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Characteristics of Child Physical and Sexual Abuse as Predictors of Psychopathology

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Abstract

Childhood physical and sexual abuse victims are at increased risk for developing depression, anxiety, and post-traumatic stress disorder (PTSD) in adulthood. Prior findings suggest abuse onset, duration, and severity moderate relationships between victimization and psychopathology. However, because these abuse characteristics are highly intercorrelated, their unique, individual effects on mental health outcomes remain unclear. To address this gap, the present study examined relationships between physical and sexual abuse characteristics and mental health outcomes and whether these relationships differed by sex. A diverse community sample of late adolescents and emerging adults (N = 1,270; mean age = 19.68; 51% female) self-reported the onset, duration, and severity of physical and sexual abuse, as well as their depressive, anxiety, and PTSD symptoms. Results of a multivariate regression model (simultaneously evaluating all physical and sexual abuse characteristics) indicated that physical abuse onset in middle childhood and sexual abuse onset in middle childhood or adolescence were associated with all forms of psychopathology; and physical abuse onset at any time was uniquely linked with PTSD. Duration and severity of physical or sexual abuse did not predict psychopathology after accounting for time of onset. Multigroup analyses indicated that adolescence-onset and duration of sexual abuse respectively predicted anxiety and PTSD in females but not males, whereas sexual abuse severity predicted fewer PTSD symptoms in males but not females. Overall, results suggested that abuse occurring after age 5 may have the most deleterious impact on mental health.

Keywords

physical abuse; sexual abuse; abuse characteristics; psychopathology

Abuse is a severe threat to the physical and psychological well-being of children (Beitchman, Zucker, Hood, & Akman, 1992; Edwards, Anda, Felitti, & Dube, 2004; Norman et al., 2012). An estimated 27 percent of females and 5 percent of males in the United States will experience sexual abuse or assault prior to age 18 (Finkelhor, Shattuck, Turner, & Hamby, 2014), and approximately 11 percent of males and 8 percent of females

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will be physically abused prior to age 18 (Finkelhor, Turner, Shattuck, & Hamby, 2013). Child victims of either physical or sexual abuse are more likely to develop concurrent and future psychopathologies (Cicchetti, Rogosch, Gunnar, & Toth, 2010; Del Giudice, Ellis, & Shirtcliff, 2011; McLaughlin et al., 2010; Molnar, Buka, & Kessler, 2001), including depression (Andrews, Valentine, & Valentine, 1995; Weiss, Longhurst, & Mazure, 1999; Widom, DuMont, & Czaja, 2007), anxiety (Stein, Walker, Anderson, & Hazen, 1996), and post-traumatic stress disorder (PTSD) (Cohen, Deblinger, Mannarino, & Steer, 2004; Ehring et al., 2014).

Child abuse victims display vastly divergent mental health outcomes in adulthood (Hillberg, Hamilton-Giachritsis, & Dixon, 2011), with characteristics of abuse, such as type of abuse, onset (age at first victimization), severity, and duration explaining much of this variability (Alexander, 1993; Romano & De Luca, 2001; Silverman, Reinherz, & Giaconia, 1996). While past research has explored the effects of sexual abuse characteristics on psychopathology (Lange et al., 1999; Ruggiero, McLeer, & Dixon, 2000; Schoedl et al., 2010), few studies have addressed the role of these characteristics for physical abuse, and even fewer have examined the unique predictive roles of both physical and sexual abuse characteristics. Because child abuse victims frequently experience more than one form of victimization (Felitti et al., 1998), investigating multiple forms of abuse within the same model is necessary to pinpoint precisely which abuse characteristics are the most important determinants of specific types of psychopathology (Joiner et al., 2007). Furthermore, onset, duration, and severity are highly intercorrelated (Rodriguez, Ryan, Rowan, & Foy, 1996; Ullman, 2007); thus, studies examining only one characteristic may provide an inaccurate picture of its effects. Because various aspects of victimization have different impacts on psychological outcomes, knowledge of the unique roles of abuse characteristics is needed to optimize our theoretical understanding of victimization and its effects, as well as to guide prevention and intervention efforts (Beitchman et al., 1992; Mullen, Martin, Anderson, Romans, & Herbison, 1993; Naar-King, Silvern, Ryan, & Sebring, 2002). Finally, little research has examined whether the relationships between abuse characteristics and psychopathology differ for males and females, although prior research suggests males and females respond differently to stressful life events (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999). To address these gaps, the present study examines the unique effects of onset, severity, and duration of both physical and sexual abuse during childhood and adolescence on mental health outcomes and examines sex differences in these effects in a large, community-based sample of young adults.

Type of Abuse

Child victims of either physical or sexual abuse are more likely to experience psychopathology in later life. Studies exclusively evaluating the role of childhood physical abuse have found associations with depression and anxiety in both adolescence and adulthood (Carlin et al., 1994; Lansford et al., 2002; MacMillan et al., 2001; Malinosky-Rummell & Hansen, 1993; Springer, Sheridan, Kuo, & Carnes, 2007). Likewise, studies solely examining childhood sexual abuse have found that it precedes depression (Jumper, 1995; Kendler, Kuhn, & Prescott, 2004), PTSD (Cohen et al., 2004) and poorer overall psychological health in adulthood (Molnar et al., 2001).

More recent studies have examined the unique effects of physical and sexual abuse on psychological outcomes, but findings have been inconsistent. Some studies have found that both physical and sexual abuse uniquely predict depression, anxiety, and suicidality in adulthood (Fergusson, Boden, & Horwood, 2008; Gibb, Chelminski, & Zimmerman, 2007; Joiner et al., 2007; Ystgaard, Hestetun, Loeb, & Mehlum, 2004), and victims of both forms of abuse are at an especially high risk (Roth, Newman, Pelcovitz, Van Der Kolk, & Mandel, 1997). However, other investigations have suggested that sexual abuse is a stronger predictor than physical abuse of depression (Brown, Cohen, Johnson, & Smailes, 1999), anxiety (Cougle, Timpano, Sachs-Ericsson, Keough, & Riccardi, 2010), and suicidal behavior (Brown et al., 1999; Lopez-Castroman et al., 2013). Meanwhile, a smaller number of studies suggest that physical abuse is actually a stronger predictor of lifetime major depressive disorder and poorer well-being than sexual abuse (Ney, Fung, & Wickett, 1994; Widom et al., 2007). With the exception of Lopez-Castroman and colleagues' (2013) study, which only examined suicidality, none of these studies examined the roles of specific abuse characteristics. Accounting for these characteristics may help resolve the discordancy in prior findings (Mullen et al., 1993).

Of all studies examining both physical and sexual abuse, only one has included specific characteristics of both physical and sexual abuse as predictors of depression, anxiety, and post-traumatic stress disorder (Naar-King et al., 2002). This study found that both duration and severity of childhood physical abuse were associated with more depressive and anxiety symptoms in adolescents, but the negative impact of sexual abuse on psychological health did not vary by duration and severity. However, this study utilized a sample of adolescent psychiatric patients, limiting the generalizability of the results to the larger population of maltreated children (Lansford et al., 2002; Springer et al., 2007).

Characteristics of Abuse

Carlson and colleagues (1997) proposed that three aspects of undesirable life events make an event traumatic: the inability to control it, the perception that it is a negative experience, and its suddenness. These three themes help to explain previous findings regarding the effects of abuse onset, duration, and severity on long-term psychological outcomes.

Onset.

Most research suggests that earlier onset of physical and sexual abuse is associated with more severe depressive, anxiety, and PTSD symptoms (Banyard & Williams, 1996; Kaplow, Dodge, Amaya-Jackson, & Saxe, 2005; Kaplow & Widom, 2007; Lopez-Castroman et al., 2013; Thornberry, Henry, Ireland, & Smith, 2010). Consistent with Carlson and colleagues' (1997) theory of trauma appraisal, younger victims are less able to control their negative situation than older victims – that is, to prevent abuse from occurring (Keiley, Howe, Dodge, Bates, & Pettit, 2001). Younger children are largely incapable of defending themselves or recruiting social support (Carlson et al., 1997; Ullman, 2007), and, as a result, they suffer feelings of learned helplessness and poor self-efficacy (Moran & Eckenrode, 1992; Peterson & Seligman, 1983). In addition, there is reason to suspect younger children are more likely to perceive abuse as a negative experience. The primary developmental task of early

childhood is to forge secure attachments with caregivers (Cicchetti, 1989; Crittenden, 1985). Because younger children are more frequently abused by relatives than strangers or acquaintances (Ullman, 2007), they may be less likely to accomplish this crucial developmental task. Indeed, victims of early childhood abuse report feeling "betrayed" by their caregivers and suffer greater psychological distress throughout the lifespan (Freyd, Klest, & Allard, 2005; Ullman, 2007). However, most of these findings do not adjust for the effects of severity and duration, both of which are correlated with abuse onset (Rausch & Knutson, 1991; Ullman, 2007).

Duration.

Carlson and colleagues (1997) contend that negative events which occur suddenly are more likely to be perceived as traumatic, but negative experiences that gradually unfold, although harmful, allow victims to habituate and avoid overwhelming feelings of dread and anxiety (Janoff-Bulman, 2010). They ultimately assert that gradually unfolding negative events are more likely to lead to depression, whereas acute, unpredictable episodes of victimization are more likely to induce PTSD symptoms. Consistent with their argument, individuals abused for longer periods of time demonstrate more depressive symptoms, suicidal ideation, suicide attempts, and self-harm (Boudewyn & Liem, 1995; Lopez-Castroman et al., 2013), whereas individuals abused for shorter periods are less likely to suffer from depression (Kiser, Heston, Millsap, & Pruitt, 1991; Trickett, Noll, Reiffman, & Putnam, 2001). On the other hand, some have found that longer duration of sexual abuse *increases* the likelihood of developing adult-onset PTSD (Rodriguez et al., 1996), even after controlling for onset and severity, contradicting Carlson et al.'s (1997) theory. These inconsistent findings demonstrate the importance of evaluating the roles of multiple abuse characteristics in the same model and using these results to refine theoretical models explaining the psychological effects of trauma.

Severity.

A large body of research suggests that greater severity of childhood abuse, either physical or sexual, predicts poorer psychological health and suicidality in adolescence and adulthood (Bagley, Wood, & Young, 1994; Boudewyn & Liem, 1995; Easton, 2012; McLean, Morris, Conklin, Jayawickreme, & Foa, 2014; Naar-King et al., 2002; Trickett, Reiffman, Horowitz, & Putnam, 1997; Wind & Silvern, 1992). These findings are consistent with Carlson and colleagues' (1997) claim that negatively perceived events are more likely to cause trauma. They argue, along with others (e.g., Briere, 1992), that fear is the typical response to events that could potentially lead to pain, injury, or death; trauma results from an inability to avoid these events; and the anticipation that similar events will occur again gives rise to psychological pain. Once again, however, little research has examined the effects of severity above and beyond the effects of onset and duration.

Sex Differences in Abuse Responses

Limited research has examined whether the links between psychopathology and abuse differ for males and females. Some studies have shown that female victims of physical abuse have poorer psychological outcomes than males, even though males are more likely to experience

physical abuse than females (Thompson, Kingree, & Desai, 2004). In fact, Silverman and colleagues (1996) reported that female and male physical abuse victims are, respectively, six and four times more likely to report suicidal ideation than non-victims of the same sex (Silverman et al., 1996). These results mirror broader findings that females are at higher risk for developing depression, anxiety, and PTSD even though males are more likely to experience traumatic events (Breslau et al., 1999; Carmen, Rieker, & Mills, 1984). Similarly, females report greater psychological distress following childhood sexual assault than males (Finkelhor, 1984), although this finding has not been replicated in all studies (Garnefski & Arends, 1998). To our knowledge, no study to date has examined sex differences in relationships between specific aspects of abuse and mental health outcomes.

Present Study

The present study sought to determine childhood and adolescent physical and sexual abuse onset, duration, and severity's unique effects (i.e., effects after adjusting for all other abuse characteristics) on depressive, anxiety, and PTSD symptomatology in young adulthood. Additionally, we examined whether the effects of abuse characteristics varied by sex. We hypothesized that earlier onset, longer duration, and greater severity duration of childhood abuse would each uniquely predict higher depressive, anxiety, and PTSD symptomatology and that these associations would be stronger for females than males.

Methods

Sample

Participants included 1,268 late adolescent and emerging adults (*M* age = 19.68 years, *SD* = 1.41, range 16–24; 51% female; 62% African American, 35% White, 1% Asian American/Pacific Islander, 1% Hispanic or Latino, and 1% biracial) from one site of Healthy Passages, a longitudinal study of adolescent health. Participants were originally recruited from fifth-grade classrooms in three metropolitan areas (Birmingham, AL; Houston, TX; and Los Angeles, CA) using two-stage probability sampling (58% participation rate) (Coker et al., 2009; Windle et al., 2004). Children and their primary caregivers at the three sites completed three waves of interviews.

This report utilizes data from wave 4, which was conducted with the children at only one of the sites (Birmingham, AL). Out of the 1,597 original participants at this site, 1,268 (79%) took part in Wave 4. Participants were more likely to be retained if they were African American, $\chi^2(1) = 32.90$, $p < .001$, and came from households headed by a single-parent, $\chi^2(1) = 6.34$, $p < .05$, and with lower levels of income, $t(1525) = -2.21$, $p < .05$. Participants provided informed written consent and were individually interviewed by trained research assistants using computer-assisted technology. All study procedures were approved by the university Institutional Review Board and participants were compensated for their time.

Measures

Physical and sexual abuse.—The physical and sexual abuse subscales of the Childhood Trauma Questionnaire (Bernstein & Fink, 1998) were utilized to assess severity of each type of abuse. Example items included "People in my family hit me so hard that it left me with

bruises or marks" for physical abuse and "Someone tried to touch me in a sexual way, or tried to make me touch them" for sexual abuse. Participants were asked to report how frequently each event occurred on a three-point scale (0 "never," 1 "sometimes," 2 "often") when they were growing up. The CTQ has well-established reliability and validity for adults and adolescents in both community and treatment settings (Bernstein et al., 2003; Scher, Stein, Asmundson, McCreary, & Forde, 2001).

Initially, items on the physical and sexual abuse scales (five items each) were averaged to determine severity scores. The sexual abuse subscale demonstrated good reliability (α = .89). However, the physical abuse subscale had poor reliability (α = .55). Further analyses indicated that removing one item of the CTQ ("I was punished with a belt, a board, a cord, or some other hard object") increased reliability to α = .72. Because spanking is not generally considered a form of abuse (Naar-King et al., 2002), this item was excluded from analysis, and the four remaining items were used to compute the physical abuse composite.

Abuse onset and duration.—Each time participants endorsed any of the abuse items as "sometimes" or "often," they were asked how old they were when it first happened. Across the multiple items on each subscale, the lowest age was used as the age of onset. The continuous age of onset was transformed into a categorical variable with four levels based on the developmental period when the abuse started: no abuse, onset in early childhood (from birth to before 6 years of age), onset in childhood (6–12 years of age), or onset in adolescence (13 years of age or later). Separate categorical variables were created for physical and sexual abuse onset. This categorization by developmental stage is consistent with prior studies (Maercker, Michael, Fehm, Becker, & Margraf, 2004; Trickett & McBride-Chang, 1995), predicts mental health outcomes better than continuous and dichotomous classification schemes (Kaplow & Widom, 2007), and is better able to detect non-linear relationships between abuse timing and psychopathology than a continuous age of onset (Trickett & McBride-Chang, 1995).

For each endorsed abuse item, participants were also asked how old they were when it last happened. Across multiple items on each subscale, the most recent age was used as the age of abuse termination. Duration was then calculated by subtracting the age of onset from the age of termination and adding one, so the first year of abuse was counted. If a participant did not endorse any of the abuse items, then duration was set to zero years.

Depressive symptoms.—The depression scale of the Diagnostic Interview Schedule for Children Predictive Scales (Lucas et al., 2001) was used to assess depressive symptoms experienced during the past 12 months (e.g., "Has there been a time when you had less energy than you usually do?"). The six symptoms were rated on a dichotomous scale (0 "no," 1 "yes") and summed (α = .72). This subscale demonstrates excellent test-retest reliability and is predictive of major depression diagnosis (Shaffer, Fisher, Lucas, Hilsenroth, & Segal, 2004).

Anxiety symptoms.—The physiological anxiety scale of the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985) was used to assess physiological anxiety symptoms (e.g., "Do you often have trouble making up your mind?"; "Do you often

feel sick in your stomach?"). The 10 symptoms were rated on a dichotomous scale (0 "no," 1 "yes") and summed (α = .65). The RCMAS is a valid measure of trait anxiety in diverse populations and demonstrates excellent test-retest reliability (Reynolds, 1980; Reynolds & Paget, 1981).

PTSD symptoms.—The Child PTSD Symptom Scale (Foa, Johnson, Feeny, & Treadwell, 2001) was used to assess PTSD symptoms experienced in the past two weeks (e.g., "Are you having upsetting thoughts or images about the event that came into your head when you didn't want them to?"). Seventeen items were rated on a four-point scale (from 1 "not at all or only one time" to 4 "five or more times per week or almost always") and averaged (α = .93). The Child PTSD Symptom Scale demonstrates excellent test-retest reliability and is predictive of clinical PTSD diagnosis among trauma victims (Gillihan, Aderka, Conklin, Capaldi, & Foa, 2013; Nixon et al., 2013).

Covariates.—Participants self-reported their sex (0 "female," 1 "male"), age (in years), and race/ethnicity (coded as 0 "White," 1 "non-White"). Information on household income was provided by participants' caregivers during a previous wave of the study. Parents specified their total annual household income (in USD) on a 20-point Likert scale (from 1 "$4,999 or less" to 20 "$250,000 or more").

Data Analysis

Bivariate associations were tested with chi-square analyses for pairs of categorical variables, t-tests or analyses of variance (ANOVAs) for combinations of categorical and continuous variables, and correlations for continuous variables using IBM SPSS 25.0. Significant ANOVA results were followed up with Tukey post-hoc honest significant difference (HSD) tests. For the main analysis, a multivariate regression model was conducted in Mplus 7.11 (Muthén & Muthén, 2013) to examine the unique effects of physical and sexual abuse onset, duration, and severity on depressive, anxiety, and PTSD symptoms using sex, ethnicity, and household income as covariates. A single model was tested with the relationships among all independent and dependent variables estimated simultaneously in order to preserve Type I error and account for the interrelatedness among the independent and dependent variables, respectively. In the main analysis, the multinomial physical and sexual abuse onset variables were transformed into six dichotomous dummy variables, each contrasting individuals who experienced physical or sexual abuse at a specific developmental stage (early childhood, childhood, or adolescence) against a reference group who did not experience abuse (0 "not abused," 1 "abused during the given period"). Additionally, a sensitivity analysis was conducted to determine if different results would emerge when evaluating abuse onset as a continuous variable (i.e., age in years when abuse first occurred). A maximum likelihood robust (MLR) estimator was used to account for the non-normal distributions of some variables. Missing data at the current wave (Wave 4 of the larger study) were minimal (1.57% of all data points) and were handled with Full Information Maximum Likelihood. Age, ethnicity, sex, and household income were included as covariates in all models.

Next, a series of multigroup models was used to evaluate sex differences in the effects of abuse characteristics on symptoms. To verify the presence of any sex differences in

relationships between abuse characteristics and mental health outcomes, a model where each relationship was constrained to be equal across sexes was compared to a configural model where each relationship was allowed to differ for males and females using a chi-square test of model fit. If the chi-square value was significant, it could be concluded that the constrained model offered poorer fit than the configural model, and sex differences were indeed present. Following this test, paths between depressive, anxiety, and PTSD symptoms and each abuse characteristic were individually freed and compared to the constrained model using a chi-square test of model fit. As in the omnibus test, a significant chi-square value indicated that males and females differed significantly on the freed path. Because differences between scaled chi-square values rendered by the MLR estimator are not distributed as chi-square values, the Satorra-Bentler correction was utilized on all the chi-square difference tests (Satorra & Bentler, 2001).

Results

Descriptive statistics of abuse dimensions and psychopathology are presented in Table 1. Results of chi-square analyses indicated that males were more likely to be *physically* abused than females in early childhood (8.3% vs. 6.2%, $\chi^2(1) = 6.20$, $p < .01$) and during adolescence (2.9% vs. 1.8%, $\chi^2(1) = 4.32$, $p < .05$). By contrast, females experienced more *sexual* abuse than males in early childhood (1.7% vs. 0.7%, $\chi^2(1) = 4.25$, $p < .05$), childhood (6.1% vs. 1.9%, $\chi^2(1) = 27.06$, $p < .001$), and adolescence (2.3% vs. 0.6%, $\chi^2(1) = 11.09$, $p < .01$). In addition, minority children were more likely to experience physical abuse than Whites in early childhood (7.6% vs. 6.6%, $\chi^2(1) = 12.19$, $p < .001$), childhood (9.6 vs. 23.8%, $\chi^2(1) = 9.22$, $p < .01$), and adolescence (4.1% vs. 0.8%, $\chi^2(1) = 9.44$, $p < .01$), as well as sexual abuse in childhood (6.5% vs. 1.2%, $\chi^2(1) = 15.28$, $p < .001$). Children physically abused during any developmental stage were at greater risk than nonvictims for sexual abuse at that same developmental stage (1.7% vs. 0.7% during early childhood, $\chi^2(1) = 5.94$, $p < .01$; 4.3% vs. 3.6% during childhood, $\chi^2(1) = 21.22$, $p < .001$; 2.4% vs. 0.6% during adolescence, $\chi^2(1) = 17.02$, $p < .001$).

Next, t-tests indicated females were sexually abused more severely (0.12 vs. 0.04, $t(1028.60) = -5.79$, $p < .001$) and for longer periods of time (0.68 vs. 0.21, $t(1128.17) = -5.12$, $p < .01$). Females also reported more symptoms of depression (2.27 vs. 1.83, $t(1265.98) = -4.66$, $p < .001$), anxiety (3.28 vs. 2.56, $t(1263.72) = -6.04$, $p < .001$), and PTSD (1.53 vs. 1.41, $t(1209.39) = -3.32$, $p < .01$) than males. Further, Whites were physically abused more severely (0.09 vs. 0.06, $t(743.50) = 2.32$, $p < .05$) and for longer periods of time (1.08 vs. 0.55, $t(625.73) = 3.15$, $p < .01$) than minorities; however, minorities reported more PTSD symptoms than Whites (1.54 vs. 1.37, $t(996.86) = -4.70$, $p < .001$). Ethnic differences were not observed for depression and anxiety scores.

The four groups based on the age of onset of physical abuse differed in depression ($F(3,1264) = 9.09$, $p < .001$), anxiety ($F(3,1264) = 2.81$, $p < .05$), and PTSD symptoms ($F(3,1218) = 22.18$, $p < .001$). Tukey post-hoc tests indicated that victims first physically abused in childhood exhibited more depression (2.38 vs. 1.81, $p < .001$) and anxiety (3.16 vs. 2.77, $p < .05$) than nonvictims; however, no differences among nonvictims, early childhood onset victims, and adolescence-onset victims were observed. In addition,

nonvictims displayed fewer PTSD symptoms than individuals first abused in early childhood (1.34 vs. 1.49, $p < .05$), childhood (1.34 vs. 1.62, $p < .001$), and adolescence (1.34 vs. 1.72, $p < .001$); onset in early childhood was also associated with fewer PTSD symptoms than onset in adolescence (1.49 vs. 1.72, $p < .05$).

For sexual abuse, the four age of onset groups differed in depression ($F(3,1264) = 10.99$, $p < .001$), anxiety ($F(3,1264) = 15.56$, $p < .001$), and PTSD symptoms ($F(3,1218) = 23.43$, $p < .001$). Tukey post-hoc tests revealed nonvictims showed fewer depressive symptoms than childhood-onset sexual abuse victims (1.95 vs. 2.65, $p < .001$) as well as adolescence-onset victims (1.95 vs. 3.03, $p < .01$). Similarly, nonvictims reported fewer anxiety symptoms than early childhood onset victims (2.77 vs. 4.27, $p < .01$), childhood-onset victims (2.77 vs. 3.75, $p < .001$), and adolescence-onset victims (2.77 vs. 4.19, $p < .001$). Finally, nonvictims reported fewer PTSD symptoms than individuals first abused in early childhood (1.42 vs. 1.77, $p < .01$), childhood (1.42 vs. 1.83, $p < .001$), and adolescence (1.42 vs. 1.88, $p < .001$). No differences in psychopathology were observed among early childhood onset, childhood-onset, and adolescence-onset sexual abuse victims.

Finally, more severe abuse tended to be longer-lasting, whether it was physical ($r = .74$, $p < .01$) or sexual ($r = .75$, $p < .01$). Duration and severity of sexual abuse, but not physical abuse, were each correlated with depression, anxiety, and PTSD ($r = .09$ to $.18$, all $p < .01$). Additionally, depression, anxiety, and PTSD were all moderately intercorrelated ($r = .34$ to $.55$, all $p < .01$).

For the main analyses, a multivariate regression model evaluated the unique effects of physical and sexual abuse onset, duration, and severity on depression, anxiety, and PTSD symptoms after adjusting for sex, race, age, and family socioeconomic status. Age and socioeconomic status were unrelated to all forms of psychopathology (all p's > .17) and were therefore subsequently removed from the model. Results of the multivariate regression model adjusting for sex and race are presented in Table 2. This model was just identified and thus had perfect fit. Onset of physical abuse in childhood uniquely predicted all types of psychopathology ($\beta = .13$ for depression, $\beta = .07$ for anxiety, and $\beta = .19$ for PTSD, all $p < .05$). In addition, onset of physical abuse in early childhood and adolescence uniquely predicted more PTSD symptoms ($\beta = .08$ and $\beta = .11$, $p < .05$, respectively), but no other forms of psychopathology. For sexual abuse, onset in childhood and adolescence also uniquely predicted more depression, anxiety, and PTSD symptoms ($\beta = .09$ to $.12$, $p < .05$). Duration and severity of physical and sexual abuse as well as early childhood onset of physical abuse did not predict any form of psychopathology. Because duration and severity were highly correlated ($r = .74$ within each type of abuse), we reran the model including only duration or only severity variables. As in the main model, however, neither duration nor severity reached statistical significance. The multivariate regression model explained 7% of variability in depressive symptoms, 6% of variability in anxiety symptoms, and 11% of variability in PTSD symptoms. When a sensitivity analysis evaluating onset of physical and sexual abuse as a continuous was conducted, physical and sexual abuse onset were unrelated to any form of psychopathology, further suggesting the relationship between abuse onset and later psychopathology was not linear.

Next, the multigroup model constraining relationships between abuse characteristics and psychopathology to be equal for both sexes had poorer fit than the configural model, χ^2 (36) = 51.23, $p < .05$, indicating that the effects of abuse characteristics on psychopathology differed for males and females. Follow up tests revealed that adolescence-onset sexual abuse was related to anxiety in females ($\beta = .13$, $p < .05$) but not males ($\beta = .01$, $p = .45$), χ^2 (1) = 7.66, $p < .01$. Early childhood and childhood-onset abuse did not predict different outcomes in males and females, and sex differences in depression and PTSD among adolescence-onset sexual abuse victims were not observed. Similarly, duration of sexual abuse predicted PTSD symptoms in females ($\beta = .17$, $p < .05$) but not males ($\beta = .00$, $p = .97$), χ^2 (1) = 6.17, $p < .05$. Finally, sexual abuse severity predicted fewer PTSD symptoms in males ($\beta = -.52$, $p < .05$) but not females ($\beta = -.07$, $p = .40$), χ^2 (1) = 10.75, $p < .01$. Duration and severity did not differentially predict depression and anxiety in males and females.

Discussion

To our knowledge, this was the first study to examine multiple characteristics of physical and sexual abuse as predictors of internalizing psychopathology in a community sample of young adults, as well as sex differences in these relationships. We hypothesized that earlier onset, greater severity, and longer duration of physical and sexual abuse would uniquely predict greater depressive, anxiety, and PTSD symptomatology. Our results partially supported these hypotheses. For physical abuse, onset in childhood (6–12 years) was related to all types of symptoms (depression, anxiety, and PTSD), and remained a unique predictor of all symptoms in the regression model. Additionally, onset of physical abuse in adolescence (age 13 or older) was related to and uniquely predicted PTSD symptoms. Early childhood onset of physical abuse was not associated with any psychopathology, but became uniquely predictive of PTSD symptoms after adjusting for other abuse characteristics. The duration or severity of physical abuse were not associated with or uniquely predictive of any type of psychopathology examined.

For sexual abuse, onset during any developmental period (early childhood, childhood, adolescence), as well as severity and duration, were associated with more depressive, anxiety, and PTSD symptoms. However, when considered together, onset of sexual abuse in childhood and adolescence served as unique predictors of all types of symptoms, whereas early childhood onset, duration, and severity did not. Finally, several sex differences indicated more detrimental effects of sexual abuse for females. Specifically, adolescence-onset sexual abuse predicted anxiety symptoms in females but not males, and longer lasting sexual abuse predicted PTSD in females but not males. Paradoxically, greater severity of sexual abuse predicted *fewer* PTSD symptoms in males, but not females.

Children's perceptions and interpretations of physical or sexual abuse are largely dictated by the cognitive abilities associated with their developmental stage (Cicchetti & Lynch, 1993). Before 5 years of age, children are unable to think about abuse when it is not occurring (Cicchetti et al., 2010; Conte & Schuerman, 1987; Shackman, Shackman, & Pollak, 2007). Although this inability to ruminate may provide some protection against the development of depression and anxiety in the youngest abuse victims, it may also render abuse less predictable, and these children therefore cannot devise plans to escape or defend themselves

from victimization (Cicchetti et al., 2010). This lack of predictability may lead to trauma symptoms (Carlson et al., 1997). In line with this theoretical framework, our results showed that physical abuse which took place before age 6 was associated with more PTSD symptoms later.

As children mature and attain the ability to think about abuse when it is not occurring, they are more likely to ruminate on victimization experiences, and rumination is a key risk factor for developing depression and anxiety (Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Nolen-Hoeksema, 2000). This ability to ruminate may explain why physical or sexual abuse onset after age 6 was a more robust predictor of depression and anxiety than abuse which occurred earlier in development. In addition, rumination is more strongly associated with sexual abuse than physical abuse victimization (Watkins, 2009), which may explain why sexual abuse was more predictive of psychopathology than physical abuse among adolescents. However, many of these interpretations assume that children's appraisals of abuse and their relationships to psychopathology remain stable throughout development. Longitudinal research is needed to investigate how older children and adolescents appraise instances of abuse that took place in the past.

We also found relationships between sexual abuse characteristics and poorer psychological health among females but not males. More specifically, we found that sexual abuse beginning in adolescence predicted more anxiety, and longer duration of abuse predicted PTSD symptoms in females. These results are consistent with previous findings that suggest females are more likely than males to experience psychological distress after traumatic events (Breslau et al., 1999; Chapman et al., 2004; Thompson et al., 2004). Some have suggested this disparity is rooted in biological differences between males and females (Walker, Carey, Mohr, Stein, & Seedat, 2004), whereas others propose female trauma victims are more likely than males to use maladaptive coping mechanisms that lead to psychopathology (Tolin & Foa, 2002; Ullman & Filipas, 2005). Somewhat unexpectedly, more severely sexually abused males were less likely to endorse PTSD symptomatology. It is possible that because sexual abuse among males is highly stigmatized, male victims may be less willing to disclose psychological symptoms (Holmes & Slap, 1998; Lisak, 1994; Ullman & Filipas, 2005).

Finally, we were very surprised that sexual abuse occurring prior to age 6 was not a more robust predictor of psychopathology, as this finding contradicts results from prior studies (Naar-King et al., 2002; Ullman, 2007). Although some research suggests that individuals sexually abused at earlier ages are less able to recall details of their abuse (Williams, 1994), our findings linking physical abuse with PTSD contradict theories claiming victims "intentionally forget" abuse. Instead, we suspect that early childhood sexual abuse frequently coincides with other negative life experiences, including other forms of maltreatment, parental divorce, and household mental illness (Dong, Anda, Dube, Giles, & Felitti, 2003), and such adverse experiences in childhood likely have a cumulative negative effect on mental health outcomes (Anda et al., 1999). Therefore, accompaniments of sexual abuse — but not abuse itself — may be the primary contributors to psychopathology. By contrast, more mature victims are able to contemplate the meaning and stigma of childhood

sexual abuse and perceive such maltreatment as traumatic (Browne & Finkelhor, 1986; Carlson et al., 1997; Conte & Schuerman, 1987; Keiley et al., 2001).

Limitations

Several aspects of this study may limit the generalizability of results. First, we were unable to evaluate the effects of other forms of maltreatment, such as emotional abuse and physical neglect. Emotional abuse and physical neglect frequently accompany physical abuse and have detrimental effects on mental health (Mullen, Martin, Anderson, Romans, & Herbison, 1996; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003). We were also unable to examine the roles of other important characteristics of abuse, such as the number of perpetrators, victims' relationships to abusers, and victims' emotional states directly after abuse (Briere & Elliott, 2003; Ullman, 2007). Our results also relied exclusively on adolescents' retrospective reports of abuse. The use of single informants of abuse incidents diminishes validity of research on victim outcomes (Brown, Cohen, Johnson, & Salzinger, 1998; Fergusson, Horwood, & Woodward, 2000; McGee, Wolfe, Yuen, Wilson, & Carnochan, 1995), and factors such as age of abuse onset, severity of abuse, and psychological health at the time of assessment can lead to under- or over-reporting of abuse (Briere, 1992; Brown et al., 1998; Rausch & Knutson, 1991). In addition, there was differential dropout of participants in the study (i.e., White children from dual-parent households with higher incomes were more likely to drop out); therefore, the results may be more representative of lower income, African American youth. Finally, the cross-sectional design of this study prohibits us from making causal inferences about the relationships between abuse characteristics and psychopathology, although the youth reported on abuse that occurred prior to the timeframe for psychopathology symptoms.

Conclusion

To our knowledge, this is the first study to date examining the unique effects of abuse characteristics on mental health outcomes in a large community sample and comparing these effects for males and females. Because onset, duration, and severity are typically interrelated (Ullman, 2007), our study provides valuable insight into the unique effects of each abuse dimension. In addition, our use of a community sample allowed for a more realistic depiction of the effects of abuse characteristics, as differences between abused and nonabused individuals are more distinct in community than clinical samples (Kendall-Tackett, Williams, & Finkelhor, 1993; Naar-King et al., 2002). Future research should account for other types of childhood adversities and evaluate a broader set of abuse characteristics; utilize a longitudinal design and multiple informants of abuse incidents; and explore relationships between adolescents' subjective appraisals of abuse and their mental health outcomes.

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Table 1:

Descriptive Statistics for Abuse and Psychopathology Variables

	%
PA Onset	
Early childhood	14.5%
Childhood	33.7%
Adolescence	4.7%
SA Onset	
Early childhood	2.4%
Childhood	8.0%
Adolescence	2.9%

	M	SD	Range
PA Duration	0.07	0.21	0–2
SA Duration	0.08	0.26	0–2
PA Severity	0.72	2.42	0–20
SA Severity	0.45	1.67	0–17
Depression	2.06	1.72	0–6
Anxiety	2.93	2.14	0–9
PTSD	1.47	0.61	1–4
Female	51.4%	0.50	0–1
Ethnic minority	64.7%	0.48	0–1

Note. PA – physical abuse; SA – sexual abuse.

Table 2:

Multivariate Regression Model Predicting Depression, Anxiety, and PTSD Symptomatology from Physical and Sexual Abuse Onset, Duration, and Severity

	Depression β	Anxiety β	PTSD β
PA Onset			
Early childhood	.05	.00	.08*
Childhood	.13*	.07*	19***
Adolescence	.04	.03	.11**
SA Onset			
Early childhood	.06	.07	.05
Childhood	.12**	.09*	.11*
Adolescence	.11***	.09*	.11*
PA Duration	−.04	.06	.01
SA Duration	−.02	.05	.10
PA Severity	.00	−.07	.00
SA Severity	−.04	−.01	−.06
Female	.11***	.15***	.07*
Ethnic minority	−.05	−.06***	.10***

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

PA – physical abuse; SA – sexual abuse.