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Effects of multiple maltreatment experiences among psychiatrically hospitalized youth

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Abstract

Objective—Relying on indicators coded from information collected routinely during intake assessments at a secure inpatient psychiatric facility, this study examined the extent to which different forms of maltreatment accounted for variations in youths' emotional and behavioral problems.

Methods—Clinical information was reviewed for a large ($N = 401$) and diverse sample (mean age = 13.9 years; 53% male; 54.6% racial/ethnic minority) of youth admitted to a publicly funded psychiatric hospital. Data were drawn from intake narratives, standardized psychopathology rating scales, and psychiatric diagnostic ratings.

Results—Findings provide some support for a hierarchical classification of multiple maltreatment experiences with sexual abuse identified as the specific form of maltreatment most reliably associated with poor adjustment. Support also was obtained for a cumulative classification approach, as the number of different types of maltreatment experiences was linked positively to elevated psychopathology ratings.

Conclusions—Even in this high-risk, atypical sample, maltreatment experiences account for variation in levels of psychopathology. These results have implications for classifying multiple maltreatment and enhancing clinical care for atypical youth who have been maltreated.

Practice implications—Clinicians working in youth psychiatric populations should implement maltreatment-specific psychotherapy approaches for maltreated youth, even as adjunctive treatments in a therapeutic milieu.

Introduction

Child maltreatment predicts negative outcomes such as low intellectual functioning (Kaufman, Jones, Stieglitz, Vitulano, & Mannarino, 1994), aggression (Kaufman & Cicchetti, 1989), substance use (Harrison, Fulkerson, & Beebe, 1997), internalizing disorders (depression, anxiety; Toth, Cicchetti, & Kim, 2002), risky sexual behaviors (Fergusson, Horwood, & Lynsky, 1997), and suicidal tendencies (Brown, Cohen, Johnson, & Smailes, 1999). The vast majority of research on the effects of maltreatment has been conducted in community samples or with youth involved with protective service agencies. However, the problems resulting from maltreatment (particularly assaultive and suicidal behaviors) are often those that can result in psychiatric hospitalization. In fact, many psychiatrically hospitalized youth have been maltreated (Day, Franklin, & Marshall, 1998; Fehon, Grilo, & Lipschitz, 2001). However, there

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is relatively less research available on the sequelae of maltreatment among youth admitted for inpatient psychiatric treatment, and especially those who exhibit very high levels of psychopathology.

Research on high-risk populations is essential to broadening our understanding of child psychopathology and enhancing treatments for youth affected by maltreatment. The deleterious effects of maltreatment in normative and even modestly at-risk populations are well established, and some research in inpatient psychiatric populations has replicated these effects. Among youth showing very high levels of psychopathology and thus expected to possess elevated organic, dispositional risk, it might be difficult to observe the additive harmful effects of maltreatment. Research with a high-risk population thus can yield important information on how maltreatment accounts for variation in symptom levels. Such research also can aid in the development of better-elaborated targeted treatments for youth already receiving mental health services. The aim of this study was to examine the extent to which different forms of maltreatment account for variations in emotional and behavioral problems in a large sample ($N = 401$) of psychiatrically hospitalized youth, about half of whom had experienced at least one form of maltreatment.

Maltreatment and Adjustment

Empirical evidence indicates clearly that child maltreatment is associated with a host of negative outcomes. Maltreatment can include a wide range of experiences ranging from sexual or physical abuse to neglect to experiences with domestic violence and emotional abuse. The most extensively researched forms of maltreatment, however, are sexual abuse, physical abuse, and neglect. Although each of those forms of maltreatment has been shown independently to correlate or lead to maladjustment, empirical findings have been less clear with respect to determining which type of maltreatment is associated with the worst outcomes, whether multiple maltreatment reliably is more detrimental than is single-form maltreatment, and whether different configurations of maltreatment experiences (e.g., physical plus sexual abuse) have different patterns of effects (see, e.g., analysis and discussion by Ney, Fung, & Wickett, 1994).

One common method of assessing the impact of the different forms of maltreatment has been to classify them hierarchically. Hierarchical classification operates according to the theory that some forms of maltreatment are inherently more detrimental than others because these types of maltreatment are active (rather than passive) and violate more strongly held social norms (Kinard, 1994; Lau et al., 2005; Manly, Cicchetti, & Barnett, 1994; Toth & Cicchetti, 1996). Here, abuse is worse than neglect because abuse is an act of commission and neglect is an act of omission. Sexual abuse is considered the worst form of maltreatment because it violates more strongly held social norms, and sexual abuse is followed in the hierarchy by physical abuse and then neglect. Although it is an act of commission, emotional abuse is considered least harmful in the hierarchical approach (Manly et al., 1994). Thus, a youth who was sexually abused, regardless of whether other forms of maltreatment have been experienced, is classified as “sexually abused.” A youth who was abused physically, but not sexually, is considered “physically abused,” a youth who was neglected but neither physically nor sexually abused is classified as “neglected,” and a youth who was emotionally abused but experienced none of the other forms of maltreatment is considered “emotionally abused” (Manly et al., 1994). Hierarchical classification thus relies on dichotomized indicators of maltreatment (i.e., 1 = maltreated, 0 = not maltreated) to derive the various subgroups of maltreated youth.

Generally, findings from studies using hierarchical classification systems support that each category is associated with maladjustment, but findings are mixed regarding whether certain types of maltreatment lead to specific negative outcomes. For instance, some researchers report sexual abuse to be more strongly associated with risky sexual behaviors than other forms of

maltreatment (Cavaiola & Schiff, 1988; Fergusson et al., 1997; Krahé, Scheinberger-Olwig, Waizenhofer, & Koplin, 1999). However, Arata and colleagues found that sexually and physically abused youth did not differ in their number of sexual partners (Arata, Langinrichsen-Rohling, Bowers, & Farrill-Swails, 2005). Similarly, findings are mixed regarding whether forms of maltreatment higher on the hierarchy are associated with worse adjustment (Engels, Moisan, & Harris, 1994; Gauthier, Stollack, Messe, & Aronoff, 1996; Lau et al., 2005; Roesler & McKenzie, 1994; Teicher, Samson, Polcari, & McGreenery, 2006). A limitation to hierarchical classification, which may account for some inconsistent findings, is that the severity of maltreatment is easily confounded with exposure to multiple types of maltreatment. This is particularly problematic for understanding emotional abuse, given that it frequently co-occurs with the other forms of maltreatment; in fact Manly et al. (1994) could not evaluate its impact via hierarchical classification because the “emotionally abused” group was too small.

An alternative to hierarchical classification is cumulative classification (also considered “multiple maltreatment,” e.g., Trickett, 1998; or “polyvictimization,” e.g., Finkelhor, Ormrod, & Turner, 2007). This sort of classification runs parallel to a cumulative risk view in developmental psychopathology more generally. Broadly, the cumulative risk scheme does not assign any single risk factor a higher status or greater weight than any other. Instead, the cumulative risk model asserts that it is the number of risk factors that is most important when predicting negative outcomes, not the presence of specific types of risks (Rutter, 1979; Sameroff, 2000). Thus, when applying a cumulative risk model to maltreatment, youth are grouped by how many types of maltreatment they have experienced without ordering the types into any hierarchy. Generally, research indicates that experiencing more types of maltreatment is associated with worse adjustment (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Arata et al., 2005; Turner, Finkelhor, & Ormrod, 2006). In comparing the cumulative and hierarchical classification schemes, however, Lau and colleagues (Lau et al., 2005) reported that hierarchical classification added to the prediction of adjustment beyond information provided by cumulative classification.

Maltreatment and Adjustment in Hospitalized Youth

Although much maltreatment research has focused on community samples or on youth identified by child protection agencies, some has examined whether the relations between maltreatment and negative adjustment indices generalize to other high-risk, atypical populations such as youth in psychiatric hospitals. Indeed, a substantial proportion of youth who are involved in psychiatric inpatient programs have a history of childhood maltreatment (Fehon et al., 2001). Thus, maltreatment appears to be a key risk factor for hospitalization. Still, not all youth referred to inpatient psychiatric treatment have been maltreated. Thus there also is reason to consider how well the typically observed relations between maltreatment and maladjustment in community-based normative or child protective samples will generalize to youth in psychiatric inpatient treatment. For example, research relying on hierarchical or cumulative classifications of maltreatment experiences suggests a generally linear relation between maltreatment severity (in a hierarchy) or amount (cumulatively) and greater maladjustment. However, on average youth in psychiatric hospitals exhibit more severe difficulties than do youth in the larger community, imposing a degree of range restriction on measures of maladjustment.

Extant literature on the effects of maltreatment in youth psychiatric populations shows some consistency with research in more normative youth populations in terms of the generally harmful impact of maltreatment. For example, Grilo, Sanislow, Fehon, Martino, and McGlashan (1999) have shown that greater abuse during childhood is linked to elevated psychiatric symptoms in adolescence including depression, suicide risk, violent behavior, and substance abuse. In a separate study, however, Grilo et al. (1999) found that abused and non-

abused adolescent inpatients significantly differed only in their mean levels of self-criticism (as an index of depression) and alcohol abuse; however, these groups did differ meaningfully in the extent to which their psychiatric symptoms accounted for suicide risk. Specifically, externalizing and internalizing problems predicted suicide risk in abused adolescents but only internalizing problems predicted risk in non-abused adolescents.

Other studies of youth psychiatric samples have shown, for example, that sexual and emotional abuse might be more psychologically damaging than physical abuse or neglect (Sullivan, Fehon, Andres-Hyman, Lipschitz, & Grilo, 2006), that sexual and physical abuse are linked independently to elevated post-traumatic stress symptoms but jointly to greater internalizing problems (Naar-King, Silvern, Ryan, & Sebring, 2002), and that sexual and physical victimization by family members is associated with elevations in both externalizing and internalizing psychopathology (Muller, Goebel-Fabbri, Diamond, & Dinklage, 2000). Still, although findings across studies have been revealing with regard to the generally deleterious effect of maltreatment, limitations across studies on sample size and maltreatment measurement have prevented firm conclusions about the differential impact of various forms and combinations of maltreatment experiences among youth inpatients. This issue is complicated too by reports from research teams such as Cohen et al. (1996), who observed no substantial variation in symptoms among adolescent inpatients as a function of maltreatment type.

Discerning the impact of various combinations of maltreatment on psychiatrically hospitalized youth can have important implications for clinical practice with those youth. For instance, maltreated and hospitalized youth might benefit from specialized treatment services adjunctive to standard hospital milieu therapies (e.g., trauma-focused cognitive-behavioral therapy for sexual abuse victims; Deblinger, Steer, & Lippman, 1999). Examining maltreatment in the hospitalized population also affords information critical to refining models of child psychopathology. Psychopathology in childhood can emerge via additive and interactive effects of organic, individually-based risk factors (such as impulsivity and emotional lability) and contextually-based risk factors (such as maltreatment and stressful life events). Youth admitted for inpatient treatment exhibit historical risk profiles high in both individual and contextual risk (Boxer, 2007). Thus it is of interest to ascertain whether different configurations of maltreatment experiences still contribute to variation in functioning in this population.

The Present Study

This study examined the psychopathology symptoms of different approaches to classifying maltreatment in a large ($N = 401$) sample of youth psychiatric inpatients. The sample for this study was comprised of youth receiving inpatient psychiatric treatment in a state-funded secure hospital. Data on histories of maltreatment and current psychopathology obtained at hospital intake were analyzed to examine three different classification schemes: hierarchical classification (e.g., Manly et al., 1994), cumulative classification (e.g., Finkelhor et al., 2007), and an independent effects model (forms of maltreatment considered separately, and not aggregated). We hypothesized generally that maltreatment experiences would account for variation in psychopathology measured at intake. We conducted exploratory analyses to determine which model of maltreatment effects provided the most explanatory power for understanding differences as a function of youths' configurations of maltreatment experiences.

Method

Participants

Participants were drawn from the database of a larger project examining the characteristics, management, and outcomes of youth receiving inpatient treatment (Boxer, 2007). Analyses in

this investigation are based on a sample of 401 youths (mean age at admission = 13.9 years, $SD = 2.1$, range 10–17 years; 53% male) admitted consecutively to a secure, publicly funded inpatient psychiatric hospital in the Midwest. Inpatients younger than 10 years at admission were excluded from this study. As noted this study is part of a larger project investigating aspects of clinical management procedures, and as a matter of policy the host facility does not implement all possible management procedures with children in that age range. Inpatients for whom psychopathology rating scale data (measures described below) were not available ($n = 83$) also were excluded from this study. However, “missingness” for the rating scale data was uncorrelated with whether a youth was maltreated ($r = .09$, $p > .05$), suggesting that the exclusion of those youth did not result in biased estimation of maltreatment effects. The analysis sample was ethnically/racially diverse (42.9% Black/African-American, 45.4% White/Caucasian, 2.7% Hispanic/Latino/a, 0.7% Native American, 7.7% Other or Mixed-Racial) and represented a broad range of economic backgrounds per US Census 2000 data on participants’ home ZIP codes (median home values from \$27,800 to \$309,800; percent of local population in poverty from 2% to 39%; median household incomes from \$17,680 to \$82,567). Participants came from a variety of custodial situations: homes with two biological parents or one biological parent and one step-parent (25.7%), single parents only (37.9% biological mother, 3.7% biological father), grandparents (4.7%), adoptive parents (11.5%), foster parents (3.2%), extended families (10.5%), or another configuration (2.7%).

The host facility for this project was a secure inpatient psychiatric institution. Youth referred for admission typically already have experienced treatment in a variety of less restrictive settings including outpatient clinics, residential treatment centers, and short-term inpatient psychiatric wards. The host facility provides long term inpatient care and serves primarily those youth unable to be treated effectively in other mental health settings. In the public mental health system of the state where the facility is located, this particular facility represents the most intensive level of behavioral and mental health care available to youth. Youth admitted to treatment there are considered to be at imminent risk for harm to self or others in the presence of chronic emotional or behavioral difficulties, and are admitted almost exclusively from short-term inpatient hospitalization.

Measures/Sources of Data: Overview

This study made use of existing clinical records. Data for this study were obtained from two sources: 1) intake assessment reports completed by teams consisting of a psychiatrist, psychologist, social worker, and psychiatric nurse; and 2) standardized psychopathology rating scales completed by the parent or caseworker present for the youths’ initial admission meeting. Intake reports were coded by master’s-level clinical psychology interns working in the host facility. Data were de-identified by the facility prior to transfer to the first author per accommodations made in order to adhere to HIPAA, state, and hospital regulations.

Histories of maltreatment—Maltreatment histories routinely were assessed during the intake process by a multi-disciplinary team of seasoned, licensed clinicians. The intake procedure typically spans two to three days; maltreatment information systematically is sought during the social history assessment (social worker), psychiatric assessment (psychiatrist), and medical examination (pediatrician). The social worker questions the parent/guardian directly about the youth’s history of abuse and neglect. The psychiatrist interviews the youth and specifically evaluates signs, symptoms, and direct complaints about abuse and neglect. The pediatrician examines the youth, explores direct complaints of abuse and neglect, and evaluates any physical indications of abuse. All three clinicians document information indicating a positive history of sexual abuse, physical abuse, emotional abuse, and neglect. Clinicians also document involvement in child protective services (CPS), including outcomes of CPS involvement. Other clinicians involved in the intake process, including clinical psychologists

and psychiatric nurses, also note any information learned regarding maltreatment during their phases of intake. At times, youth admitted to the hospital are involved in active CPS cases; in those circumstances clinicians (typically the social workers) consult directly with CPS caseworkers. Except in cases where CPS contact is available, it can be difficult to determine definitively whether an abuse or neglect claim has been legally substantiated, although the multi-source assessment does permit validation of claims across different reporters. Still, research by Hussey et al. (2005) has shown that behavioral and mental health symptoms typically do not vary as the function of whether maltreatment reports are substantiated or unsubstantiated. Through all components of the maltreatment assessment, clinicians adhered to the legal definitions of child abuse and neglect codified in state law. For confidentiality purposes the state where the facility is located cannot be identified. However the legal definition of *abuse* in this state involves harm or threatened harm to a youth's health or well-being via non-accidental physical or mental injury. The injury can be the result of sexual, non-sexual physical, or emotional acts. The legal definition of *neglect* involves harm or threatened harm to health or well-being via negligent treatment or by placing a child at risk for harm through failure to supervise or failure to eliminate potential sources of risk.

Coders reviewed the intake reports in order to rate the extent to which youth experienced *physical abuse*, *sexual abuse*, *emotional abuse*, and *neglect* using ratings of 0 = *none noted*, 1 = *form of maltreatment noted, but no legal status noted*, and 2 = *form of maltreatment noted as 'substantiated' or otherwise supported via some official process*. In the analyses reported here, following Hussey et al. (2005) and in order to enhance the sensitivity of our coding and augment analytic power, we dichotomized these variables as 0 = *none noted* and 1 = *any noted*.

Maltreatment indicators were used to derive two different classifications. The *hierarchical classification* scheme followed Manly et al. (1994; also see Kinard, 1994). Youth positive for sexual abuse were classified as “sexually abused” ($n=90$), youth positive for physical abuse but not sexual abuse were classified as “physically abused” ($n=73$), youth positive for neglect but not sexual or physical abuse were classified as “neglected” ($n=31$); and youth positive for emotional abuse but not sexual or physical abuse or neglect were classified as “emotionally abused” ($n=6$). Remaining youth were classified as “not maltreated” ($n=201$). The *cumulative risk* classification, analogous to Finkelhor et al.'s (2007) “polyvictimization” and Trickett's (1998) multiple maltreatment view, grouped youth by how many types of maltreatment they had experienced – none ($n=201$), one ($n=82$), two ($n=55$), three ($n=34$), or four ($n=29$), regardless of maltreatment type. With respect to forms of maltreatment considered separately, 90 youth experienced sexual abuse, 131 experienced physical abuse, 105 experienced neglect, and 84 experienced emotional abuse.

Psychopathology criterion variables—Indicators of psychopathology were obtained from two sources. First was the *Devereaux Scales of Mental Disorders* (DSMD; Naglieri, LeBuffe, & Pfeiffer, 1994). We included broad-band scale scores for *internalizing problems* (e.g., depression, anxiety), *externalizing problems* (e.g., aggression, delinquency), and *critical pathology* (e.g., psychosis, autistic behaviors). These scales have excellent internal reliability (coefficient alphas ranging from .88–.98) and criterion validity (consistent discrimination between hospitalized and control samples of youth). DSMD scales were completed by the individual who admitted the child to the hospital (typically the primary caregiver).

Standard (T) scores greater than 60 on the DSMD scales indicate clinical case status in the general population, and scores greater than 70 are considered highly significant with respect to clinical levels of psychopathology (Naglieri et al., 1994). To indicate relatively elevated clinical status in the current study population, we used a cut score of 80T or two theoretical standard deviations above the scales' theoretical mean. Following Trickett (1998), who

suggested that multiple maltreatment should predict diverse symptom patterns, we created a *total clinical status score* by dichotomizing the broad-band DSMD scale scores according to clinical status (i.e., greater than 80T, 80T or less) and then summing those three indicators. This total score provides information on the diversity of symptoms as an effect of maltreatment, and affords an index of the clinical or practical significance of any differences between classification schemes.

The second source of psychopathology information was the intake psychiatric interview. For descriptive purposes only we included the *primary Axis I diagnoses* from the Diagnostic and Statistical Manual of Mental Disorders, Fourth edition (DSM-IV; American Psychiatric Association [APA], 1994) assigned for each youth at intake. We also recorded the Axis V score indicating *Global Assessment of Functioning* (GAF). Primary diagnoses were categorized as either: 1) *mood/anxiety disorders* (any depressive, anxiety, bipolar, mania, or mood disorder not otherwise specified), 2) *thought disorders* (any schizophrenia, schizophreniform, schizoaffective, or thought disorder not otherwise specified), 3) *behavior disorders* (any conduct, oppositional-defiant, disruptive behavior, or attention deficit-hyperactivity disorder), 4) *post-traumatic stress disorder*, or 5) “other” (including autism spectrum and developmental disorders). GAF scores can range from 0 to 100, with lower scores indicating greater impairment; a midrange score of 50 represents “serious symptoms... or any serious impairment in social, occupational, or school functioning” (APA, 1994). Reliability studies suggest that GAF scores can be assigned with acceptable degrees of reliability during initial diagnostic assessments (e.g., Söderberg, Tungström, & Armelius, 2005). GAF scores were not available for three youths.

Procedures

All procedures were reviewed and approved by human subjects research committees at the host facility, the state agency overseeing activities at the facility, and the authors’ university. Information contained in the inpatient charts was coded by three master’s-level clinical psychology interns trained by the first author. Analyses of a subset of cases coded by all three interns ($n=55$; 14.7% of sample) indicated very high levels of inter-rater reliability (intraclass correlation coefficients $> .90$ for all codes). Interns coded remaining cases independently.

Results

Preliminary analyses of maltreatment classifications and criterion variables

Table 1 presents descriptive diagnostic and psychopathology information for maltreated and non-maltreated groups. These data indicate that the study sample generally is comparable to those described in other studies of maltreatment in youth psychiatric populations with regard to psychiatric diagnostics, but perhaps somewhat more severe in terms of psychopathology rating scale data. Significance testing (t -tests and chi-square analyses) yielded statistically (mean differences in continuous ratings) as well as clinically (mean or proportional differences in clinical criteria) significant differences between the maltreated and non-maltreated groups.

Chi-square analyses indicated that membership in some of the hierarchically classified groups was related to sex: females were more likely than males to be assigned to the sexual abuse group ($\chi^2 [1] = 8.71, p < .01$) whereas males were more likely than females to be assigned to the physical abuse group ($\chi^2 [1] = 7.25, p < .01$) and to the no maltreatment group ($\chi^2 [1] = 3.63, p < .10$). With respect to cumulative classification, females ($M=1.14$) experienced somewhat greater diversity of maltreatment than did males ($M=.91$), $t(399)=1.79, p = .075$. Although there was no significant variation by age in hierarchical classification, age was correlated modestly with cumulative maltreatment, $r(401) = -.11, p < .05$. Considered

independently, as shown in Table 2, maltreatment indicators were modestly to moderately and significantly intercorrelated, and modestly and significantly correlated with sex and age.

Criterion analyses based on hierarchical classification

To examine differences in criterion scores based on the hierarchical classification, we computed a series of five univariate analyses of covariance (ANCOVA) with hierarchical group (sexually abused, physically abused, neglected, or other) as the between-subjects factor and the effects of sex and age controlled as covariates. Similar to Manly et al. (1994), we excluded the emotionally abused group from this analysis due to the small size of this group ($n = 6$). Dependent variables were the three DSMD scales, the total clinical status score, and the intake GAF score. We opted for the multiple-univariate analysis approach rather than a single multivariate ANOVA (MANOVA) following recommendations for this sort of analysis outlined by Jaccard and Guilamo-Ramos (2002; also see Keselman, Cribbie, & Holland, 2004). We applied the traditional Bonferroni correction to control family-wise error and thus used $\alpha = .01$ to evaluate the statistical significance of each ANCOVA (Keppel, 1991). We examined pairwise group differences via single degree of freedom contrasts using the Tukey method.

Table 3 summarizes the results of these analyses. As shown, significant differences were observed for the DSMD internalizing and critical pathology scales, and for the total clinical status variable. The sexually abused group typically scored the highest on these criterion measures, but was not significantly different from the neglected group.

Criterion analyses based on cumulative classification

To examine the effects of cumulative maltreatment, we computed ordinary least squares (OLS) regression analyses of the five criterion variables listed in the previous section, with the cumulative classification score (range = 0 through 4) as the independent variable in step 2 of each regression while controlling for the effects of sex and age entered in step 1. We again used $\alpha = .01$ to interpret the statistical significance of the results for each criterion variable. As shown in Table 4, the cumulative classification score significantly predicted (at $p < .01$) only the DSMD critical pathology and total clinical status scores.

Criterion analyses based on independent classifications

To examine the independent effects of the three forms of maltreatment, we computed a second set of OLS regressions of the five criterion variables, this time setting the dichotomous indicators of sexual abuse, physical abuse, and neglect as the independent variables at step 2 while controlling for sex and age in step 1. We used $\alpha = .01$ for evaluating statistical significance. As shown in Table 5, only the sexual abuse indicator significantly predicted any criterion variables. A history of sexual abuse significantly predicted DSMD internalizing, critical pathology, and total clinical status.

Discussion

We analyzed data from a large sample of psychiatrically hospitalized youth to evaluate three different conceptions of how multiple maltreatment experiences account for variation in psychopathology symptoms. Via combinations of dichotomized indicators of four different types of maltreatment (sexual abuse, physical abuse, emotional abuse, neglect), we examined a hierarchically ordered model of maltreatment effects (i.e., sexual abuse produces the worst symptoms), a cumulative model of effects (i.e., total discrete maltreatment experiences, regardless of type, relate linearly to elevated symptoms), and an independent model of effects (i.e., examining maltreatment types separately for effects on symptoms). We observed effects of sexual abuse on criterion measures of internalizing problems, critical pathology (e.g., autistic

and psychotic symptoms), and overall clinical impairment as indicated by scores on the Devereaux Scales of Mental Disorders (DSMD). We observed no significant maltreatment effects on externalizing behavior or on Global Assessment of Functioning (GAF) scores assigned at hospital intake. Our results suggest a critical role for sexual abuse relative to physical abuse and neglect in the emotional and behavioral functioning of psychiatrically hospitalized youth. These results have implications for understanding the development of psychopathology in abnormal or at-risk youth populations, as well as for clinical practice in those populations.

Sexual Abuse as a Risk Factor for Psychopathology

The hierarchical approach to classifying children's maltreatment experiences is based on the notion that psychological harm from maltreatment is related to the extent to which the act of maltreatment violates social norms (e.g., Toth & Cicchetti, 1996), the extent of the "seriousness" of the act of maltreatment (Kinard, 1994), or to the extent to which the act of maltreatment represents active commission rather than passive omission (Lau et al., 2005). In this scheme, regardless of the particular justification, sexual abuse is considered to be the most severe form of maltreatment. Still, as noted by Lau and colleagues (2005), there has been neither theoretical nor empirical justification for this approach to rank-ordering multiple maltreatment experiences.

Our findings confer some validity on a hierarchical approach to classification by illuminating in our sample the detrimental impact of sexual abuse in comparison to physical abuse, neglect, and no maltreatment. We could not assess the relative impact of the emotionally-abused only classification because, similar to Manly et al. (1994), the high covariation between emotional abuse and the other forms of maltreatment left us with an unacceptably small cell size for this group ($n = 6$). In analyses of the other hierarchically-defined groups, the sexual abuse group (sexual abuse alone or in combination with any other form of maltreatment) generally was rated the highest in terms of DSMD internalizing problems, critical pathology, and total clinical status. Importantly, pairwise contrasts yielded no differences between the sexual abuse group and the neglect group (neglect alone). Analyses treating the forms of maltreatment independently rather than in combination, however, demonstrated that sexual abuse accounted for significant variance in the same three DSMD criterion measures whereas physical abuse and neglect were not significant predictors of any criterion indicators.

Interestingly, despite substantial research and theory linking maltreatment experiences to internalizing and externalizing problem behavior syndromes – and especially the well-established association between physical abuse and aggressive/disruptive behavior (see, e.g., Dodge, Pettit, & Bates, 1990) – we observed consistently larger effects when examining critical pathology scores as the function of maltreatment experiences. The DSMD critical pathology scale taps a fairly wide range of specific symptoms associated with autistic or psychotic syndromes. Given that these symptoms indicate potentially more organically-based disorders that emerge earlier in development, however, this finding might suggest an interesting exposition of the diathesis-stress model of psychopathology. Youth with tendencies towards exhibiting autistic or psychotic symptoms might experience an exacerbation of these symptoms under conditions of maltreatment, particularly sexual abuse.

Cumulative Maltreatment Effects on Psychopathology

The observation of no difference in the hierarchical classification analyses between sexual abuse and neglect and the significant effect of cumulative maltreatment on criterion measures attenuate the conclusion that sexual abuse is the "worst" form of maltreatment. Neglect clearly also can be deleterious, and multiple maltreatment experiences appear to be more detrimental regardless of type than do single maltreatment experiences. Our observations with respect to

the cumulative classification lend support to previous research on “polyvictimization” (Finkelhor et al., 2007) or “multiple maltreatment” (Trickett, 1998) effects – stated simply, a greater diversity of discrete forms of maltreatment experienced predicts greater severity in externalizing behavior, critical pathology, and overall clinical impairment. Conceptualizing each form of maltreatment as a discrete risk factor also brings our findings in line with the broader developmental psychopathology view advanced by Rutter (1979) and Sameroff (2000), whose theories regarding the impact of multiple risk experiences have been supported time and again in studies of child and adolescent psychosocial outcomes.

Maltreatment in Youth Psychiatric Populations

The sample of youth included in this investigation represents a population high in both individually-based and contextually-based risk for emotional and behavioral difficulties (Author citation). Despite this elevated risk profile, our analyses support the multifinality (i.e., multiple problems stemming from a single risk factor; Cicchetti & Rogosch, 1996) of maltreatment observed in normative, child protective, and youth psychiatric populations. Table 1 shows that the experience of any form or combination of maltreatment is linked to significantly greater internalizing, externalizing, and “critical” psychopathology as well as overall impairment per the DSMD. Maltreatment also appears responsible for clinically significant differences in externalizing and critical psychopathology (per DSMD scores) and a greater likelihood of PTSD as a primary psychiatric diagnosis. As discussed above, however, the analysis afforded by the various classification schemes supports the possibility that much of the general maltreatment effect in our sample appears to be driven by the specific impact of sexual abuse. Still, this assertion is tempered to a degree by our observation that cumulative maltreatment also significantly predicted externalizing and critical pathology in addition to total clinical status.

The lack of significant variation in the intake GAF score across our inferential analyses illuminates an important issue for consideration in studying youth psychiatric populations. Across the different maltreatment classifications we examined, the range of GAF means hovered around 24 with a standard deviation of about 5. Thus about 68% of the youths in our sample were assigned GAF ratings at intake between about 19 and 29 – which according to the DSM suggests very significant impairment in functioning. For example, a GAF score in the 21–30 range means that “behavior is considerably influenced by delusions or hallucinations or serious impairment in communication or judgment or inability to function in almost all areas” (APA, 1994). Although this extreme degree of general impairment mitigates the extent to which results can be generalized to normal populations, it permits an interesting test of the ability of different forms of maltreatment to account for variation in specific forms of psychopathology. It will be important for researchers to continue examining the effects of maltreatment on psychopathology across a variety of atypical youth populations representing different degrees of risk.

Limitations and Future Directions

There are a few salient limitations to the current study. First, the nature of the routine clinical procedures used to assess maltreatment also did not take the severity, frequency, or duration (including age of first victimization) of maltreatment into account and thus we relied on dichotomous indicators of maltreatment. Recent analyses by Lau and colleagues (2005) have shown some utility for maltreatment classifications and ratings based on the severity and frequency of specific forms of maltreatment. Measuring maltreatment in this manner would permit finer-grained comparisons between, for example, the effects of single incidents of sexual abuse and repeated incidents of physical abuse. Second, the sample for this study was not a child protective service (CPS) sample. Thus, maltreatment histories might not have been

assessed as rigorously as they might have been in a CPS intake setting; of course even in that context maltreatment experiences can be very difficult to measure accurately (Kinard, 1994).

Even with these methodologically important limitations, however, the dichotomous codes upon which we relied produced reliable and valid results that were generally consistent with prior work. The use of data extracted from routine clinical assessments in a “real world” practice setting greatly enhances the external validity of our investigation and represents a step forward with respect to the translation of theory to practice and vice-versa. Of course, we did observe what would be described as “small” effects (Cohen, 1988) of maltreatment as implied by our partial η^2 and R^2 values, thus accounting for small proportions of variance in the adjustment variables; more detailed assessments of maltreatment characteristics would likely bolster these sorts of findings. On a related point, we focused primarily on the effects of maltreatment and it is possible that other contextual and individual sources of risk might account for different patterns of adjustment in this high-risk sample. Finally, it also is necessary to note that we focused only on four forms of maltreatment, albeit those appearing most consistently in the maltreatment literature. Others also have considered exposure to interparental violence in combination with physical abuse (e.g., Hughes, Parkinson, & Vargo, 1989; Mahoney, Donnelly, Boxer, & Lewis, 2003); as noted earlier Finkelhor and colleagues (2007) have assessed a number of different victimization and exposure experiences. Future work in atypical samples should broaden the scope of inquiry to include an expanded array of maltreatment experiences, singly and in combination.

As noted above, it will be of great interest and potential importance for researchers to continue investigating the effects of different maltreatment experiences in atypical youth populations. The deleterious effects of maltreatment in more normative populations, even in nationally representative samples (e.g., Turner et al., 2006), are well established. In line with a developmental psychopathology approach (e.g., Achenbach, 1982), assessing those effects in various atypical or abnormal groups can inform clinical practice with maltreated youth (e.g., identifying most impactful types or type combinations of maltreatment) and enhance understanding of risk factors for psychopathology more generally.

Implications for Clinical Practice

The results of this study demonstrate that even in a high-risk youth psychiatric population, there is an additive detrimental effect of maltreatment on psychopathology symptoms. Maltreatment represented by a variety of combinations and classifications here was associated with elevations in a number of discrete symptom clusters. In addition to the need for routine assessment of maltreatment upon admission to inpatient care, a clear implication of this finding for clinicians working in psychiatric populations is that it might be useful to incorporate maltreatment-focused psychotherapy into the treatment plans of maltreated youth. Randomized controlled trials support the efficacy of specific therapies for children who have experienced various forms of trauma, particularly sexual and physical abuse (i.e., trauma-focused therapy; see, e.g., Deblinger et al., 1999; Kolko, 1996). Thus it can be helpful to incorporate such treatments adjunctively into the broader therapeutic milieu for youth who have been maltreated.

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Table 1

Descriptive psychiatric diagnostic and psychopathology rating scale data

Criterion measure	No maltreatment (n=201)	Any maltreatment (n=200)	Significance test
DSMD internalizing			
Mean (SD)	74.63 (14.44)	77.73 (14.75)	$t(399) = 2.12^*$
Percent > 80	39.3%	43.5%	$\chi^2(1) = .73$, ns
DSMD externalizing			
Mean (SD)	73.38 (15.26)	76.41 (14.89)	$t(399) = 2.01^*$
Percent > 80	34.8%	44.5%	$\chi^2(1) = 3.92^*$
DSMD critical pathology			
Mean (SD)	71.44 (15.92)	78.18 (16.22)	$t(399) = 4.20^{***}$
Percent > 80	27.4%	48%	$\chi^2(1) = 18.19^{***}$
DSMD total clinical status	1.01 (1.09)	1.36 (1.18)	$t(399) = 3.04^{**}$
DSM-IV primary diagnosis			
Mood/anxiety disorder	64.2%	66.5%	$\chi^2(1) = .06$, ns
Thought disorder	16.4%	13%	$\chi^2(1) = .83$, ns
Behavior disorder	12.9%	9.5%	$\chi^2(1) = 1.09$, ns
PTSD	.5%	8%	$\chi^2(1) = 13.24^{***}$
Other	5.5%	2%	$\chi^2(1) = 3.27^+$
DSM-IV GAF	23.76 (5.14) ^a	24.89 (4.64) ^b	$t(396) = .27$, ns

⁺
 $p < .10$ ^{*}
 $p < .05$ ^{**}
 $p < .01$ ^{***}
 $p < .001$

Note: DSMD = Devereaux Scales of Mental Disorders; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, 4th edition; GAF = Global Assessment of Functioning; SD = Standard deviation; PTSD = Post-traumatic stress disorder; ns = non-significant.

^a
n = 200.^b
n = 198.

Table 2

Correlations among study variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Sex (0=female, 1=male)	-.19**									
3. GAF	-.09	-.01								
4. DSMD-Internalizing	-.08	-.05**	-.11*							
5. DSMD-Externalizing	-.11*	-.15**	.00	-.57**						
6. DSMD-Critical pathology	-.17**	-.03	-.10	.72**	-.63**					
7. Sex Abuse (0= none, 1=any)	-.00	-.20**	.00	.18**	.11*	.23**				
8. Phys Abuse (0= none, 1=any)	-.11	.05	-.03	.05	.08**	.14**	.36**			
9. Neglect (0= none, 1=any)	-.14**	-.09	.02	.05	.15**	.15**	.26**	.41**		
10. Emotional abuse (0 = none, 1 = any)	-.05	-.04	-.01	.04	.08	.11*	.36**	.60**	.34**	

*
 $p < .05$.**
 $p < .01$.

Note. GAF = Global Assessment of Functioning; DSMD = Devereaux Scales of Mental Disorders.

Table 3

Summary of criterion analyses for Hierarchical classification

Criterion measure	Univariate ANCOVA result for classification variable	Partial η^2	Significant pairwise differences
DSMD-Internalizing	$F(3, 395) = 4.69, p = .003$	.035	SA > PA SA > O
DSMD-Externalizing	$F(3, 395) = 1.63, p = .182$	.012	None
DSMD-Critical pathology	$F(3, 395) = 8.55, p = .000$	.062	SA > PA SA > O
DSMD-Total clinical status	$F(3, 395) = 5.58, p = .001$	.041	SA > PA SA > O
Intake GAF	$F(3, 392) = .234, p = .872$	.002	None

Note: SA = Sexually abused; PA = physically abused; N = neglected; O = no maltreatment. Emotionally abused group excluded due to small cell size ($n = 6$; see Manly et al., 1994).

Table 4

Summary of criterion analyses for Cumulative classification

Criterion measure	F-step adding cumulative score ^a	ΔR^2 for step	b (SE) for cumulative score	β for cumulative score
DSMD-Internalizing	$F(1, 397) = 3.32, p = .069$	.008	1.05 ⁺ (.58)	.092
DSMD-Externalizing	$F(1, 397) = 5.82, p = .016$	.014	1.41 [*] (.59)	.119
DSMD-Critical pathology	$F(1, 397) = 16.14, p = .000$	.038	2.53 ^{**} (.63)	.197
DSMD-Total clinical status	$F(1, 397) = 11.39, p = .001$	.027	.15 ^{**} (.04)	.167
Intake GAF	$F(1, 394) = .169, p = .682$	.000	-.08 (.19)	-.021

⁺ $p < .10$ ^{*} $p < .05$.^{**} $p < .01$.^a After controlling sex and age.

Table 5
Summary of criterion analyses for Independent effects classification

Criterion measure	F-step adding maltreatment scores ^a	ΔR^2 for step	b (SE) for predictor	β for predictor
DSMD-Internalizing	$F(4, 394) = 3.08, p = .016$	.030	Sex Ab Phys Ab Neglect Emot Ab	.188 -.020 -.003 -.018
DSMD-Externalizing	$F(3, 394) = 1.18, p = .125$	.017	Sex Ab Phys Ab Neglect	.043 .011 .102
DSMD-Critical pathology	$F(3, 394) = 5.79, p = .000$	.054	Sex Ab Phys Ab Neglect Emot Ab	.017 .196 .031 .068
DSMD-Tot clinical status	$F(3, 394) = 4.10, p = .003$	.039	Sex Ab Phys Ab Neglect Emot Ab	-.004 .169 -.002 .050
Intake GAF	$F(3, 391) = .158, p = .959$	.002	Sex Ab Phys Ab Neglect Emot Ab	.031 .009 -.044 .019
				-.004

⁺ $p < .10$

^{*} $p < .05$

^{**} $p < .01$.

^a After controlling sex and age.