | | | |
| Gender | -0.82\*\* | | 0.31 | -1.33 | | -0.30 | -0.10 | | 0.14 | | -0.33 | 0.13 | -0.12 | 0.17 | | -0.39 | | 0.16 |
| Age 3 Irritability | 2.22\* | | 0.88 | 0.78 | | 3.67 | 3.05\*\*\* | | 0.78 | | 1.77 | 4.33 | 5.86\*\*\* | 1.38 | | 3.58 | | 8.14 |
| Age 3 Internalizing Symptoms | -0.03 | | 0.04 | -0.08 | | 0.03 | -0.01 | | 0.02 | | -0.04 | 0.01 | -0.03 | 0.02 | | -0.06 | | 0.00 |
| Age 3 Externalizing Symptoms | 0.04 | | 0.04 | -0.02 | | 0.10 | 0.03 | | 0.02 | | 0.00 | 0.06 | 0.07\*\*\* | 0.02 | | 0.04 | | 0.10 |
| Age 9 Diurnal Slope | 0.90\*\* | | 0.34 | 0.34 | | 1.46 | 0.50\*\* | | 0.19 | | 0.19 | 0.81 | 0.65\*\* | 0.23 | | 0.28 | | 1.03 |
| Age 12 Internalizing Symptoms | 0.22\*\*\* | | 0.04 | 0.15 | | 0.28 | 0.09\*\*\* | | 0.02 | | 0.06 | 0.13 | 0.11\*\*\* | 0.02 | | 0.07 | | 0.14 |
| Age 12 Irritability | 0.26\* | | 0.10 | 0.09 | | 0.43 | 0.16\*\* | | 0.05 | | 0.08 | 0.24 | 0.62\*\*\* | 0.06 | | 0.53 | | 0.71 |
| Age 3 Irritability X Age 9 Diurnal Slope | 0.33\*\* | | 0.13 | 0.12 | | 0.54 | 0.43\*\*\* | | 0.11 | | 0.25 | 0.60 | 0.82\*\*\* | 0.19 | | 0.50 | | 1.13 |

**Supplemental Table 1**

*Interactive Effects of Age 3 Irritability and Age 9 Diurnal Slope Predicting Subscales of Children’s Internalizing and Externalizing Symptoms at Age 12*

\**p* ≤ .05*,* \*\**p* < .01, \*\*\**p* < .001

1. Figures are available on request. [↑](#footnote-ref-1)