Different Forms of Child Maltreatment have Comparable Consequences Among Children from Low-Income Families

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Abstract

Context—Several widely held beliefs about child abuse and neglect may be incorrect. It is most commonly assumed that some forms of abuse (e.g., physical and sexual abuse) are more harmful than others (e.g., emotional abuse and neglect); other assumptions are that each form of abuse has specific consequences, and that the effects of abuse differ across sex and race.

Objective—To determine whether these assumptions are valid by testing the hypothesis that different types of child maltreatment actually have equivalent, broad, and universal effects.

Design—Large, diverse sample collected over 27 years.

Setting—Research summer camp program for low-income, school-aged children.

Participants—Participants were 2,292 racially and ethnically diverse boys (55%) and girls (45%), aged 5–13 years. Of these, 1,193 (52%) had a well-documented history of child maltreatment.

Main Outcome Measures—Various forms of internalizing and externalizing personality and psychopathology were assessed using multiple informant ratings on the California Child Q-set and Teacher Report Form, as well as child self-reported depression and peer ratings of aggression and disruptive behavior.

Results—Using a structural analysis, we found that different forms of child maltreatment have equivalent psychiatric effects. We also found that maltreatment alters two broad vulnerability factors, Internalizing ($\beta = .185$, $p < .001$) and Externalizing ($\beta = .283$, $p < .001$), that underlie multiple forms of psychiatric disturbance, and that maltreatment has equal consequences for boys

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and girls of different races. Finally, our results allowed us to describe a base rate and co-occurrence issue that makes it difficult to identify the unique effects of child sexual abuse.

Conclusions—Our findings challenge widely held beliefs about how child abuse should be recognized and treated—a responsibility that often lies with the clinician. Because different types of child abuse have equivalent, broad, and universal effects, effective treatments for maltreatment of any sort are likely to have comprehensive psychological benefits. Population-level prevention and intervention strategies should emphasize emotional abuse, a widespread cruelty far less punishable than other types of child maltreatment.

Worldwide prevalence estimates suggest that child physical abuse (8.0%), sexual abuse (1.6%), emotional abuse (36.3%), and neglect (4.4%) are common cruelties.[1,2] These forms of abuse and neglect are collectively referred to as child maltreatment (CM). At least four assumptions pervade the scientific literature on CM: 1. *harmfulness*, CM causes substantial harm; 2. *non-equivalence*, some forms of CM are more harmful than others; 3. *specificity*, each form of CM has specific consequences; and 4. *non-universality*, the effects of CM differ across sex and race.

The strongest assumption is that CM causes harm. In a meta-analysis, non-sexual forms of CM (physical abuse, emotional abuse, and neglect) were associated with a wide range of mental health problems, including depression, anxiety, eating disorders, substance use, and suicidal behavior.[3] Evidence from research on sexual abuse is less consistent. Although early literature reviews concluded that child sexual abuse predicts a range of psychiatric outcomes,[4–6] more recent meta-analyses based on community samples[7] and college samples[8] suggest that child sexual abuse is weakly associated with later adjustment problems. Unsurprisingly, these findings are controversial[9], and have been criticized[10,11] and defended[12,13] on several occasions.

The non-equivalence assumption is evident in the legal system, where some forms of CM are felonies but others are legal, and in the scientific literature, which focuses predominantly on sexual and physical abuse.[14] However, meta-analytic data do not show appreciable differences in harm across types of CM.[3] Furthermore, study-level comparisons are confounded by differences in samples and methods, and individual-level comparisons are rare and usually fail to model patterns of CM co-occurrence. The ubiquity of the non-equivalence assumption must therefore be based on factors other than comparative evidence of harm, such as cultural mores and differences in the ability to measure and document maltreatment.

The specificity assumption is based on early studies suggesting that particular exposures may be linked to particular mental health outcomes.[15,16] However, subsequent evidence suggests that various forms of CM may have non-specific, widespread effects on mental health.[13,16,17] An unanswered question is whether such widespread effects are the result of CM affecting common factors that underlie multiple psychiatric disorders.

The non-universality assumption has received occasional support from research showing sex differences[18] and racial differences[19] in CM-related outcomes, motivating some to recommend treatments tailored to sex and race.[21] However, research in this area is scarce

and few studies have directly (statistically) tested sex or race as a moderator. Prevalence rates may differ between populations, as might various risk factors and service response variables, but the question of whether the effects of CM generalize across populations remains unanswered.

To test each assumption and overcome the limitations of previous research, this study rigorously assesses multiple forms of CM, relates them structurally, and uses them to predict a broad range of ensuing maladjustment in a large, racially diverse sample of boys and girls aggregated over 27 years. We hypothesize that our results will correspond to meta-analytic evidence supporting the assumption of harm; otherwise, our results will contradict the other assumptions, including non-equivalence, specificity, and non-universality. That is, we hypothesize that different forms of CM will have equivalent, broad, and universal consequences. Such findings would have substantial etiological, clinical, and legal implications.

Method

Participants

The participants in this investigation included 2,292 children aged 5 to 13 (M=9.05, SD=2.04) who attended a summer camp research program designed for school-aged low income children. Data were collected each year from 1986 to 2012. Some children attended the camp for multiple years, and the data from their first year of attendance were used in the current study. The study design specified recruitment of both maltreated children (n=1193) and nonmaltreated children (n=1099). Among the participants, 54.7% were boys. The maltreated and nonmaltreated children were comparable in terms of racial/ethnic diversity and family demographic characteristics[22]. The National Longitudinal Study of Adolescent Health system for coding race and ethnicity was used.[23] The sample was 60.4% African American (5.3% Hispanic), 31.0% White (36.8% Hispanic), and 8.6% from other racial groups (3.2% Hispanic). The families of the children were low income, with 95.1% of the families having a history of receiving public assistance. Single mothers headed 62.9% of the families.

Recruitment, Classification of CM, and Procedure

This research was reviewed and approved by the University of Rochester Institutional Review Board. Full details regarding the recruitment of participants, classification of CM, and study procedure are provided in the Supplement. Briefly, parents of all maltreated and nonmaltreated children provided informed consent for their child's participation, as well as consent for examination of any Department of Human Services (DHS) records pertaining to the family. Comprehensive searches of DHS records were completed, and maltreatment information was coded utilizing operational criteria from maltreatment nosology specified in the Maltreatment Classification System (MCS[24]). The whole sample was representative of the children in families receiving services from the DHS.

Consistent with national demographic characteristics of maltreating families,[25] the maltreated children were predominantly from low-SES families. Consequently,

demographically comparable nonmaltreated children were recruited from families receiving Temporary Assistance for Needy Families. To verify the absence of child maltreatment in these families, DHS records were searched, mothers were interviewed using the Maternal Maltreatment Classification Interview,[26] and record searches were conducted in the year following camp attendance to verify that all available information had been accessed. Only children from families without any history of documented abuse or neglect were retained in the nonmaltreatment group.

The MCS is a reliable and valid method for classifying maltreatment that utilizes DHS records detailing investigations and findings involving maltreatment in identified families over time. Rather than relying on official designations and case dispositions, the MCS codes all available information from DHS records, making independent determinations of maltreatment experiences. Coding of the DHS records was conducted by trained raters who demonstrated acceptable reliability with the criterion (weighted kappas with the criterion ranging from 0.86 to 0.98). Reliabilities for the presence versus absence of maltreatment subtypes ranged from 0.90 to 1.00.

Children attended a week-long day camp program, where they were assigned to groups of eight to ten same-age and same-sex peers; half of the children assigned to each group were maltreated.[27] Each group was conducted by three trained camp counselors, who were unaware of the maltreatment status of children and the hypotheses of the study. Over the week, camp provided 35 hours of interaction between children and counselors. In addition to the recreational activities, after providing assent, children participated in various research assessments. Clinical consultation and intervention occurred if any concerns over danger to self or others emerged during research sessions. At the end of the week, children in each group completed sociometric ratings of their peers. The counselors, who had been trained extensively for 2 weeks prior to the camp, also completed assessment measures on individual children, based on their observations and interactions with children in their respective groups.

Measures

The camp context and associated measurement battery provided a multiple-informant view of child adaptive functioning. Measures included child self-report, peer nominations, and counselor-reports. These measures provided emotional, behavioral, and temperament indicators of the internalizing (INT) and externalizing (EXT) spectra, the two broad factors that underlie common psychiatric disorders.[28]

Child report—The Children's Depression Inventory (CDI[29]) is a widely used self-report questionnaire to assess depressive symptomatology in school-age children. Internal consistency for the total scale has ranged from 0.71 to 0.89, and validity has been well established.[29] In the current sample, scores on the CDI ranged from 0 to 42 (M=8.93, SD=7.51).

Peer reports—On the last day of summer camp, children evaluated the characteristics of their peers in their respective camp groups. Children were given behavioral descriptors characterizing different types of social behavior and asked to select one peer from the group

who best fit the behavioral description. Descriptors included a child who was disruptive, and a child who was a fighter. The total number of nominations that each individual child received from peers in both categories was determined, and these totals were converted to proportions of the possible nominations in each category. Scores in each category were standardized within each year of camp.

Counselor reports—Behavioral symptomatology was evaluated at the end of each week by counselors' completion of the Teacher Report Form (TRF)[30] and the California Child Q-set (CCQ).[31] The TRF is a widely used and validated instrument to assess child symptomology from the perspective of teachers; the TRF was used in the present study because camp counselors are able to observe similar behaviors to that of teachers. The CCQ consists of statements about traits that represent major facets of personality, including those from the Five-Factor Model (FFM) of personality. Counselors' scores on the TRF and CCQ were averaged to obtain individual child scores. Interrater reliability across all scales, based on average intraclass correlations among pairs of raters, ranged from 0.56 to 0.88 (M=0.76).

Results

Subgroup Comparisons

Figures 1 and 2 display differences between nonmaltreated children and specific subgroups of maltreated children. Because some psychiatric outcomes are skewed, differences between groups are represented using the nonparametric success rate difference (SRD) effect size; values of 0.1, 0.3, and 0.4 represent small, medium, and large effects, respectively.[32] Also displayed is the number of cases per CM category, as well as the effect sizes for CM type, variety, frequency, and severity across psychological outcomes. Figures 1 and 2 distinguish between measures of internalizing (INT) and externalizing (EXT), two broad factors that underlie personality and psychopathology[20]. Overall, these subgroup comparisons show that abused and neglected children experience all types of maladjustment at significantly higher rates than their non-maltreated counterparts, and that this maladjustment increases as CM grows more diverse, frequent, and severe.

Co-Occurrence of CM

Figure 3 displays the rate of co-occurrence between the different types of CM. The size of the circles in Figure 3 is proportional to the number of children who experienced each type of CM, and the amount of overlap between circles is proportional to the co-occurrence of CM types. It is important to note that almost all sexual abuse cases (99%) occurred in the presence of another type of CM.

Multivariate Associations

Although subgroup comparisons support the assumption that CM is psychologically harmful, overlap among CM types and psychiatric outcomes is substantial. Thus, structural modeling is needed to disentangle these effects and directly test assumptions of non-equivalence, specificity, and non-universality.

Structural model—Structural equation modeling and measurement invariance models were fit using *Mplus*.[33] In the structural model, independent variables were four types of previously documented CM, each with three indicators representing the number of documented CM events committed by three different perpetrators (mother, father, and other). Dependent variables were self-, peer-, and counselor-rated psychological factors, modeled as indicative of latent INT and EXT factors. Because the threshold for legal documentation of CM was high, maltreatment indicators were modeled as censored from below. For this type of analysis, the default *Mplus* estimator is maximum likelihood estimation with robust standard errors (MLR). Initially, the four types of CM were modeled separately. However, under this initial model there were extremely high correlations among physical abuse, emotional abuse, and neglect (average correlation = .82). Multicollinearity among these variables produced partial regression coefficients that were in the opposite direction of theory and of implausible magnitude (e.g., physical and emotional abuse were strongly predictive of positive outcomes); this is a typical consequence of multicollinearity[34]. Therefore, physical abuse, emotional abuse, and neglect were modeled as indicators of a single "Non-Sexual CM" variable.

Displayed in Figure 4 is the final structural model, with prospectively assessed CM variables on the left side and psychological outcome variables on the right side. Arrows leading from the CM variables to the psychological variables represent regression paths, the predictive portion of the model. The child's age and year of camp attendance were statistically controlled, though for the sake of clarity these two controls were omitted from the figure. Two INT factor loadings were of modest size, including the loadings for the TRF Somatic Complaints scale and the CDI Depression scale. However, the TRF Somatic Complaints scale has the lowest co-occurrence rates with the other TRF syndromes,[35] and the correspondence between child self-reported depression and parent/teacher reports of child depression is typically low.[36] Both scales were retained because somatic complaints are a common feature of adult internalizing disorders, and childhood depressive symptoms are not easily detected by an informant; the latent variable (INT) captures shared variance across sources, thus mitigating informant discrepancies.[37]

The full structural model was used to examine each of the four assumptions regarding the effects of CM, including whether CM significantly predicts psychopathology (harmfulness), whether some types of CM more strongly predict psychopathology than others (non-equivalence), whether CM predicts specific types of psychopathology incremental to the underlying INT and EXT factors (specificity), and whether the full structural model varies across sex and race (non-generalizability).

Harmfulness assumption—In support of the harmfulness assumption, non-sexual forms of CM, including physical abuse, emotional abuse, and neglect, significantly predicted both INT (β =.22, p <.001) and EXT (β = .30, p <.001) after accounting for age and year of camp attendance. In line with previous meta-analytic evidence, sexual CM was not significantly related to INT or EXT.

Non-equivalence assumption—Contrary to the non-equivalence assumption, the structural model indicates equivalence between different forms of CM. With the exception

of sexual CM, which was not predictive of psychiatric outcomes, non-sexual forms of CM load heavily on a single factor (factor loadings ranged from .96–.98).

Specificity assumption—Contrary to the specificity assumption, the structural model indicates non-specificity. Greater frequency of non-sexual CM predicts greater rates of INT and EXT, but beyond these effects, CM does not predict specific psychiatric outcomes. In each of 20 analyses, the structural model in Figure 2 was altered to add a direct pathway between CM and a specific psychiatric outcome (e.g., Anxiety). In all 20 cases (2 CM predictors, 10 psychiatric outcomes), the specific regression coefficient was very small in size (all βs < .02) and not significant.

Non-universality assumption—Contrary to the non-universality assumption, invariance analyses indicate generalizability of effects across groups in the structural model. For sex and race, Table 1 presents fit statistics for three models that 1. allow factor loadings, intercepts, and regressions to vary across groups; 2. set factor loadings and intercepts equal across groups to evaluate strong measurement invariance; and 3. set regressions equal across groups to evaluate structural invariance. For both sex and race, the improvement in fit (i.e., generally lower values for fit statistics) across models indicates both measurement and structural invariance.

Comment

Our results suggest that physical abuse, emotional abuse, and neglect are equivalent insults that affect broad psychiatric vulnerabilities. Our results also highlight an important problem —one that may explain mixed findings in the child sexual abuse literature. Specifically, child sexual abuse is an infrequent event that is almost always accompanied by other types of CM. This pattern of rarity and lopsided co-occurrence has several consequences. First, it poses a statistical constraint that severely attenuates the correlation between sexual and non-sexual CM. For example, if nearly all people with Disorder X are men, but very few men have Disorder X, then sex will be nearly uncorrelated with Disorder X (despite the fact that almost all cases are men). This constraint explains why sexual CM and non-sexual CM are weakly correlated factors in our structural model: Whereas 89% of sexual CM cases are accompanied by non-sexual CM, only 9% of non-sexual CM cases are accompanied by sexual CM.

Second, there is no practical way to understand the specific consequences of sexual CM because its correlates may be attributed to other forms of co-occurring CM. Statistically controlling for co-occurring CM partials out what little covariation is left after the attenuation caused by unidirectional redundancy, further gutting the variance in the sexual abuse variable and producing unreliable parameter estimates. Alternatively, samples of "pure" sexual abuse cases (without co-occurring CM) are extremely rare and unrepresentative. This intractable issue may explain why research on sexual CM produces mixed results. The infrequency of sexual CM, combined with its unidirectional redundancy with non-sexual CM, attenuates their correlation and undermines efforts to identify the effects of sexual abuse, which are almost certainly detrimental. As such, previous meta-analyses of the child sexual abuse literature[7,8] may produce misleading results.

This study also partially addresses a potentially confounding variable: socioeconomic status (SES). Because factors associated with low SES predict the occurrence of both CM[38] and mental illness[39], low SES may explain the association between CM and psychopathology. In the current study, all children were sampled from low-SES families, attenuating this potential SES confound. However, it should be noted that a different pattern of results may be found in higher SES populations.

Sexual abuse may be an underreported type of CM that is difficult for child protection agencies to substantiate. Thus, an important limitation to overcome is getting to these missed cases; doing so may also help address the methodological problem of rarity and lopsided co-occurrence. Other limitations of this study include reliance on official documentation, absence of data regarding psychopathology prior to CM, and use of psychological reports from counselors and children who only knew the participants in the camp setting.

Conclusions

Complex etiological models of CM effects on mental health may be less illuminating than parsimonious models emphasizing pathways to broad vulnerability factors. Evidence suggests this may also be true of childhood adversity, more generally.[40] Thus, treatments tailored to specific types of abuse, populations, or outcomes may be less effective than those aimed at mitigating early changes in the neurobiological and temperamental factors that dispose individuals towards psychopathology. Such treatments are likely to have broad and comprehensive benefits. Finally, population-level prevention and intervention strategies should not ignore the considerable psychological harms imposed by emotional abuse, which rival those of physical abuse and neglect. Taken together with high worldwide prevalence[2] and evidence that emotional and physical pain share a common somatosensory representation in the brain[41,42], it is clear that emotional abuse is widespread, painful, and destructive.

Acknowledgments

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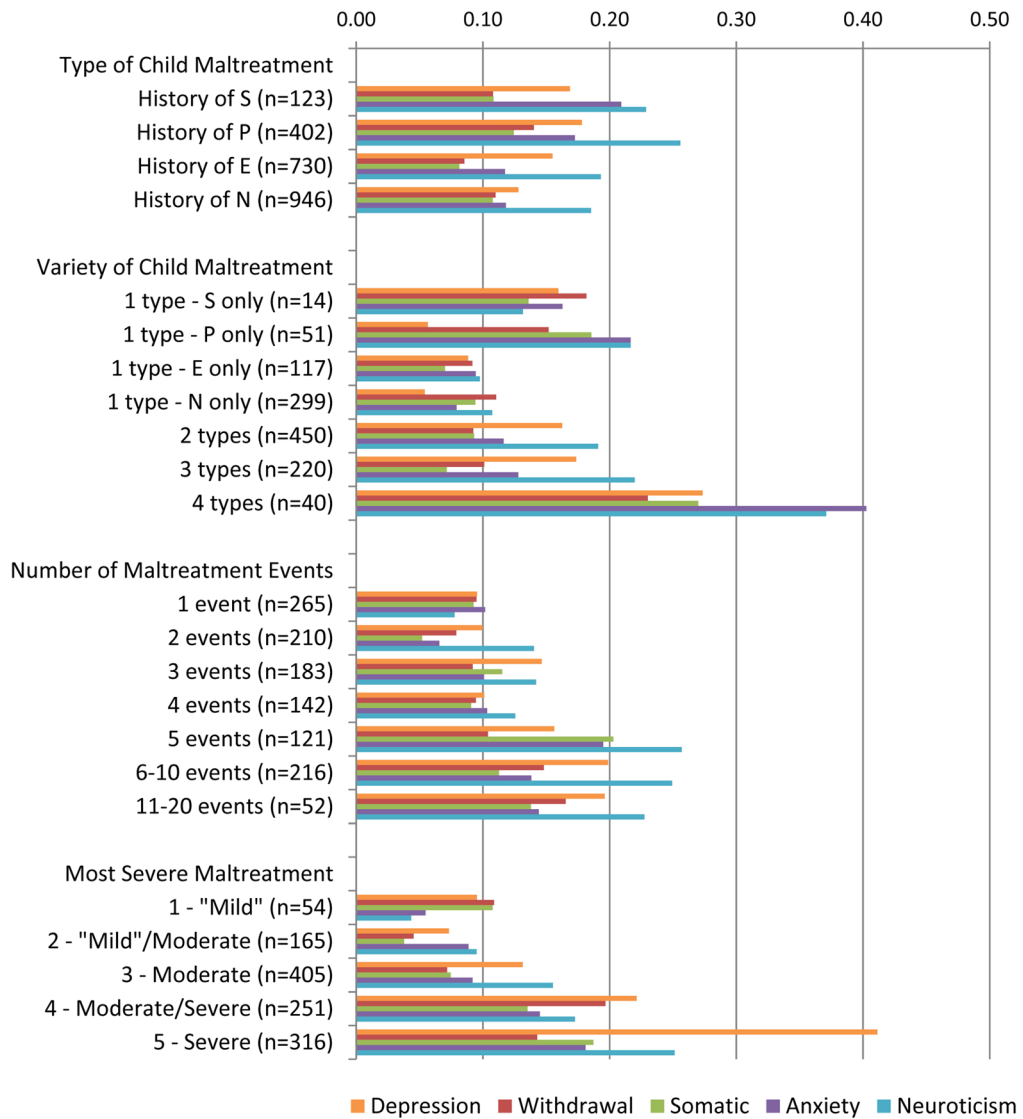
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Figure 1.
Internalizing effect sizes for type, variety, frequency, and severity of child maltreatment (CM). Each bar reflects an effect size (Success Rate Difference) from comparing different CM groups to the non-CM group.

Note. S = sexual abuse, P = physical abuse, E = emotional abuse, N = neglect. Effect sizes of 0.1, 0.3, and 0.4 are considered small, medium, and large, respectively. With the exception of the 1 type – S only (n = 14) bars, all displayed bars are significant at p<.01. Even the most "mild" form of CM was serious enough to reach the threshold for documentation.
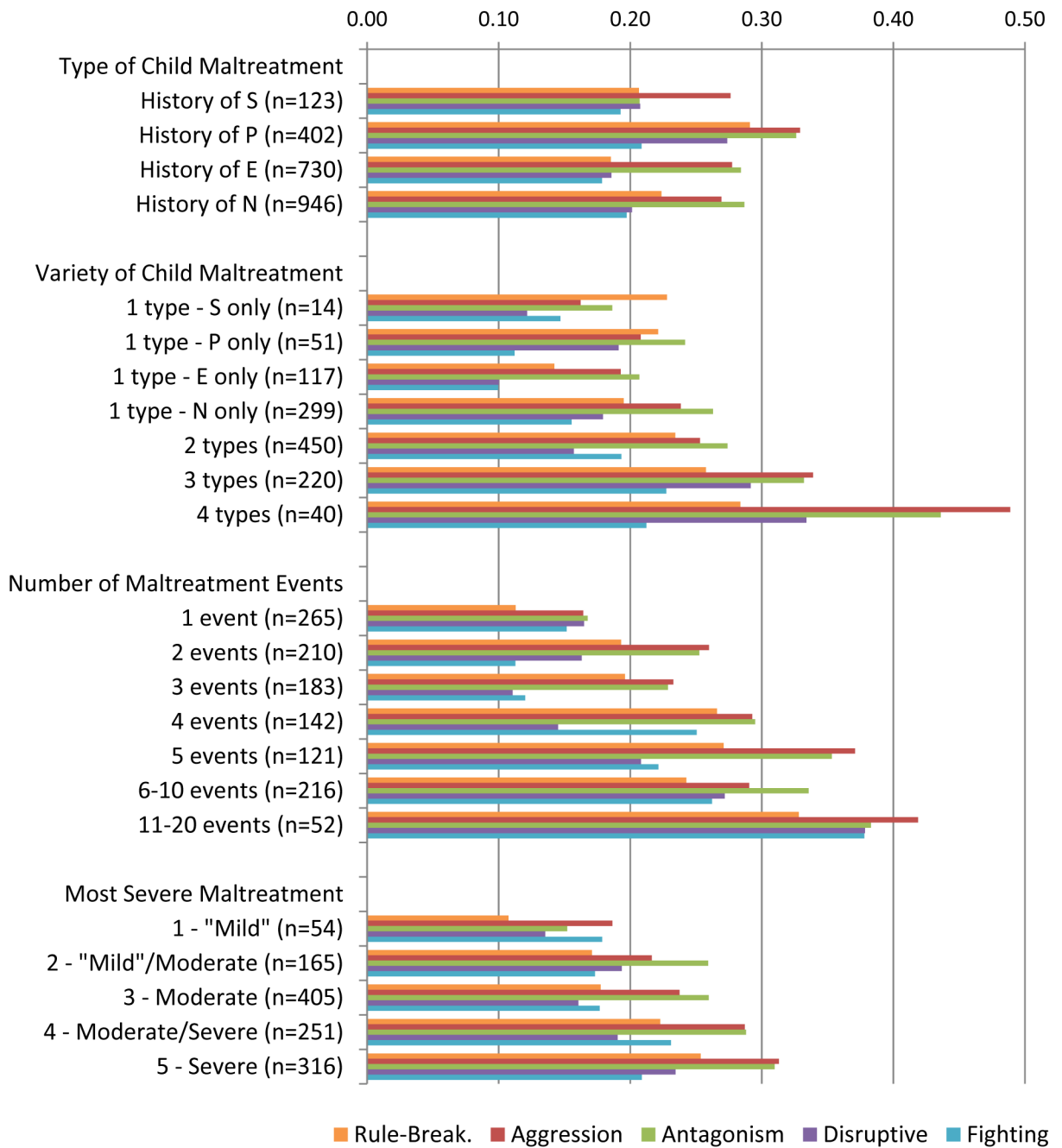
Figure 2.
Externalizing effect sizes for type, variety, frequency, and severity of child maltreatment (CM). Each bar reflects an effect size (Success Rate Difference) from comparing different CM groups to the non-CM group.

Note. S = sexual abuse, P = physical abuse, E = emotional abuse, N = neglect. Effect sizes of 0.1, 0.3, and 0.4 are considered small, medium, and large, respectively. With the exception of the 1 type – S only (n = 14) bars, all displayed bars are significant at p<.01.

Even the most "mild" form of CM was serious enough to reach the threshold for documentation.
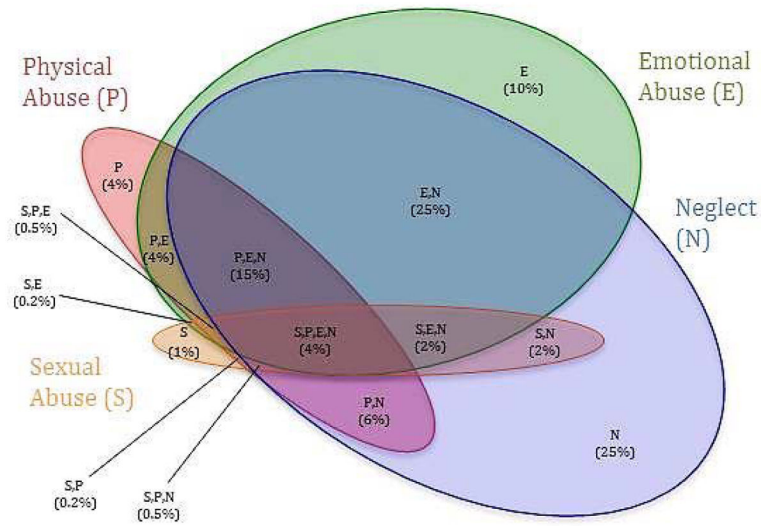
Figure 3.

Co-occurrence between different types of child maltreatment.

Note: The size of the circles is proportional to the number of children who experienced each type of maltreatment, and the amount of overlap between the circles is proportional to the co-occurrence of maltreatment types.
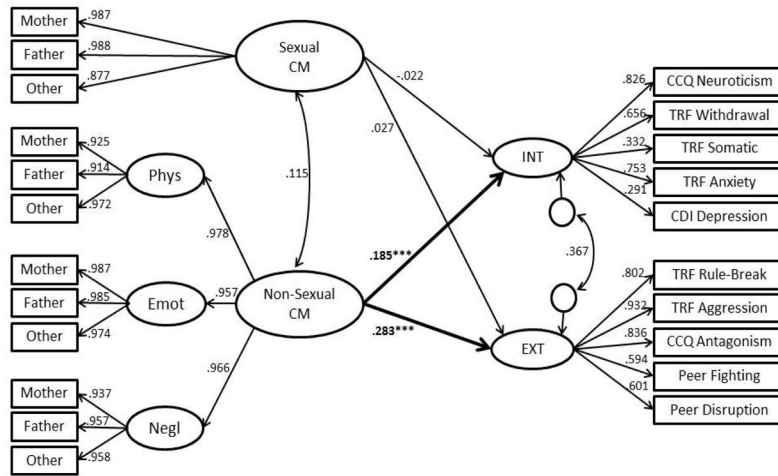
Figure 4.
Structural model predicting psychiatric outcomes from child sexual abuse, physical abuse, emotional abuse, and neglect after controlling for age and year of camp attendance.
*** $p < .001$. CM = child maltreatment, Phys = physical abuse, Emot = emotional abuse, Negl = neglect, INT = internalizing, EXT = externalizing, CCQ = California Child Q-set, TRF = Teacher Report Form, CDI = Children's Depression Inventory, Peer = peer ratings.

Table 1

Measurement and structural invariance across sex (female/male) and race (Black/White).

	Parameters	AIC	BIC	aBIC
Sex (Female vs. Male)				
Model 1 - Configural Invariance: Intercepts free, factor loadings free, regression paths free	160	172013	171902	171410
Model 2 - Strong Measurement Invariance: Intercepts equal across groups, factor loadings equal across groups, regression paths free	116	171090	171755	171386
Model 3 - Structural Invariance: Intercepts equal across groups, factor loadings equal across groups, regression paths equal across groups	112	171090	171732	171376
Race (Black vs. White)				
Model 1 - Configural Invariance: Intercepts free, factor loadings free, regression paths free	160	155781	156673	156171
Model 2 - Strong Measurement Invariance: Intercepts equal across groups, factor loadings equal across groups, regression paths free	116	155738	156393	156025
Model 3 - Structural Invariance: Intercepts equal across groups, factor loadings equal across groups, regression paths equal across groups	112	155741	156373	156017