**Supplemental Materials**

**Covariates Considered**

Several demographic and child characteristics were considered as covariates. First, family socioeconomic status (SES) was calculated as an income-to-needs ratio consistent with prior work with the SECCYD dataset (Campbell et al., 2006, 2010; Gazelle & Spangler, 2007; Roisman et al., 2009). This was calculated from U.S. Census Bureau tables as the ratio of family income to the appropriate poverty level for each household size, with values lower than 2 representing low income (Marceau et al., 2015). Values across the primary timepoints in the current study (i.e., Grade 3 to age 15) were averaged. Children’s age at the first primary time point (i.e., age at the Grade 3 assessment) was also considered as a covariate.

Two aspects of children’s physical development at age 15, body mass index (BMI) and pubertal status, were considered as covariates in Aim 2 models. Age-15 BMI was calculated as the ratio in weight in kilograms over height in meters squared based on measurements from an age-15 lab assessment. Pubertal status was assessed by trained nurse practitioners or physicians using the Tanner Stage criteria (1 = prepubertal to 5 = sexually mature). If a child was between two stages, examiners gave the child the lower stage rating (see Susman et al., 2010). Finally, children reported on their time of awakening and time of saliva collection each day. Time since awakening was calculated as the difference between time of data collection from time of awakening.

Bivariate correlations were conducted to determine whether potential covariates were significantly and substantially (i.e., *r* > .30; Cohen, 1988) correlated with any predictor or outcome variable of interest to determine whether they should be included in primary analysis models. Neither child age at Grade 3 (*r*s = -.06 – .08) nor family SES (*r*s = -.21 – -.07) were substantially correlated with any key study variables, and therefore were not included in analyses. Additionally, time since awakening (*r*s = .05 – .12), pubertal status (*r*s = .03 – .10), and BMI (*r*s = -.11 – -.09) were not substantially correlated with cortisol values on any day and were therefore not included in Aim 2 models.

**Missing Data**

Data were examined for systematic missingness. Data was expected to be missing at random (MAR) given that missingness was not randomly assigned within the study design, which is necessary to achieve data missing completely at random (i.e., MCAR; Baraldi & Enders, 2010). Demographic correlates of attrition were known from prior work with the dataset and are described above. Rates of missingness on study variables ranged from 7% (Grade 3 PR measures) to 23% (Grade 6 TR measures). Nearly half of the sample (45.5%) had complete data, and 77% were missing 6 or fewer study variables (out of > 40 total variables). Dummy coded variables were created reflecting presence or absence of any missing data on key variables at each time point, and these variables were examined for associations with child age, SES, and grade 3 levels of parent- and teacher-reported irritability and victimization. Missingness at Grade 4 was associated with lower SES [*F*(1, 1082) = 5.96, *p* = .02] and higher TR relational victimization [*F*(1, 980) = 4.02, *p* = .045]. Missingness at Grade 5 was associated with higher TR physical victimization [*F*(1, 979) = 3.93, *p* = .048]. Grade 6 missingness was not significantly associated with any of the examined variables. Finally, missing data at age 15 was associated with higher PR irritability [*F*(1, 1024) = 4.09, *p* = .04] and higher TR relational victimization [*F*(1, 980) = 4.09, *p* = .04]. Age 15 missingness was also examined for associations with key variables at grades 4 – 6. The only significant association was that missing data at age 15 was associated with higher PR physical victimization at grade 6 [*F*(1, 1020) = 4.01, *p* = .046]. As evidence was found for the MAR assumption, missing data was accommodated using full information maximum likelihood (FIML; Little, 2013).

**CFAs**

***Irritability***

An initial T1 irritability factor with teacher report and parent report at grades 3 and 4 loading onto an irritability factor showed poor fit to the data [χ2(2) = 141.40, *p* < .001; RMSEA = .25; CFI = .84; SRMR = .10]. Modification indices suggested allowing within-reporter residuals to covary for either reporter. As parent reports were completed by the same individual at both time points, in contrast to teachers who likely changed between academic years, a residual covariance was added between parent-reported irritability at grades 3 and 4. The resulting model showed excellent fit to the data [χ2(1) = 0.21, *p* = .65; RMSEA = .00; CFI = 1.00; SRMR = .002], and all factor loadings were significant and substantial (Supplemental Figure 1a). Similarly, an initial T2 irritability factor showed poor fit to the data [χ2(2) = 120.11, *p* < .001; RMSEA = .24; CFI = .84; SRMR = .10]. With the residuals of parent report at grades 5 and 6 allowed to covary, the model showed excellent fit to the data [χ2(1) = 0.68, *p* = .41; RMSEA = .00; CFI = 1.00; SRMR = .003] and all indicators loaded significantly onto the latent factor (Supplemental Figure 1b).

Factors were also tested for equivalence across gender and acceptable fit to the data for each group, as structural models examining gender differences were run separately for each gender. At T1, an initial fully freed model provided adequate fit to the data [χ2(5) = 6.68, *p* = .25; RMSEA = .03; CFI = 1.00; SRMR = .02]. Constraining factor loadings [Δχ2(3) = 1.52, *p* = .68] to equivalence across gender did not result in significant decrement in model fit; however, constraining factor variance [Δχ2(1) = 16.46, *p* < .001] to be equal was not supported. When run separately by gender, models provided close fit to the data for both males [χ2(1) = 0.03, *p* = .86; RMSEA = .00; CFI = 1.00; SRMR = .001] and females [χ2(1) = 0.18, *p* = .67; RMSEA = .00; CFI = 1.00; SRMR = .002], and all factor loadings were significant and substantial for both groups (βs = .31 – .73, *ps* < .001). At T2, a fully freed model provided adequate fit to the data [χ2(5) = 15.67, *p* = .008; RMSEA = .06; CFI = .99; SRMR = .04], and nested model tests supported constraining factor loadings [Δχ2(3) = 1.10, *p* = .78] and factor variance [Δχ2(1) = 3.33, *p* = .07] to equivalence across groups. Separate group models demonstrated close fit to the data for males [χ2(1) = 1.07, *p* = .30; RMSEA = .01; CFI = 1.00; SRMR = .007] and females [χ2(1) = 0.001, *p* = .97; RMSEA = .00; CFI = 1.00; SRMR = .00]. Indicators loaded significantly onto the latent factor for both groups (βs = .24 – .80, *p*s < .001).

***Relational Victimization***

A T1 Relational Victimization factor with teacher and parent reports at grades 3 and 4 initially showed poor fit to the data [χ2(2) = 47.62, *p <* .001; RMSEA = .14; CFI = .93; SRMR = .04] which improved with the addition of a residual covariance between parent report indicators [χ2(1) = 0.47, *p* = .49; RMSEA = .00; CFI = 1.00; SRMR = .003]. All indicators significantly and substantially loaded onto the latent factor in this model (Supplemental Figure 2a). The T2 relational victimization factor showed a similar pattern, with an initial model providing poor fit to the data [χ2(2) = 88.64, *p* < .001; RMSEA = .20; CFI = .90; SRMR = .07], but showing acceptable fit to the data with the addition of a residual covariance between parent report indicators [χ2(1) = 7.89, *p* = .005; RMSEA = .08; CFI = .99; SRMR = .01]. All indicators loaded significantly and substantially onto this final model (Supplemental Figure 2b).

At T1, a fully freed multiple group model showed adequate fit to the data [χ2(5) = 12.28, *p* = .03; RMSEA = .05; CFI = .99; SRMR = .03]. Equivalence constraints across groups on factor loadings [Δχ2(3) = 0.77, *p* = .86], but not factor variance [Δχ2(1) = 7.92, *p* = .005], were supported. Models run separately for males [χ2(1) = 0.29, *p* = .59; RMSEA = .00; CFI = 1.00; SRMR = .004] and females [χ2(1) = 2.42, *p* = .12; RMSEA = .05; CFI = 1.00; SRMR = .01] demonstrated close fit to the data and factor loadings for both groups were significant and substantial (βs = .44 – .74, *p*s < .001). Models at T2 were similar, with an initial model demonstrating adequate fit to the data [χ2(5) = 25.20, *p* < .001; RMSEA = .09; CFI = .98; SRMR = .04], and constraints on factor loadings [Δχ2(3) = 2.98, *p* = .39], but not factor variance [Δχ2(1) = 11.43, *p* < .001] was supported. Separate models showed adequate fit to the data for males [χ2(1) = 2.50, *p* = .11; RMSEA = .05; CFI = 1.00; SRMR = .01] and females [χ2(1) = 4.84, *p* = .03; RMSEA = .09; CFI = .99; SRMR = .02], and all factor loadings were significant and substantial for both groups (βs = .36 – .72, *p*s < .001).

***Physical Victimization***

As the physical victimization two-item subscales showed poor internal consistency, the physical victimization latent factor was constructed using parent and teacher report at the item level. An initial T1 item-level model showed poor fit to the data [χ2(20) = 189.67, *p* < .001; RMSEA = .09; CFI = .72; SRMR = .08]. A review of modification indices suggested the need to allow residuals to covary among items completed by the same reporter at the same timepoint (MIs = 35.58 – 52.80). With these residual covariances estimated, the model provided acceptable fit to the data [χ2(16) = 55.97, *p* < .001; RMSEA = .05; CFI = .93; SRMR = .04]. Although teacher reported item loadings were low (Supplemental Figure 3a), all were significant and they were retained for conceptual purposes. The T2 physical victimization model was similar. Initially, the model provided poor fit to the data [χ2(20) = 257.10, *p* < .001; RMSEA = .11; CFI = .61; SRMR = .10] and MIs suggested residuals within reporter within timepoint should be allowed to covary (MIs = 56.77 – 81.65). With these estimated, the model showed acceptable fit to the data [χ2(16) = 30.22, *p* = .02; RMSEA = .03; CFI = .98; SRMR = .04]. All factor loadings were significant, and although teacher report item loadings were low, they were retained for conceptual purposes (Supplemental Figure 3b).

A multiple group model fully freed to vary across genders showed adequate fit to the data at T1 [χ2(39) = 83.28, *p* < .001; RMSEA = .05; CFI = .93; SRMR = .05]. Constraints on factor loadings [Δχ2(7) = 4.72, *p* = .69] but not factor variance [Δχ2(1) = 8.81, *p* = .003], to equivalence across gender were supported. Models estimated separately for males [χ2(16) = 44.73, *p* < .001; RMSEA = .06; CFI = .92; SRMR = .05] and females [χ2(16) = 28.86, *p* = .02; RMSEA = .04; CFI = .95; SRMR = .04] showed adequate fit to the data. Factor loadings were generally significant and substantial (βs = .20 – .73, *p*s < .001 – .03), with the exception of teacher report items at grade 4 in the female only model (βs = .04 – .19, *p*s = .05 – .56). These indicators were retained for conceptual purposes and to maintain consistency with the full sample model. At T2, a multiple group model fully freed to vary across gender did not converge. A male-only model provided close fit to the data [χ2(16) = 17.19, *p* = .37; RMSEA = .01; CFI = 1.00; SRMR = .03] and factor loadings were significant (βs = .18 – .67, *p*s < .001 – .04). However, a female-only model did not converge due to restricted range resulting in indicators being dichotomous. Therefore, a manifest composite created by averaging all latent variable indicators (i.e., parent and teacher report on the two physical victimization items at grades 5 and 6) was used for female models that included T2 physical victimization.

***Cortisol***

The latent factor with the cortisol value of each day loading onto a cortisol latent factor was just-identified. All indicators loaded significantly and substantially onto the factor (Supplemental Figure 4). A fully freed multiple group model provided adequate fit to the data [χ2(2) = 7.61, *p* = .02; RMSEA = .08; CFI = .99; SRMR = .03]. Constraints on factor loadings [Δχ2(2) = 1.06, *p* = .59] were supported, but constraining factor variance resulted in a significant decrement in fit to the data [Δχ2(1) = 4.81, *p* = .03], with females showing higher factor variance. Gender-specific models were just-identified, but factor loadings were significant and substantial for both groups (βs = .56 – .87, *p*s < .001).

**Combined Aim 1 Models**

***Primary Model***

First, a measurement model in which factors for T1 irritability, T2 physical victimization, T2 relational victimization, and the T3 CU traits manifest variable were simultaneously estimated and allowed to covary did not provide adequate fit [χ2(108) = 448.48, *p* < .001; RMSEA = .05; CFI = .87; SRMR = .06]. A review of MI’s indicated that residuals should be allowed to covary among physical and relational victimization indicators (MIs = 6.31 – 69.92) by the same reporter at the same time point (e.g., PR relational victimization at grade 3 with PR physical victimization items at grade 3). After allowing these residuals to covary, the model provided close fit to the data [χ2(100) = 192.40, *p* < .001; RMSEA = .03; CFI = .97; SRMR = .05]. With the best-fitting measurement model established, structural paths and covariates were added. This structural model provided adequate fit to the data [χ2(139) = 293.32, *p* < .001; RMSEA = .03; CFI = .95; SRMR = .05]. Consistent with hypotheses, T1 irritability predicted significant increases in both physical (β = .37, SE = .10, *p* < .001) and relational (β = .44, SE = .09 *p* < .001) victimization, and directly predicted increases in CU traits (β = .29, SE = .08, *p* = .001). However, contrary to predictions, relational victimization significantly predicted decreases in CU traits (β = -.34, SE = .17, *p* = .046), and a positive effect of physical victimization did not reach significance (β = .28, SE = .13, *p* = .08). Likewise, counter to hypotheses, there was a significant negative indirect effect of irritability to CU traits through relational victimization (β = -.15, 95% CI [-.44, -.02]), whereas a positive indirect effect through physical victimization was not significant (β = .08, 95% CI [-.001, .28]). Due to the high correlation between the T2 physical and relational victimization factors (*r* = .76, SE = .06, *p* < .001) as well as the correlated residuals across these constructs, models were then run separately by form of victimization. These models were retained and are presented in the main manuscript.

***Alternative Model***

An initial measurement model with T1 physical and relational victimization factors, the T2 irritability factor, and T3 CU traits manifest variable freely covarying provided less than adequate fit to the data [χ2(108) = 446.98, *p* < .001; RMSEA = .05; CFI = .86; SRMR = .06]. An evaluation of modification indices showed, consistent with the primary model, that allowing residuals to covary among indicators of physical and relational victimization by the same reporter within timepoint would substantially improve model fit (MIs = 17.70 – 48.81). With these residual covariances estimated, the measurement model provided adequate fit [χ2(100) = 238.21, *p* < .001; RMSEA = .04; CFI = .94; SRMR = .05]. Next, structural paths and covariates were added. The model provided adequate fit to the data [χ2(126) = 324.59, *p* < .001; RMSEA = .04; CFI = .93; SRMR = .05]. Relational victimization (β = .47, SE = .13, *p* < .001), but not physical victimization (β = -.003, SE = .12, *p* = .98), predicted increases in irritability. In turn, irritability predicted marginally significant (β = .18, SE = .09, *p* = .06) increases in CU traits. Physical victimization (β = .16, SE = .08, *p* = .047), but not relational victimization (β = -.15, SE = .11, *p* = .17), directly predicted increases in CU traits. The indirect effect of relational victimization predicting increases in CU traits through increases in irritability was significant and positive, although small (β = .08, 95% CI [.001, .29]). The physical victimization indirect effect was not significant (β = -.15, 95% CI [-.42, .06]). However, similar to the primary model, the covariance between the relational and physical victimization factors was high (*r* = .75, SE = .04, *p* < .001). Therefore, to address collinearity concerns, models were also run separately by form of victimization. These models are presented in the main manuscript.

**Robustness Tests**

***Removing Unemotional CU Traits Subscale.***

As the present study focused on pathways to the development of CU traits that may be characterized by higher levels of emotionality, and therefore not reflect the unemotionality dimension of CU traits (Craig et al., 2021), Aim 1 analyses were re-run using the YPI CU traits scale with the unemotionality subscale removed as the outcome variable. This revised scale (10 items, Cronbach’s α = .72; McDonald’s ω = .74) was highly correlated with the original full YPI CU traits scale (*r* = .95, *p* < .001), and results from these models were consistent with original models with the full CU scale. Standardized regression coefficients from the primary and alternative models are presented in Supplemental Tables 1 and 2, respectively. For primary models, both the relational victimization [χ2(41) = 137.36, *p* < .001; RMSEA = .05; CFI = .96; SRMR = .04] and physical victimization [χ2(88) = 186.07, *p* < .001; RMSEA = .03; CFI = .95; SRMR = .05] models provided adequate to close fit to the data. Results were virtually identical to those with the full CU traits scale, with irritability predicting significant increases in both physical and relational victimization and CU traits directly, and neither form of victimization significantly predicting change in CU traits. Likewise, indirect effects were non-significant in both the relational victimization (β = -.03, 95% CI [-.16, .04]) and physical victimization (β = .006, 95% CI [-.04, .06]) models.

The alternative relational [χ2(41) = 184.52, *p* < .001; RMSEA = .06; CFI = .93; SRMR = .05] and physical victimization [χ2(88) = 244.00, *p* < .001; RMSEA = .04; CFI = .91; SRMR = .05] models provided adequate fit to the data. In the alternative relational victimization model, the effect of T2 irritability on T3 CU traits, which was marginally significant in the original model, reached statistical significance (*p* = .048), although the magnitude of the effect was similar to that seen in the original models. This effect remained marginally significant (*p* = .08) in the physical victimization model. All other effects remained consistent with the original models, including indirect effects which remained small but significant for both relational victimization (β = .08, 95% CI [.02, .23]) and physical victimization (β = .03, 95% CI [.002, .12]).

Given the consistency in the pattern of findings and magnitude of effects, along with the strong correlation between the CU traits scales with and without the unemotional subscale included, it was determined that the study’s findings are likely not strongly influenced by this 5-item subscale. Therefore, to limit the overall number of tests conducted, gender differences and additional aims were not tested with the modified CU traits variable and original findings were retained.

***Including Harsh Parenting as a Covariate.***

Given the present study’s focus on examining negative peer experiences as a socializing factor in the development of CU traits, robustness tests were also conducted to determine whether effects of peer victimization persisted above and beyond those of a known socializing factor – harsh parenting experiences. Specifically, primary caregiver report at Grade 3 on a measure of parental discipline practices adapted from the Raising Children Checklist (Greenberger & Goldberg, 1989) included in the SECCYD as the Raising Children Questionnaire (Shumow et al., 1998) was added as a covariate to Aim 1 models. The harsh control subscale was used, which contains 9 items (e.g., “Do you make sure you are strict with your child when it comes to punishment?”) rated on a 1 (*Definitely No)* to 4 (*Definitely Yes)*. Items were averaged to create a subscale score. The subscale demonstrated adequate internal consistency in the current sample (Cronbach’s α = .75; McDonald’s ω = .74).

The primary relational victimization model [χ2(47) = 147.59, *p* < .001; RMSEA = .04; CFI = .96; SRMR = .04] provided close fit to the data, and the primary physical victimization model [χ2(98) = 204.20, *p* < .001; RMSEA = .03; CFI = .94; SRMR = .05] provided adequate fit to the data. T1 irritability was significantly correlated with harsh parenting in both models (*r*s = .22, *p*s < .001). The effect of harsh parenting on CU traits was significant in the physical (β = .07, SE = .03, *p* = .049) but not relational (β = .06, SE = .04, *p* = .07) victimization model. Harsh parenting did not significantly predict either form of victimization (βs = -.05 – .06, *p*s = .21 – .15). Standardized regression coefficients for key hypothesized paths in these models are presented in Supplemental Table 3. All direct effects were consistent with original models that did not include harsh parenting, as were indirect effects which remained non-significant for effects of irritability on CU traits through both relational (β = -.04, 95% CI [-.16, .03]) and physical (β = .003, 95% CI [-.04, .05]) victimization. Given this consistency in findings, effects in the primary models were considered robust to the effects of harsh parenting, and to reduce the number of tests run, gender specific models were not tested.

The alternative relational [χ2(47) = 200.78, *p* < .001; RMSEA = .05; CFI = .93; SRMR = .05] and physical [χ2(98) = 264.99, *p* < .001; RMSEA = .04; CFI = .91; SRMR = .05] models provided adequate fit to the data. Both forms of victimization at T1 were significantly correlated with Grade 3 harsh parenting (*r*s = .10 – .17, *p*s = .009 – < .001). Effects of harsh parenting on T2 irritability were also significant in both models (βs = .11 – .13, *p*s = .02 – .004), consistent with primary models. Likewise, effects of harsh parenting on CU traits were similar in magnitude to those in the primary models, although the effect reached significance for the relational (β = .07, SE = .04, *p* = .048), rather than the physical (β = .07, SE = .03, *p* = .05) model. Standardized regression coefficients for hypothesized paths in these models are presented in Supplemental Table 4. In both models, the effect of T2 irritability on T3 CU traits, which had been previously marginally significant (*p*s = .08), became fully non-significant (*p*s = .12 – .13). Likewise, although the magnitude of effect estimates for the indirect effects remained virtually identical to those in models without harsh parenting, the effects no longer reached statistical significance for the relational (β = .06, 95% CI [-.006, .17]) or the physical (β = .03, 95% CI [-.002, .10]) model.

Due to these changes in significance of effects, gender-specific alternative models controlling for harsh parenting were also examined. The alternative relational model provided adequate fit to the data for both males [χ2(47) = 108.12, *p* < .001; RMSEA = .05; CFI = .94; SRMR = .04] and females [χ2(47) = 138.09, *p* < .001; RMSEA = .06; CFI = .92; SRMR = .06]. Consistent with the full sample model, the effect of T2 irritability on T3 CU traits which was previously significant for females became non-significant when harsh parenting was controlled due to a substantially larger standard error. Likewise, the indirect effect of relational victimization on CU traits through irritability, which had previously been significant for females, was no longer significant despite being similar in magnitude to that seen in the original models (β = .10, 95% CI [-.02, .37]). Effects of the male-specific model were consistent with those in the model not including harsh parenting. Consistent with original models, the alternative physical model provided borderline adequate fit for both males [χ2(98) = 204.90, *p* < .001; RMSEA = .04; CFI = .89; SRMR = .05] and females [χ2(98) = 252.24, *p* < .001; RMSEA = .05; CFI = .89; SRMR = .06] and were retained with caution. Findings were consistent with models not controlling for harsh parenting, such that physical victimization predicted increases in irritability for males only, the effect of irritability on CU traits was significant for females only, and indirect effects were non-significant for both males (β = .01, 95% CI [-.11, .18]) and females (β = .02, 95% CI [-.04, .15]).

Overall, these results suggest that, although harsh parenting was associated with higher levels of victimization, irritability, and CU traits consistent with prior work (Javakhishvili & Vazsonyi, 2022), findings of the present study generally persist above and beyond these effects. This is particularly true for primary models, for which there were no interpretive changes with the addition of harsh parenting. In alternative models, although small direct effects which were previously marginally or weakly significant (e.g., *p* = .048) became non-significant, the overall pattern of effects did not change. Likewise, indirect effects of physical and relational victimization through increases in irritability, which were previously weakly significant, became non-significant. The lower tail of the confidence intervals for these effects hovered around cut-points for significance vs. non-significance in both original and robustness test models. Therefore, interpreting effects based solely on significance vs. non-significance would overstate the amount of change seen in the models controlling for harsh parenting. Instead, as the magnitude of the indirect effects estimates are virtually identical to those seen in the original models, they are considered generally robust to the addition of harsh parenting, and changes in the confidence interval that result in a non-significant interpretation underscores that these effects are quite small and require replication. The broad consistency in the pattern of effects indicates a unique explanatory role for peer victimization above and beyond the influence of harsh parenting, although replication will be needed. Given this broad consistency in findings and to limit the overall number of tests conducted, analyses for additional aims controlling for harsh parenting were not conducted.

**Moderation by co-occurring aggression**

Consistent with prior findings that children who are both victimized and engage in aggressive behavior are at risk for especially negative outcomes (Cook et al., 2010), moderation by aggression co-occurring with victimization was examined. Specifically, engaging in aggressive behavior along with being victimized may be reflective of youth caught in a cycle whereby their peer relationships are characterized by frequent conflict and limited positive peer interactions, which may lead to the development of a harsh, negative worldview dominated by aggressive and uncaring tendencies (Ettekal & Ladd, 2020). Consistent with the STAR model (Waller & Wagner, 2019), this pattern of interactions may promote the development of low affiliative reward due to a lack of positive social inputs, and insensitivity to threat through desensitization to the consequences of aggressive and threatening peer interactions. In order to reduce model complexity, models included only form-consistent moderation terms (e.g., physical victimization moderated by physical aggression). This is consistent with prior work with this dataset which has used form-consistent models (Blakely-McClure & Ostrov, 2016; Ostrov & Godleski, 2013), as well as theory and empirical work suggesting associations between aggression and victimization are stronger within form (Crick et al., 1999; Ostrov, 2008, 2010).

***Measures of physical and relational peer aggression***

Physical aggression was measured using teacher report on the TRF and parent report on the CBCL from grades 3 through 6. Specifically, five items reflecting physical aggression (e.g., “Physically attacks people”), as identified in previous work with this dataset (e.g., NICHD ECCRN, 2004) were averaged. Items were rated on a 3-point scale (0 = *Not true* to 2 = *Very true or often true*)*.* The subscale demonstrated acceptable internal consistency at all grades as reported both by teachers (Cronbach’s αs = .76 – .80; McDonald’s ωs = .78 – .81) and parents (Cronbach’s αs = .70 – .75; McDonald’s ωs = .70 – .75), and parent and teacher report were weakly to moderately correlated within timepoint (*r*s = .23 – .31, *p*s < .001).

Relational aggression was measured from grades 3 through 6 using parent and teacher report on an adapted version of the Children’s Social Behavior Scale (CSBS; Crick, 1997; Crick et al., 1996) included in the NICHD SECCYD as “My child’s behavior with other children” for parent report and “Relationships with Peers: Part E” for teacher report. This adapted scale includes 6 items measuring relational aggression (e.g., “When mad at a peer, gets even by excluding the peer from the group”) rated on a 3-point scale from 0 (*Not true*) to 2 (*Often true*). Both teacher report (Cronbach’s αs = .84 – .87; McDonald’s ωs = .84 – .87) and parent report (Cronbach’s αs = .74 – .78; McDonald’s ωs = .75 – .79) demonstrated adequate internal consistency in the current sample. Within time point, parent and teacher reports were modestly but significantly correlated (*r*s = .17 – .28, *p*s < .001).

***Relational Aggression CFAs***

At T1, an initial relational aggression model showed poor fit to the data [χ2(2) = 103.14, *p* < .001; RMSEA = .22; CFI = .87; SRMR = .08]. Allowing residuals from parent report at grades 3 and 4 to covary resulted in a model with excellent fit to the data [χ2(1) = 0.00, *p* = .99; RMSEA = .00; CFI = 1.00; SRMR = .00] and all indicators loading significantly and substantially onto the latent factor (Supplemental Figure 5a). Likewise, although an initial T2 factor showed poor fit to the data [χ2(2) = 46.61, *p* < .001; RMSEA = .15; CFI = .94; SRMR = .06], allowing parent report residuals to covary resulted in a model with excellent fit to the data [χ2(1) = 0.01, *p* = .91; RMSEA = .00; CFI = 1.00; SRMR = .001] and significant and substantial factor loadings from all indicators (Supplemental Figure 5b).

The multiple group model at T1 freed to vary across gender showed close fit to the data [χ2(5) = 4.96, *p* = .42; RMSEA = .00; CFI = 1.00; SRMR = .02]. Constraints on factor loadings [Δχ2(3) = 0.50, *p* = .92] and factor variance [Δχ2(1) = 3.07, *p* = .08] were supported. When run separately by group, the model provided close fit to the data for both males [χ2(1) = 0.06, *p* = .81; RMSEA = .00; CFI = 1.00; SRMR = .002] and females [χ2(1) = 0.04, *p* = .84; RMSEA = .00; CFI = 1.00; SRMR = .001], and all factor loadings were significant and substantial (βs = .33 – .78, *p*s < .001). At T2, an initial fully freed model showed close fit to the data [χ2(5) = 3.33, *p* = .65; RMSEA = .00; CFI = 1.00; SRMR = .01], and constraining factor loadings to be equal across groups was not supported [Δχ2(1) = 12.76, *p* = .005], suggesting configural but not metric invariance across groups. Specifically, the loading of parent report indicators at grades 5 and 6 were stronger for females than males. The models run separately for males [χ2(1) = 1.04, *p* = .31; RMSEA = .01; CFI = 1.00; SRMR = .006] and females [χ2(1) = 0.75, *p* = .39; RMSEA = .00; CFI = 1.00; SRMR = .006] each provided close fit to the data, and factor loadings were significant and substantial for both groups (βs = .29 – .67, *p*s < .001).

***Physical Aggression CFAs***

The initial T1 physical aggression CFA also showed poor fit to the data [χ2(2) = 168.00, *p* < .001; RMSEA = .28; CFI = .82; SRMR = .09], which improved with the estimation of a residual covariance between parent report indicators [χ2(1) = 13.04, *p* < .001; RMSEA = .11; CFI = .99; SRMR = .01]. Of note, although the RMSEA index remained elevated, all factor loadings were significant and substantial (Supplemental Figure 6a). A T2 physical aggression model with parent report indicators allowed to covary demonstrated excellent fit to the data [χ2(1) = 0.47, *p* = .50; RMSEA = .00; CFI = 1.00; SRMR = .003], representing a significant improvement from the initial model [χ2(2) = 110.78, *p* < .001; RMSEA = .23; CFI = .86; SRMR = .09]. All indicators loaded significantly and substantially in the final T2 physical aggression model (Supplemental Figure 6b).

A T1 multiple group model with all parameters freed to vary across genders provided adequate fit to the data [χ2(5) = 16.93, *p* = .005; RMSEA = .07; CFI = .99; SRMR = .02]. Constraints on factor loadings were supported [Δχ2(3) = 2.23, *p* = .53], but constraining factor variance to equality across groups resulted in a significant decrement in fit to the data [Δχ2(1) = 66.12, *p* < .001], with males demonstrating higher factor variance. When fit separately, the model for males generally provided adequate fit, with the exception of the RMSEA index [χ2(1) = 9.88, *p* = .002; RMSEA = .13; CFI = .98; SRMR = .02]. The model for females provided close fit to the data [χ2(1) = 2.83, *p* = .09; RMSEA = .06; CFI = .99; SRMR = .01], and factor loadings were significant and substantial for both groups (βs = .36 – .75, *p*s < .001). At T2, similar to T1 models, an initial fully freed model provided close fit to the data [χ2(5) = 6.49, *p* = .26; RMSEA = .02; CFI = 1.00; SRMR = .01], and constraints on factor loadings [Δχ2(3) = 2.74, *p* = .43], but not factor variance [Δχ2(1) = 25.16, *p* < .001], were supported. Group-specific models provided adequate fit to the data for both males [χ2(1) = 3.17, *p* = .07; RMSEA = .06; CFI = .99; SRMR = .01] and females [χ2(1) = 3.00, *p* = .08; RMSEA = .06; CFI = .99; SRMR = .01], and all indicators loaded significantly and substantially (βs = .29 – .76, *p*s < .001).

***Primary Aggression Analyses***

All aggression models were run separately by form to reduce model complexity. Additionally, all models were reduced to single-informant latent variables to reduce complexity due to convergence errors in original models (e.g., no convergence, models requiring multiple starts with the majority not converging). Specifically, parent report indicators were retained for irritability latent variables, and teacher report was retained for victimization and aggression latent variables. These reporters were selected for conceptual purposes, as teachers may have greater exposure to peer interactions within which peer victimization and aggression occur, whereas parents may be better reporters of temperament/emotion constructs that are expressed across settings.

**Aggression Primary Models.** For the physical victimization and aggression model, a measurement model with T1 irritability, T2 physical victimization, T2 physical aggression, and T3 CU traits allowed to covary provided close fit to the data [χ2(20) = 43.24, *p* = .002; RMSEA = .03; CFI = .97; SRMR = .03]. With regression paths specified and covariates added, the main effects model provided adequate fit to the data [χ2(41) = 134.99, *p* < .001; RMSEA = .05; CFI = .91; SRMR = .05]. There was a significant main effect of T2 physical aggression on T3 CU traits (β = .19, SE = .05, *p* < .001). Estimating the interaction between T2 physical victimization and physical aggression resulted in a significant improvement in model fit [χ2(1) = 7.71, *p* = .006] and the regression of T3 CU traits on the interaction was significant (β = -.09, SE = .03, *p* = .003). An examination of simple slopes at +/- 1 SD from the mean of physical aggression indicated that the direct effect of physical victimization on CU traits was stronger and significant at low levels of physical aggression (*B* = 2.83, SE = 1.01, *p* = .005) relative to high levels of physical aggression (*B* = 1.39, SE = .74, *p* = .06) which was non-significant (*B* = 1.39, SE = .74, *p* = .06). When plotted (Supplemental figure 7), the combination of higher levels of concurrent physical aggression and physical victimization predicts the highest levels of CU traits, consistent with hypotheses. The indirect effect of irritability on CU traits through physical victimization was non-significant at low (i.e., -1 SD from the mean; 95% CI [-.35, .57]), mean (95% CI [-.27, .44]), and high (i.e., +1 SD from the mean; 95% CI [-.19, .31]) levels of physical aggression. Therefore, the moderating effect of aggression was limited to the direct effect of physical victimization on CU traits.

Models were then examined separately by gender. A manifest variable was used for physical victimization in the female model due to convergence issues with this latent variable in the gender-specific CFA models (see Preliminary Analyses). Monte Carlo integration was used to accommodate missing data on the manifest variable in the interaction. The main effect model provided adequate fit to the data for males [χ2(41) = 78.60, *p* < .001; RMSEA = .04; CFI = .93; SRMR = .05] and close fit for females [χ2(14) = 25.61, *p* = .03; RMSEA = .04; CFI = .97; SRMR = .03]. The main effect of physical aggression on CU traits was nonsignificant for males (β = .02, SE = .08, *p* = .81), but was significant for females (β = .20, SE = .08, *p* = .01). Estimating the interaction resulted in marginally improved fit for males [χ2(1) = 3.35, *p* = .07], and was not significant for females [χ2(1) = 0.33, *p* = .93]. Likewise, the effect of the interaction on CU traits did not reach significance for males (β = -.11, SE = .06, *p* = .06) or females (β = -.03, SE = .03, *p* = .23). Together, this suggests that, in the full sample, physical aggression and physical victimization may interact to predict change in CU traits such that higher levels of CU traits are seen when physical victimization and physical aggression co-occur. However, the indirect effect of irritability to CU traits through physical victimization does not appear to be dependent on levels of physical aggression.

An initial measurement model for relational forms provided generally acceptable fit, although the RMSEA index was elevated [χ2(9) = 90.09, *p* < .001; RMSEA = .09; CFI = .93; SRMR = .04]. The relational main effect model provided borderline adequate fit to the data [χ2(22) = 180.91, *p* < .001; RMSEA = .08; CFI = .89; SRMR = .04] but was retained with caution in order to test the aims and specific predictions of the project. The main effect of T2 relational aggression on T3 CU traits was nonsignificant (β = -.09, SE = .06, *p* = .14). Estimating the interaction between T2 relational victimization and relational aggression resulted in a significant improvement in model fit [χ2(1) = 4.30, *p* = .04], and the interaction’s effect on T3 CU traits was significant (β = -.11, SE = .05, *p* = .03). An examination of simple slopes revealed that the effect of relational victimization on CU traits was significant and positive at low (*B* = 0.67, SE = .31, *p* = .03) but not high (*B* = -0.05, SE = .06, *p* = .86) levels of relational aggression. Contrary to predictions, the highest levels of CU traits were seen at high levels of relational victimization occurring with low levels of relational aggression (Supplemental Figure 8). The indirect effect of irritability to CU traits through relational victimization was non-significant at low (95% CI [.00, .07]), mean (95% CI [-.01, .04]), and high (95% CI [-.03, .02]) levels of co-occurring relational aggression.

Models were then run separately by gender. Main effect models provided borderline adequate fit for both males [χ2(22) = 102.86, *p* < .001; RMSEA = .08; CFI = .89; SRMR = .05] and females [χ2(22) = 93.04, *p* < .001; RMSEA = .08; CFI = .90; SRMR = .04] and were retained with caution. The direct effect of relational aggression on CU traits was nonsignificant for both males (β = .01, SE = .08, *p* = .87) and females (β = .13, SE = .11, *p* = .25). For males, estimating the interaction resulted in a significant improvement in model fit [χ2(1) = 4.90, *p* = .03], and the path of CU traits regressed onto the interaction was significant (β = -.16, SE = .07, *p* = .02). Inconsistent with the full sample model, the direct effect of relational victimization was significant at high (*B* = -.73, SE = .35, *p =* .04), but not low (*B* = .26, SE = .37, *p* = .48) levels of relational aggression. When these slopes are graphed (Supplemental Figure 9), it appears that the general pattern of effects remains similar to that seen in the full sample, but that the highest levels of CU traits are seen for males with high levels of relational aggression, but low victimization, contrary to predictions and findings from the full sample model. The indirect effect was non-significant at low (95% CI [-.02, .03]), mean (95% CI [-.03, .01]), and high (95% CI [-.06, .02]) levels of relational aggression. For females, estimating the interaction did not improve model fit [χ2(1) = 0.44, *p* = .51] and was non-significant (β = -.05, SE = .08, *p* = .47).

**Aggression Alternative Models.** The measurement model for the alternative physical model provided close fit to the data in the full sample [χ2(20) = 41.12, *p* = .004; RMSEA = .03; CFI = .97; SRMR = .03]. With regression paths specified and covariates added, the main effects model also provided adequate fit to the data [χ2(41) = 127.12, *p* < .001; RMSEA = .04; CFI = .94; SRMR = .03]. The main effect of T1 physical aggression on T2 irritability was not significant (β = .16, SE = .37, *p* = .66). Estimating the interaction between T1 physical aggression and T1 physical victimization did not improve model fit [χ2(1) = 1.62, *p* = .20] and did not significantly predict T2 irritability (β = -.04, SE = .03, *p* = .18). The main effect model provided adequate fit to the data for males [χ2(41) = 110.18, *p* < .001; RMSEA = .06; CFI = .91; SRMR = .04]. For females, the initial model did not converge and errors indicated a problem with the T1 physical victimization latent variable. Therefore, consistent with the primary physical models, a manifest variable was created and used for physical victimization in this model. With this manifest variable, the model provided close fit to the data [χ2(14) = 23.35, *p* = .05; RMSEA = .04; CFI = .98; SRMR = .03]. The main effect of physical aggression on irritability was non-significant for both males (β = .24, SE = .20, *p* = .23) and females (β = -.24, SE = .29, *p* = .40). Likewise, estimating the interaction did not improve model fit for either gender [χ2(1) = 0.16 – 1.36, *p*s = .69 - .24] and did not significantly predict T2 irritability in either model (βs = -.04 – -.02, *p*s = .21 – .69).

In the full sample, the alternative relational measurement model provided generally acceptable fit to the data, although the RMSEA index was again elevated [χ2(9) = 79.83, *p* < .001; RMSEA = .09; CFI = .94; SRMR = .03]. The main effect model with covariates added provided close fit to the data [χ2(22) = 104.67, *p* < .001; RMSEA = .06; CFI = .95; SRMR = .03]. The effect of T1 relational aggression on T2 irritability was significant (β = .23, SE = .08, *p* = .003). The interaction did not significantly improve model fit [χ2(1) = 2.88, *p* = .09] and did not significantly predict T2 irritability (β = -.07, SE = .04, *p* = .08). When run separately by gender, models provided close fit to the data for males [χ2(22) = 45.83, *p* = .002; RMSEA = .04; CFI = .97; SRMR = .02] and adequate fit for females [χ2(22) = 72.50, *p* < .001; RMSEA = .07; CFI = .93; SRMR = .04]. Unlike the full sample model, relational aggression did not significantly predict change in irritability for males (β = .16, SE = .16, *p* = .31) or females (β = .15, SE = .08, *p* = .05). Estimating the interaction predicting T2 irritability also did not significantly improve model fit for either gender [χ2(1) = 1.74 – 2.58, *p*s = .11 – .19] and was non-significant in both models (βs = -.09 – -.08, *p*s = .18 – .10). Together, this indicates that although relational aggression directly predicted increases in irritability, neither form interacted with their respective forms of victimization to predict change in irritability in alternative models, contrary to hypotheses.

In sum, these analyses found support for the importance of considering the co-occurrence of victimization and aggression in direct associations between negative peer relations and the development of CU traits. However, the nature of these effects differs by form and gender. Importantly, these findings should be interpreted with caution given the measurement difficulties discussed above.

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### **Supplemental Tables**

**Supplemental Table 1 -** Aim 1 primary models excluding unemotionality subscale

|  |  |  |
| --- | --- | --- |
|  | Rel Vic | Phys Vic |
| Irr 🡪 Vic | .45 (.09) \*\*\* | .37 (.10) \*\*\* |
| Vic 🡪 CU | -.07 (.10) | .02 (.06) |
| Irr 🡪 CU (direct) | .24 (.09) \*\* | .20 (.07) \*\* |

*Note.* Standardized regression coefficients, standard errors in parentheses. Coefficients for separate relational and physical models are presented in their respective columns. Irr = Irritability, Rel = Relational, Phys = physical, Vic = Victimization, CU = Callous unemotional. \*\**p* < .01, \*\*\**p* < .001.

**Supplemental Table 2 -** Aim 1 alternative models excluding unemotionality subscale

|  |  |  |
| --- | --- | --- |
|  | Rel Vic | Phys Vic |
| Vic 🡪 Irr | .42 (.10) \*\*\* | .26 (.09) \*\* |
| Irr 🡪 CU | .18 (.09) \* | .13 (.07) + |
| Vic 🡪 CU (direct) | -.06 (.09) | .07 (.06) |

*Note.* Standardized regression coefficients, standard errors in parentheses. Coefficients for separate relational and physical models are presented in their respective columns. Irr = Irritability, Rel = Relational, Phys = physical, Vic = Victimization, CU = Callous unemotional. +*p* < .01, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

**Supplemental Table 3 -** Aim 1 primary models with harsh parenting covariate

|  |  |  |
| --- | --- | --- |
|  | Rel Vic | Phys Vic |
| Irr 🡪 Vic | .46 (.09) \*\*\* | .35 (.10) \*\*\* |
| Vic 🡪 CU | -.09 (.09) | .01 (.06) |
| Irr 🡪 CU (direct) | .24 (.09) \*\* | .20 (.07) \*\* |

*Note.* Standardized regression coefficients, standard errors in parentheses. Coefficients for separate relational and physical models are presented in their respective columns. Irr = Irritability, Rel = Relational, Phys = Physical, Vic = Victimization, CU = Callous unemotional. \*\**p* < .01, \*\*\**p* < .001.

**Supplemental Table 4** - Aim 1 alternative models with harsh parenting covariate

|  |  |  |  |
| --- | --- | --- | --- |
|  | Full Sample | Males | Females |
| Rel Vic 🡪 Irr | .41 (.10) \*\*\* | .32 (.13) \* | .51 (.15) \*\* |
| Irr 🡪 CU | .13 (.09) | .04 (.31) | .19 (.21) |
| Rel Vic 🡪 CU (direct) | .01 (.11) | -.03 (.19) | .11 (.21) |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Full Sample | Males | Females |
| Phys Vic 🡪 Irr | .24 (.09) \*\* | .32 (.13) \* | .10 (.15) |
| Irr 🡪 CU | .11 (.07) | .02 (.14) | .23 (.10) \* |
| Phys Vic 🡪 CU (direct) | .06 (.06) | .01 (.09) | -.08 (.10) |

*Note.* Standardized regression coefficients, standard errors in parentheses. Irr = Irritability, Rel = Relational, Vic = Victimization, CU = Callous unemotional. *\*p <* .05, \*\**p* < .01, \*\*\**p* < .001.

**Supplemental Table 5 –** *Bivariate correlations among manifest variables*

|  | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | | 9. | 10. | 11. | 12. | 13. | | 14. | 15. | 16. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. PR Irr 3 |  |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |
| 2. PR Irr 4 | .68\*\*\* |  |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |
| 3. PR Irr 5 | .62\*\*\* | .67\*\*\* |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |
| 4. PR Irr 6 | .59\*\*\* | .60\*\*\* | .65\*\*\* |  |  |  |  |  | |  |  |  |  |  | |  |  |  |
| 5. TR Irr 3 | .21\*\*\* | .21\*\*\* | .20\*\*\* | .18\*\*\* |  |  |  |  | |  |  |  |  |  | |  |  |  |
| 6. TR Irr 4 | .20\*\*\* | .22\*\*\* | .20\*\*\* | .22\*\*\* | .44\*\*\* |  |  |  | |  |  |  |  |  | |  |  |  |
| 7. TR Irr 5 | .13\*\*\* | .15\*\*\* | .20\*\*\* | .13\*\*\* | .36\*\*\* | .41\*\*\* |  |  | |  |  |  |  |  | |  |  |  |
| 8. TR Irr 6 | .17\*\*\* | .15\*\*\* | .15\*\*\* | .20\*\*\* | .41\*\*\* | .38\*\*\* | .41\*\*\* |  | |  |  |  |  |  | |  |  |  |
| 9. PR PVic 3 | .26\*\*\* | .19\*\*\* | .18\*\*\* | .18\*\*\* | .21\*\*\* | .20\*\*\* | .11\*\*\* | .22\*\*\* | |  |  |  |  |  | |  |  |  |
| 10. PR PVic 4 | .25\*\*\* | .25\*\*\* | .22\*\*\* | .22\*\*\* | .21\*\*\* | .23\*\*\* | .16\*\*\* | .16\*\*\* | | .48\*\*\* |  |  |  | |  |  |  |  |
| 11. PR PVic 5 | .22\*\*\* | .21\*\*\* | .21\*\*\* | .21\*\*\* | .24\*\*\* | .23\*\*\* | .15\*\*\* | .25\*\*\* | | .44\*\*\* | .51\*\*\* |  |  |  | |  |  |  |
| 12. PR PVic 6 | .18\*\*\* | .18\*\*\* | .19\*\*\* | .21\*\*\* | .10\*\* | .15\*\*\* | .13\*\*\* | | .19\*\*\* | .30\*\*\* | .43\*\*\* | .47\*\*\* |  |  | |  |  |  |
| 13. TR PVic 3 | .08\* | .04 | .06 | .04 | .24\*\*\* | .20\*\*\* | .09\*\* | .19\*\*\* | | .20\*\*\* | .23\*\*\* | .20\*\*\* | .18\*\*\* |  | |  |  |  |
| 14. TR PVic 4 | .12\*\*\* | .11\*\*\* | .04 | .10\*\* | .20\*\*\* | .25\*\*\* | .11\*\* | .07\* | | .10\*\* | .18\*\*\* | .18\*\*\* | .14\*\*\* | .23\*\*\* | |  |  |  |
| 15. TR PVic 5 | .09\*\* | .10\*\* | .14\*\*\* | .05 | .18\*\*\* | .17\*\*\* | .19\*\*\* | .09\* | | .10\*\* | .10\*\* | .14\*\*\* | .14\*\*\* | .19\*\*\* | | .12\*\*\* |  |  |
| 16. TR PVic 6 | .05 | .07\* | .08\* | .09\* | .18\*\*\* | .13\*\*\* | .10\*\* | .23\*\*\* | | .14\*\*\* | .11\*\* | .19\*\*\* | .17\*\*\* | .15\*\*\* | | .14\*\*\* | .13\*\*\* |  |
| 17. PR RVic 3 | .30\*\*\* | .23\*\*\* | .26\*\*\* | .25\*\*\* | .24\*\*\* | .28\*\*\* | .21\*\*\* | .26\*\*\* | | .47\*\*\* | .36\*\*\* | .33\*\*\* | .29\*\*\* | .16\*\*\* | | .13\*\*\* | .10\*\* | .07 |
| 18. PR RVic 4 | .27\*\*\* | .28\*\*\* | .28\*\*\* | .26\*\*\* | .20\*\*\* | .22\*\*\* | .16\*\*\* | .17\*\*\* | | .32\*\*\* | .51\*\*\* | .38\*\*\* | .34\*\*\* | .17\*\*\* | | .19\*\*\* | .08\* | .06 |
| 19. PR RVic 5 | .24\*\*\* | .24\*\*\* | .28\*\*\* | .31\*\*\* | .22\*\*\* | .25\*\*\* | .21\*\*\* | .26\*\*\* | | .30\*\*\* | .38\*\*\* | .48\*\*\* | .44\*\*\* | .16\*\*\* | | .18\*\*\* | .12\*\*\* | .14\*\*\* |
| 20. PR RVic 6 | .23\*\*\* | .22\*\*\* | .28\*\*\* | .32\*\*\* | .15\*\*\* | .20\*\*\* | .16\*\*\* | .23\*\*\* | | .26\*\*\* | .35\*\*\* | .36\*\*\* | .56\*\*\* | .16\*\*\* | | .16\*\*\* | .10\*\* | .14\*\*\* |
| 21. TR RVic 3 | .15\*\*\* | .12\*\*\* | .15\*\*\* | .12\*\*\* | .42\*\*\* | .27\*\*\* | .21\*\*\* | .25\*\*\* | | .24\*\*\* | .27\*\*\* | .24\*\*\* | .20\*\*\* | .35\*\*\* | | .17\*\*\* | .17\*\*\* | .23\*\*\* |
| 22. TR RVic 4 | .12\*\*\* | .13\*\*\* | .15\*\*\* | .16\*\*\* | .32\*\*\* | .40\*\*\* | .24\*\*\* | .22\*\*\* | | .18\*\*\* | .27\*\*\* | .21\*\*\* | .21\*\*\* | .23\*\*\* | | .40\*\*\* | .20\*\*\* | .19\*\*\* |
| 23. TR RVic 5 | .15\*\*\* | .17\*\*\* | .15\*\*\* | .16\*\*\* | .27\*\*\* | .25\*\*\* | .41\*\*\* | .26\*\*\* | | .19\*\*\* | .26\*\*\* | .20\*\*\* | .24\*\*\* | .13\*\*\* | | .20\*\*\* | .37\*\*\* | .21\*\*\* |
| 24. TR RVic 6 | .12\*\*\* | .15\*\*\* | .12\*\*\* | .13\*\*\* | .30\*\*\* | .25\*\*\* | .29\*\*\* | .41\*\*\* | | .25\*\*\* | .20\*\*\* | .26\*\*\* | .24\*\*\* | .16\*\*\* | | .19\*\*\* | .16\*\*\* | .47\*\*\* |
| 25. PR PAgg 3 | .50\*\*\* | .40\*\*\* | .35\*\*\* | .36\*\*\* | .26\*\*\* | .25\*\*\* | .21\*\*\* | .24\*\*\* | | .30\*\*\* | .32\*\*\* | .25\*\*\* | .19\*\*\* | .14\*\*\* | | .15\*\*\* | .10\*\* | .06 |
| 26. PR PAgg 4 | .39\*\*\* | .45\*\*\* | .39\*\*\* | .39\*\*\* | .20\*\*\* | .27\*\*\* | .23\*\*\* | .19\*\*\* | | .27\*\*\* | .38\*\*\* | .28\*\*\* | .24\*\*\* | .14\*\*\* | | .16\*\*\* | .09\*\* | .03 |
| 27. PR PAgg 5 | .34\*\*\* | .37\*\*\* | .45\*\*\* | .39\*\*\* | .20\*\*\* | .31\*\*\* | .22\*\*\* | .28\*\*\* | | .24\*\*\* | .30\*\*\* | .29\*\*\* | .22\*\*\* | .13\*\*\* | | .13\*\*\* | .13\*\*\* | .13\*\*\* |
| 28. PR PAgg 6 | .35\*\*\* | .37\*\*\* | .38\*\*\* | .46\*\*\* | .23\*\*\* | .26\*\*\* | .19\*\*\* | .27\*\*\* | | .22\*\*\* | .31\*\*\* | .30\*\*\* | .28\*\*\* | .11\*\*\* | | .17\*\*\* | .08\* | .09\*\* |
| 29. TR PAgg 3 | .20\*\*\* | .17\*\*\* | .14\*\*\* | .15\*\*\* | .65\*\*\* | .44\*\*\* | .31\*\*\* | .37\*\*\* | | .23\*\*\* | .22\*\*\* | .22\*\*\* | .07\* | .31\*\*\* | | .19\*\*\* | .22\*\*\* | .17\*\*\* |
| 30. TR PAgg 4 | .18\*\*\* | .19\*\*\* | .18\*\*\* | .18\*\*\* | .38\*\*\* | .63\*\*\* | .36\*\*\* | .36\*\*\* | | .22\*\*\* | .17\*\*\* | .19\*\*\* | .14\*\*\* | .27\*\*\* | | .28\*\*\* | .19\*\*\* | .14\*\*\* |
| 31. TR PAgg 5 | .11\*\*\* | .10\*\* | .07\* | .11\*\* | .29\*\*\* | .34\*\*\* | .63\*\*\* | .40\*\*\* | | .12\*\*\* | .15\*\*\* | .10\*\* | .12\*\*\* | .14\*\*\* | | .04 | .21\*\*\* | .11\*\* |
| 32. TR PAgg 6 | .10\*\* | .08\* | .12\*\*\* | .12\*\*\* | .29\*\*\* | .32\*\*\* | .33\*\*\* | .63\*\*\* | | .19\*\*\* | .15\*\*\* | .24\*\*\* | .15\*\*\* | .22\*\*\* | | .10\*\* | .13\*\*\* | .27\*\*\* |
| 33. PR RAgg 3 | .34\*\*\* | .34\*\*\* | .31\*\*\* | .29\*\*\* | .17\*\*\* | .16\*\*\* | .18\*\*\* | .18\*\*\* | | .25\*\*\* | .17\*\*\* | .17\*\*\* | .17\*\*\* | .14\*\*\* | | .08\* | .05 | .03 |
| 34. PR Ragg 4 | .31\*\*\* | .38\*\*\* | .35\*\*\* | .33\*\*\* | .17\*\*\* | .22\*\*\* | .19\*\*\* | .15\*\*\* | | .23\*\* | .34\*\*\* | .25\*\*\* | .20\*\*\* | .14\*\*\* | | .09\*\* | .08\* | .07 |
| 35. PR RAgg 5 | .28\*\*\* | .32\*\*\* | .31\*\*\* | .32\*\*\* | .16\*\*\* | .17\*\*\* | .16\*\*\* | .18\*\*\* | | .20\*\*\* | .26\*\*\* | .25\*\*\* | .20\*\*\* | .10\*\* | | .06 | .01 | .11\*\* |
| 36. PR RAgg 6 | .28\*\*\* | .33\*\*\* | .35\*\*\* | .35\*\*\* | .17\*\*\* | .17\*\*\* | .16\*\*\* | .19\*\*\* | | .21\*\*\* | .24\*\*\* | .26\*\*\* | .29\*\*\* | .10\*\* | | .07\* | .02 | .09\*\* |
| 37. TR RAgg 3 | .18\*\*\* | .15\*\*\* | .18\*\*\* | .18\*\*\* | .46\*\*\* | .26\*\*\* | .26\*\*\* | .21\*\*\* | | .14\*\*\* | .15\*\*\* | .13\*\*\* | .08\* | .22\*\*\* | | .11\*\* | .13\*\*\* | .06 |
| 38. TR RAgg 4 | .14\*\*\* | .10\*\* | .12\*\*\* | .20\*\*\* | .28\*\*\* | .43\*\*\* | .29\*\*\* | .26\*\*\* | | .11\*\* | .08\* | .05 | .08\* | .14\*\*\* | | .23\*\*\* | .08\* | .07 |
| 39. TR RAgg 5 | .10\*\* | .11\*\* | .14\*\*\* | .14\*\*\* | .21\*\*\* | .23\*\*\* | .52\*\*\* | .26\*\*\* | | .08\* | .09\*\* | .09\*\* | .11\*\* | .09\*\* | | .08\* | .17\*\*\* | .04 |
| 40. TR RAgg 6 | .08\* | .11\*\* | .15\*\*\* | .17\*\*\* | .23\*\*\* | .19\*\*\* | .30\*\*\* | .52\*\*\* | | .10\*\* | .07 | .14\*\*\* | .08\* | .07 | | .06 | .03 | .26\*\*\* |
| 41. CU 36 mos. | .25\*\*\* | .24\*\*\* | .23\*\*\* | .23\*\*\* | .15\*\*\* | .13\*\*\* | .10\*\* | .07\* | | .19\*\*\* | .17\*\*\* | .14\*\*\* | .14\*\*\* | .08\* | | .12\*\*\* | .14\*\*\* | .03 |
| 42. CU Age 15 | .07\* | .06 | .02 | .03 | .16\*\*\* | .15\*\*\* | .12\*\*\* | .12\*\*\* | | .11\*\*\* | .07\* | .09\*\* | .04 | .08\* | | .04 | .13\*\*\* | .08\* |
| 43. Cortisol | -.05 | .03 | .001 | .03 | -.06 | -.06 | -.09 | -.09 | | -.07 | -.05 | -.04 | -.02 | -.04 | | -.04 | -.08\* | .05 |

*Supplemental Table 5 Continued*

|  | 17. | 18. | 19. | 20. | 21. | 22. | 23. | 24. | | 25. | 26. | 27. | 28. | | 29. | 30. | 31. | 32. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. PR RVic 3 |  |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  |
| 18. PR RVic 4 | .49\*\*\* |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  |
| 19. PR RVic 5 | .48\*\*\* | .62\*\*\* |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  |
| 20. PR RVic 6 | .44\*\*\* | .55\*\*\* | .67\*\*\* |  |  |  |  |  | |  |  |  |  | |  |  |  |  |
| 21. TR RVic 3 | .35\*\*\* | .34\*\*\* | .31\*\*\* | .64\*\*\* |  |  |  |  | |  |  |  |  | |  |  |  |  |
| 22. TR RVic 4 | .29\*\*\* | .32\*\*\* | .22\*\*\* | .37\*\*\* | .43\*\*\* |  |  |  | |  |  |  |  | |  |  |  |  |
| 23. TR RVic 5 | .25\*\*\* | .29\*\*\* | .25\*\*\* | .35\*\*\* | .37\*\*\* | .39\*\*\* |  |  | |  |  |  |  | |  |  |  |  |
| 24. TR RVic 6 | .25\*\*\* | .23\*\*\* | .21\*\*\* | .35\*\*\* | .38\*\*\* | .40\*\*\* | .42\*\*\* |  | |  |  |  |  | |  |  |  |  |
| 25. PR PAgg 3 | .29\*\*\* | .30\*\*\* | .16\*\*\* | .22\*\*\* | .17\*\*\* | .16\*\*\* | .16\*\*\* | .14\*\*\* | |  |  |  |  | |  |  |  |  |
| 26. PR PAgg 4 | .22\*\*\* | .32\*\*\* | .17\*\*\* | .22\*\*\* | .13\*\*\* | .19\*\*\* | .19\*\*\* | .19\*\*\* | | .65\*\*\* |  |  |  | |  |  |  |  |
| 27. PR PAgg 5 | .21\*\*\* | .28\*\*\* | .11\*\*\* | .23\*\*\* | .11\*\*\* | .22\*\*\* | .19\*\*\* | .17\*\*\* | | .54\*\*\* | .65\*\*\* |  |  |  | |  |  |  |
| 28. PR PAgg 6 | .20\*\*\* | .28\*\*\* | .13\*\*\* | .28\*\*\* | .11\*\*\* | .17\*\*\* | .17\*\*\* | .17\*\*\* | | .56\*\*\* | .60\*\*\* | .66\*\*\* |  | |  |  |  |  |
| 29. TR PAgg 3 | .22\*\*\* | .16\*\*\* | .24\*\*\* | .10\*\* | .44\*\*\* | .29\*\*\* | .27\*\*\* | | .25\*\*\* | .31\*\*\* | .22\*\*\* | .23\*\*\* | .23\*\*\* | |  |  |  |  |
| 30. TR PAgg 4 | .22\*\*\* | .12\*\*\* | .32\*\*\* | .15\*\*\* | .26\*\*\* | .39\*\*\* | .24\*\*\* | .22\*\*\* | | .27\*\*\* | .29\*\*\* | .33\*\*\* | .26\*\*\* | | .49\*\*\* |  |  |  |
| 31. TR PAgg 5 | .15\*\*\* | .11\*\*\* | .35\*\*\* | .11\*\* | .20\*\*\* | .20\*\*\* | .41\*\*\* | .25\*\*\* | | .19\*\*\* | .19\*\*\* | .23\*\*\* | .17\*\*\* | | .42\*\*\* | .41\*\*\* |  |  |
| 32. TR PAgg 6 | .19\*\*\* | .12\*\*\* | .35\*\*\* | .14\*\*\* | .19\*\*\* | .16\*\*\* | .17\*\*\* | .38\*\*\* | | .22\*\*\* | .15\*\*\* | .27\*\*\* | .24\*\*\* | | .38\*\*\* | .37\*\*\* | .42\*\*\* |  |
| 33. PR RAgg 3 | .37\*\*\* | .28\*\*\* | .21\*\*\* | .21\*\*\* | .18\*\*\* | .09\*\*\* | .14\*\*\* | .11\*\*\* | | .33\*\*\* | .30\*\*\* | .26\*\*\* | .28\*\*\* | | .20\*\*\* | .15\*\*\* | .17\*\*\* | .13\*\*\* |
| 34. PR Ragg 4 | .31\*\*\* | .37\*\*\* | .16\*\*\* | .24\*\*\* | .17\*\*\* | .12\*\*\* | .11\*\*\* | .09\* | | .34\*\*\* | .38\*\*\* | .32\*\*\* | .34\*\*\* | | .18\*\*\* | .18\*\*\* | .13\*\*\* | .13\*\*\* |
| 35. PR RAgg 5 | .26\*\*\* | .29\*\*\* | .15\*\*\* | .27\*\*\* | .16\*\*\* | .05 | .10\*\* | .13\*\*\* | | .30\*\*\* | .31\*\*\* | .32\*\*\* | .32\*\*\* | | .12\*\*\* | .15\*\*\* | .12\*\*\* | .16\*\*\* |
| 36. PR RAgg 6 | .33\*\*\* | .32\*\*\* | .15\*\*\* | .37\*\*\* | .17\*\*\* | .08\* | .11\*\* | .10\*\* | | .32\*\*\* | .29\*\*\* | .30\*\*\* | .37\*\*\* | | .14\*\*\* | .14\*\*\* | .11\*\* | .15\*\*\* |
| 37. TR RAgg 3 | .20\*\*\* | .14\*\*\* | .30\*\*\* | .15\*\*\* | .39\*\*\* | .19\*\*\* | .15\*\*\* | .11\*\*\* | | .21\*\*\* | .17\*\*\* | .11\*\*\* | .15\*\*\* | | .46\*\*\* | .30\*\*\* | .24\*\*\* | .19\*\*\* |
| 38. TR RAgg 4 | .20\*\*\* | .08\* | .38\*\*\* | .14\*\*\* | .19\*\*\* | .31\*\*\* | .16\*\*\* | .14\*\*\* | | .16\*\*\* | .10\*\* | .15\*\*\* | .17\*\*\* | | .30\*\*\* | .47\*\*\* | .29\*\*\* | .25\*\*\* |
| 39. TR RAgg 5 | .18\*\*\* | .11\*\* | .48\*\*\* | .11\*\* | .15\*\*\* | .13\*\*\* | .36\*\*\* | .13\*\*\* | | .17\*\*\* | .16\*\*\* | .18\*\*\* | .13\*\*\* | | .24\*\*\* | .26\*\*\* | .53\*\*\* | .26\*\*\* |
| 40. TR RAgg 6 | .14\*\*\* | .13\*\*\* | .44\*\*\* | .26\*\*\* | .17\*\*\* | .12\*\*\* | .14\*\*\* | .33\*\*\* | | .18\*\*\* | .12\*\*\* | .17\*\*\* | .20\*\*\* | | .23\*\*\* | .22\*\*\* | .24\*\*\* | .57\*\*\* |
| 41. CU 36 mos. | .20\*\*\* | .20\*\*\* | .15\*\*\* | .18\*\*\* | .10\*\* | .16\*\*\* | .13\*\*\* | .16\*\*\* | | .26\*\*\* | .24\*\*\* | .19\*\*\* | .24\*\*\* | | .17\*\*\* | .15\*\*\* | .13\*\*\* | .04 |
| 42. CU Age 15 | .003 | -.007 | -.003 | .02 | .25\*\*\* | .12\*\*\* | .14\*\*\* | .06 | | .11\*\* | .14\*\*\* | .09\*\* | .10\*\* | | .25\*\*\* | .18\*\*\* | .14\*\*\* | .15\*\*\* |
| 43. Cortisol Age 15 | -.05 | -.007 | -.03 | -.02 | .003 | -.04 | -.08\* | -.05 | | -09\* | -.08\* | -.12\*\*\* | -.06 | | -.10\*\* | -.07\* | -.13\*\*\* | -.08\* |

*Supplemental Table 5 Continued*

|  | 33. | 34. | 35. | 36. | 37. | 38. | 39. | 40. | 41. | 42. | 43. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 33. PR RAgg 3 |  |  |  |  |  |  |  |  |  |  |  |
| 34. PR Ragg 4 | .64\*\*\* |  |  |  |  |  |  |  |  |  |  |
| 35. PR RAgg 5 | .59\*\*\* | .64\*\*\* |  |  |  |  |  |  |  |  |  |
| 36. PR RAgg 6 | .56\*\*\* | .61\*\*\* | .66\*\*\* |  |  |  |  |  |  |  |  |
| 37. TR RAgg 3 | .28\*\*\* | .28\*\*\* | .26\*\*\* | .27\*\*\* |  |  |  |  |  |  |  |
| 38. TR RAgg 4 | .18\*\*\* | .17\*\*\* | .17\*\*\* | .19\*\*\* | .39\*\*\* |  |  |  |  |  |  |
| 39. TR RAgg 5 | .29\*\*\* | .24\*\*\* | .22\*\*\* | .24\*\*\* | .32\*\*\* | .36\*\*\* |  |  |  |  |  |
| 40. TR RAgg 6 | .21\*\*\* | .18\*\*\* | .24\*\*\* | .26\*\*\* | .31\*\*\* | .30\*\*\* | .31\*\*\* |  |  |  |  |
| 41. CU 36 mos. | .23\*\*\* | .24\*\*\* | .17\*\*\* | .19\*\*\* | .13\*\*\* | .07\* | .11\*\* | .04 |  |  |  |
| 42. CU Age 15 | -.03 | .001 | -.01 | .02 | .08\* | .05 | .02 | .04 | .10\* |  |  |
| 43. Cortisol | -.03 | -.02 | -.02 | .004 | -.06 | -.06 | -.10 | -.01 | -.02 | -.06 |  |

*Note.* PR = parent report, TR = teacher report, Irr = irritability, Vic = Victimization, Agg = Aggression, R = Relational, P = Physical, CU = Callous Unemotional, 3 = Grade 3, 4 = Grade 4, 5 = Grade 5, 6 = Grade 6; \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

### **Supplemental Figures**

**Supplemental Figure 1** - Standardized factor loadings for irritability factors

**1a) T1 Irritability 1b)** **T2 Irritability**

*A diagram of a flowchart

Description automatically generatedA diagram of a flowchart

Description automatically generated*

*Note.* All coefficients are standardized, with standard errors in parentheses. PR = Parent Report, TR = Teacher Report, Irr = Irritability, 3 = Grade 3, 4 = Grade 4, 5 = Grade 5, 6 = Grade 6. \*\*\**p* < .001.

**Supplemental Figure 2** - Standardized factor loadings for relational victimization factors

**2a) T1 Relational Victimization 2b)** **T2 Relational Victimization**

**A diagram of a diagram

Description automatically generated**

**A diagram of a diagram

Description automatically generated**

*Note.* All coefficients are standardized, with standard errors in parentheses. PR = Parent Report, TR = Teacher Report, Rel = Relational, Vic = Victimization, 3 = Grade 3, 4 = Grade 4, 5 = Grade 5, 6 = Grade 6. \*\*\**p* < .001.

**Supplemental Figure 3 -** Standardized factor loadings for physical victimization factors

A diagram of a diagram

Description automatically generatedA diagram of a diagram

Description automatically generated**3a) T1 Physical Victimization 3b)** **T2 Physical Victimization**

*Note.* All coefficients are standardized, with standard errors in parentheses. PR = Parent Report, TR = Teacher Report, G3 = Grade 3, G4 = Grade 4, G5 = Grade 5, G6 = Grade 6. \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

**Supplemental Figure 4 -** Standardized factor loadings for cortisol factor

A diagram of a model

Description automatically generated

*Note.* All coefficients are standardized, with standard errors in parentheses. \*\*\**p* < .001.

**Supplemental Figure 5 -** Standardized factor loadings for relational aggression factors

**5a) T1 Relational Aggression 5b)** **T2 Relational Aggression**

A diagram of a model

Description automatically generated**A diagram of a relationship

Description automatically generated**

*Note.* All coefficients are standardized, with standard errors in parentheses. PR = Parent Report, TR = Teacher Report, Rel = Relational, Agg = Aggression, 3 = Grade 3, 4 = Grade 4, 5 = Grade 5, 6 = Grade 6. \*\*\**p* < .001.

**Supplemental Figure 6 -** Standardized factor loadings for physical aggression factors

**6a) T1 Physical Aggression 6b)** **T2 Physical Aggression**

A diagram of a physical aggression

Description automatically generatedA diagram of a physical aggression

Description automatically generated

*Note.* All coefficients are standardized, with standard errors in parentheses. PR = Parent Report, TR = Teacher Report, Phys = Physical, Agg = Aggression, 3 = Grade 3, 4 = Grade 4, 5 = Grade 5, 6 = Grade 6. \*\*\**p* < .001.

**Supplemental Figure 7 -** Physical victimization x physical aggression predicting CU traits



\*

\*\*

*Note.* Simple slopes from primary physical Aim 2 model. Phys = Physical, Vic = Victimization, Agg = Aggression, CU = Callous-unemotional, SD = Standard deviation. \**p* < .05, \*\**p* < .01.

**Supplemental Figure 8 -** Full sample relational victimization x relational aggression predicting CU traits



\*

*Note.* Simple slopes from primary relational Aim 2 model. Rel = Relational, Vic = Victimization, Agg = Aggression, CU = Callous-unemotional, SD = Standard deviation. \**p* < .05.

**Supplemental Figure 9 -** Male-specific relational victimization x relational aggression predicting CU traits

\*

*Note.* Simple slopes from primary relational Aim 2 model run for males only. Rel = Relational, Vic = Victimization, Agg = Aggression, CU = Callous-unemotional, SD = Standard deviation. \**p* < .05.