**Supplementary Materials**

**Methods**

Additional details for psychopathology symptom variables:

Depression symptoms were assessed using the Children’s Depression Inventory-2 (CDI-2), which demonstrates good reliability and validity in child and adolescent populations (Craighead et al., 1998; Kovacs, 1992, 2011; Weissman et al., 2020). Anxiety symptoms, covering domains of panic/somatic symptoms, generalized anxiety, separation anxiety, social phobia, and school phobia, were measured with the Screen for Child Anxiety Related Emotional Disorders (SCARED) (Birmaher et al., 1997). SCARED has good psychometric properties in young samples (Birmaher et al., 1999; Birmaher et al., 1997; Weissman et al., 2020). Externalizing psychopathology outcomes were constructed using the maximum of child and parent reports on attention problem, rule-breaking, and aggression subscales of the Youth Self-Report (YSR) and the Child Behavior Checklist (CBCL) (Achenbach, 1991; Liu et al., 1997). DSM-IV-defined PTSD symptoms of re-experiencing, avoidance/numbing, and hyper-arousal were assessed using child and parent versions of the UCLA PTSD Reaction Index (Steinberg et al., 2004). The higher of child and parent symptom severity scores were used across the domains. Dimensional internalizing and externalizing outcomes were extracted using a confirmatory factor analysis performed in MPlus Version 8.1 (Muthén & Muthén, 2017) using a model that is equivalent to a correlated factors model, fit on deciles of scores for depression, anxiety, PTSD, attention problem, rule-breaking, and aggression.

**Results**

Table S.1: Distributions of key variables in the overall sample

|  |  |  |
| --- | --- | --- |
| Characteristic | Overall | % Missing |
| n | 227 |  |
| Age, years, mean(SD) | 11.47 (0.48) | 0 |
| Female biological sex, n(%) | 110 (48.5) | 0 |
| Chronicity of poverty, early childhood, mean(SD) | 0.92 (1.40) | 7.5 |
| Ever poverty, early childhood, n(%) | 80 (38.1) | 7.5 |
| Maternal depression, early childhood, mean(SD) | 23.94 (7.55) | 0 |
| Threat, mean(SD) | 0.01 (0.77) | 0 |
| Deprivation, mean(SD) | 0.01 (0.71) | 0 |
| AB: Attention bias threat, reaction time difference in ms, mean(SD) | -4.91 (35.02) | 5.3 |
| IER: Adaptation to emotional conflict, reaction time difference in ms, mean(SD) | 8.07 (126.39) | 6.6 |
| IER: Stroop - fear, reaction time difference in ms, mean(SD) | -7.40 (88.52) | 6.6 |
| IER: Stroop - happy, reaction time difference in ms, mean(SD) | -5.31 (85.37) | 6.6 |
| ToM: Accuracy on affective trials, mean(SD) | 0.91 (0.10) | 10.6 |
| ToM: Accuracy on cognitive trials, mean(SD) | 0.79 (0.10) | 10.6 |
| FC: SCR to CS+ vs CS-, μs, mean(SD) | 0.18 (0.19) | 15.4 |
| PT: Tanner stage, mean(SD) | 2.21 (0.85) | 15 |
| LA: Language ability, t-score, mean(SD) | 60.06 (8.98) | 0 |
| RA: Reasoning ability, t-score, mean(SD) | 55.56 (9.27) | 0 |
| IC: Reaction time (ms) on inhibit trials, mean(SD) | 5.02 (4.17) | 18.9 |
| IC: Reaction time (ms) on switch trials, mean(SD) | 26.64 (8.89) | 18.9 |
| IC: Accuracy on Stroop task, mean(SD) | 0.33 (0.09) | 10.6 |
| RS: Reaction time (ms) on no- vs high-reward trials, mean(SD) | -28.98 (56.85) | 7.5 |
| RS: Total stars, mean(SD) | 59.82 (14.47) | 7.5 |
| Internalizing symptoms, mean(SD) | 0.00 (1.19) | 6.6 |
| Externalizing symptoms, mean(SD) | 0.04 (2.14) | 6.6 |

% Missing out of 227 with baseline data

Table S.2: HIMA results with outcome and mediator models mutually adjusted for threat and deprivation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Adversity Exposure | Mediator | Adversity-Psychopathology a | Adversity-Mediator a | Mediator-Psychopathology b | BH-corrected  p-value |
| Standardized β (95% CI) | Standardized β (95% CI) | Standardized β (95% CI) |
| Internalizing | Threat | PT: Tanner stage | 0.16(0.03,0.29)\* | 0.02(-0.11,0.15) | 0.19(0.06,0.32)\*\* | 0.8144 |
| Threat | RS: Reaction time on no- vs high-reward trials | 0.16(0.03,0.29)\* | -0.18(-0.32,-0.04)\* | -0.15(-0.27,-0.03)\* | 0.0212 |
| Deprivation | PT: Tanner stage | 0.30(0.16,0.44)\*\*\* | -0.13(-0.27,0.01) | 0.19(0.06,0.32)\*\* | 0.1373 |
| Deprivation | RS: Reaction time on no- vs high-reward trials | 0.30(0.16,0.44)\*\*\* | -0.08(-0.23,0.07) | -0.15(-0.27,-0.03)\* | 0.3115 |
| Externalizing | Threat | PT: Tanner stage | 0.27(0.14,0.40)\*\*\* | 0.02(-0.11,0.15) | 0.20(0.07,0.33)\*\* | 0.8721 |
| Threat | RS: Total stars | 0.27(0.14,0.40)\*\*\* | -0.18(-0.32,-0.04)\* | -0.05(-0.17,0.07) | 0.8721 |
| Deprivation | PT: Tanner stage | 0.21(0.07,0.35)\*\* | -0.13(-0.27,0.01) | 0.20(0.07,0.33)\*\* | 0.1373 |
| Deprivation | RS: Total stars | 0.21(0.07,0.35)\*\* | -0.08(-0.23,0.07) | -0.05(-0.17,0.07) | 0.6590 |
| p-value \*\*\*<0.001, \*\*<0.01, \*<0.05 | | |  |  |  |  |
| a Adjusted for the other adversity exposure, age, biological sex, early life poverty chronicity, and maternal depression | | | | | |  |
| b Adjusted for threat, deprivation, age, biological sex, early life poverty chronicity, and maternal depression | | | | | |  |
| Standardized beta coefficients represent the change in the outcome associated with a 1-SD change in the predicting variable | | | | | |  |
| BH=Benjamini-Hochberg, preserving false discovery rate at 0.05 | | | |  |  |  |

Table S.3: HIMA results in the overall sample and by sex.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Adversity Exposure | Mediator | Sample | Adversity-Psychopathology a | Adversity- Mediator a | Mediator-Psychopathology b |
|  | Standardized β (95% CI) | Standardized β (95% CI) | Standardized β (95% CI) |
| Internalizing | Threat | Tanner Stage | All | 0.22(0.09,0.35)\*\* | -0.01(-0.13,0.11) | 0.19(0.06,0.32)\*\* |
|  | Boys | 0.17(0.00,0.34)\* | 0.11(-0.05,0.27) | 0.15(-0.04,0.34) |
|  | Girls | 0.29(0.08,0.5)\*\* | -0.17(-0.37,0.03) | 0.28(0.09,0.47)\*\* |
| Threat | Reward Sensitivity (RT contrast) | All | 0.22(0.09,0.35)\*\* | -0.20(-0.33,-0.07)\*\* | -0.15(-0.27,-0.03)\* |
|  | Boys | 0.17(0.00,0.34)\* | -0.19(-0.35,-0.03)\* | -0.11(-0.29,0.07) |
|  | Girls | 0.29(0.08,0.50)\*\* | -0.20(-0.42,0.02) | -0.17(-0.34,0.00) |
| Deprivation | Tanner Stage | All | 0.34(0.2,0.48)\*\*\* | -0.12(-0.25,0.01) | 0.19(0.06,0.32)\*\* |
|  | Boys | 0.33(0.16,0.50)\*\*\* | -0.06(-0.22,0.10) | 0.15(-0.04,0.34) |
|  | Girls | 0.32(0.08,0.56)\*\* | -0.20(-0.42,0.02) | 0.28(0.09,0.47)\*\* |
| Deprivation | Reward Sensitivity (RT contrast) | All | 0.34(0.2,0.48)\*\*\* | -0.12(-0.26,0.02) | -0.15(-0.27,-0.03)\* |
|  | Boys | 0.33(0.16,0.50)\*\*\* | -0.07(-0.24,0.1) | -0.11(-0.29,0.07) |
|  | Girls | 0.32(0.08,0.56)\*\* | -0.21(-0.46,0.04) | -0.17(-0.34,0.00) |
| Externalizing | Threat | Tanner Stage | All | 0.31(0.18,0.44)\*\*\* | -0.01(-0.13,0.11) | 0.21(0.08,0.34)\*\* |
|  | Boys | 0.24(0.07,0.41)\*\* | 0.11(-0.05,0.27) | 0.23(0.03,0.43)\* |
|  | Girls | 0.41(0.23,0.59)\*\*\* | -0.17(-0.37,0.03) | 0.25(0.08,0.42)\*\* |
| Threat | Reward Sensitivity (Total stars) | All | 0.31(0.18,0.44)\*\*\* | -0.02(-0.15,0.11) | -0.19(-0.31,-0.07)\*\* |
|  | Boys | 0.24(0.07,0.41)\*\* | -0.04(-0.23,0.15) | -0.18(-0.35,-0.01)\* |
|  | Girls | 0.41(0.23,0.59)\*\*\* | 0.00(-0.19,0.19) | -0.22(-0.39,-0.05)\* |
| Deprivation | Tanner Stage | All | 0.28(0.14,0.42)\*\*\* | -0.12(-0.25,0.01) | 0.21(0.08,0.34)\*\* |
|  | Boys | 0.27(0.09,0.45)\*\* | -0.06(-0.22,0.1) | 0.23(0.03,0.43)\* |
|  | Girls | 0.28(0.06,0.50)\* | -0.2(-0.42,0.02) | 0.25(0.08,0.42)\*\* |
| Deprivation | Reward Sensitivity (Total stars) | All | 0.28(0.14,0.42)\*\*\* | -0.04(-0.19,0.11) | -0.19(-0.31,-0.07)\*\* |
|  | Boys | 0.27(0.09,0.45)\*\* | -0.12(-0.31,0.07) | -0.18(-0.35,-0.01)\* |
|  | Girls | 0.28(0.06,0.50)\* | 0.07(-0.15,0.29) | -0.22(-0.39,-0.05)\* |
| p-value \*\*\*<0.001, \*\*<0.01, \*<0.05 | | |  |  |  |  |
| a Adjusted for age, biological sex, early life poverty chronicity, and maternal depression | | | | | |  |
| b Adjusted for threat, deprivation, age, biological sex, early life poverty chronicity, and maternal depression | | | | | | |
| Standardized beta coefficients represent the change in the outcome associated with a 1-SD change in the predicting variable | | | | | | |

Table S.4: Distributions of deprivation and threat experiences by biological sex.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | p-value |
| N(%) | 117 (51.5) | 110 (48.5) |  |
| Overall deprivation: mean(sd) | 0.12 (0.73) | -0.11 (0.67) | 0.014 |
| **Cognitive deprivation** - reverse-coded count of cognitive stimulation items on the HOME-SF: mean(sd) | 2.64 (1.86) | 2.43 (1.67) | 0.375 |
| **Emotional deprivation** - standardized composite of the CECA and MNBS emotional neglect measures: mean(sd) | 0.18 (0.88) | -0.18 (0.80) | 0.002 |
| **Physical deprivation** - standardized composite of food insecurity and physical neglect subscales of MNBS and CTQ: mean(sd) | 2.62 (0.93) | 2.47 (0.86) | 0.200 |
| Overall threat: mean(sd) | 0.09 (0.79) | -0.08 (0.74) | 0.086 |
| **Count of distinct types** of violence experienced (physical, sexual, domestic violence, witnessing violent crime, victim of violent crime) : mean(sd) | 0.33 (0.84) | 0.22 (0.61) | 0.242 |
| **Summed frequency** ratings of witnessed and experienced violence on VEX-R: mean(sd) | 5.56 (5.92) | 3.97 (4.23) | 0.026 |
| Sum of physical and sexual abuse **severity** on CTQ: mean(sd) | 10.59 (1.36) | 10.56 (2.76) | 0.914 |

References

Achenbach, T. M. (1991). Manual for the Child Behavior Checklist/4-18 and 1991 profile. *University of Vermont, Department of Psychiatry*.

Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric Properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): A Replication Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *38*(10), 1230-1236. <https://doi.org/10.1097/00004583-199910000-00011>

Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J., & Neer, S. M. (1997). The screen for child anxiety related emotional disorders (SCARED): Scale construction and psychometric characteristics. *Journal of the American Academy of Child & Adolescent Psychiatry*, *36*(4), 545-553.

Craighead, W. E., Smucker, M. R., Craighead, L. W., & Ilardi, S. S. (1998). Factor Analysis of the Children's Depression Inventory in a Community Sample. *Psychological assessment*, *10*(2), 156-165. <https://doi.org/10.1037/1040-3590.10.2.156>

Kovacs, M. (1992). Children Depression Inventory (CDI) manual. *Toronto, Ontario: Multi-Health Systems*.

Kovacs, M. (2011). CDI 2: Children’s depression inventory. . In *Technical manual (2nd ed.)*. Multi-health Systems.

Liu, X., Guo, C., Liu, L., Wang, A., Hu, L., Tang, M., Chai, F., Zhao, G., Yang, J., & Sun, L. (1997). Reliability and validity of the Youth Self-Report (YSR) of Achenbach's Child Behavior Checklist (CBCL). *Chinese Mental Health Journal*.

Muthén, L. K., & Muthén, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Muthén & Muthén.

Steinberg, A. M., Brymer, M. J., Decker, K. B., & Pynoos, R. S. (2004). The University of California at Los Angeles Post-traumatic Stress Disorder Reaction Index. *Curr Psychiatry Rep*, *6*(2), 96-100. <https://doi.org/10.1007/s11920-004-0048-2>

Weissman, D. G., Nook, E. C., Dews, A. A., Miller, A. B., Lambert, H. K., Sasse, S. F., Somerville, L. H., & McLaughlin, K. A. (2020). Low Emotional Awareness as a Transdiagnostic Mechanism Underlying Psychopathology in Adolescence. *Clin Psychol Sci*, *8*(6), 971-988. <https://doi.org/10.1177/2167702620923649>