

# Posttraumatic Stress Symptoms and Trajectories in Child Sexual Abuse Victims: An Analysis of Sex Differences Using the National Survey of Child and Adolescent Well-Being

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**Abstract** Very few studies have prospectively examined sex differences in posttraumatic stress symptoms and symptom trajectories in youth victimized by childhood sexual abuse. This study addresses that question in a relatively large sample of children, drawn from the National Survey of Child and Adolescent Well-Being, who were between the ages of 8–16 years and who were reported to Child Protective Services for alleged sexual abuse. Sex differences were examined using t tests, logistic regression, and latent trajectory modeling. Results revealed that there were not sex differences in victims' posttraumatic stress symptoms or trajectories. Whereas caseworkers substantiated girls' abuse at higher rates than boys' abuse and rated girls significantly higher than boys on level of harm, there were not sex differences in three more objective measures of abuse severity characteristics. Overall, higher caseworker ratings of harm predicted higher initial posttraumatic stress symptom levels, and substantiation status predicted shallower decreases in trauma symptoms over time. Implications for theory and intervention are discussed.

**Keywords** NSCAW · Posttraumatic stress symptoms · Childhood sexual abuse · Sex differences

Posttraumatic stress disorder (PTSD) can occur following exposure to a potentially traumatic life event (PTE), and is defined by three symptom clusters: re-experiencing, avoidance and numbing, and hyperarousal (American Psychiatric Association 1994). In the general population, women's lifetime risk of developing PTSD is twice that of men's (Kessler et al. 2005; Kessler et al. 1995). The current literature suggests that between 30–50% of sexually abused children meet full criteria for a PTSD diagnosis (McLeer et al. 1988; Widom 1999; Deblinger et al. 1989; Darves-Bornoz et al. 1998; Giaconia et al. 1995), and that a much larger percentage experience at least some posttraumatic stress symptoms (PTSS) (McLeer et al. 1992; McLeer et al. 1988; Cuffe et al. 1998).

Evidence is contradictory as to whether there are sex differences in PTSS and PTSD among sexual abuse victims. Sex differences in PTSD are reported to be greater for PTEs that occur in childhood (Breslau et al. 1999), suggesting that experiencing a PTE in childhood confers an even greater increased risk of PTSD in women relative to men than does experiencing a PTE later in life. However, a recent meta-analysis of sex differences in PTSD did not detect a sex difference in lifetime risk of PTSD among survivors of childhood sexual abuse (Tolin & Foa 2006). This paper aims to examine sex differences in PTSS and symptom trajectories in a longitudinal study of sexually abused children. A second goal of the paper is to examine factors that might account for sex differences, such as abuse characteristics.

A growing line of research within the trauma field pertains to sex differences in psychological trauma reactions to PTEs. This research provides substantial empirical

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support for three findings. First, over the course of a lifetime, men experience significantly more PTEs than do women (Breslau et al. 1999; Breslau et al. 1998; Kessler et al. 1995; Norris 1992). Second, over the course of a lifetime, women are significantly more likely to meet criteria for PTSD than are men, despite their less frequent exposure to PTEs (Kessler et al. 1995; Stein et al. 2000; Tolin & Foa 2006). Third, sexual PTEs (sexual assault, rape, and childhood sexual abuse) are more commonly experienced by women than men (Kessler et al. 1995; Norris 1992; Pimlott-Kubiak & Cortina 2003; Creamer et al. 2001; Tolin & Foa 2006), and are among the PTEs most likely to elicit psychological trauma symptoms in both males and females (Kessler et al. 1995; Creamer et al. 2001; Gavranidou & Rosner 2003; Gwadz et al. 2007; Boney-McCoy & Finkelhor 1995b; Cuffe et al. 1998).

An important question is whether women are innately more vulnerable to developing PTSS and PTSD than are men, or whether higher rates of PTSD among women reflect women's greater exposure to the types of PTEs (i.e., sexual PTEs) that are most strongly associated with PTSD. Some findings support the possibility that females are innately more vulnerable to developing PTSD than are males, especially when the PTE involves assaultive violence (Breslau & Anthony 2007; Green et al. 1991; Vernberg et al. 1996; Breslau et al. 1999; Breslau et al. 1998; Giaconia et al. 1995; Stein et al. 2000), and a few studies have concluded that female sex is a unique predictor of pediatric PTSD following childhood sexual abuse (Walker et al. 2004; Boney-McCoy & Finkelhor 1995a). A variety of reasons for this purported female vulnerability have been proposed, including neurological and hormonal sex differences (Teicher et al. 2004; Olff et al. 2007), sex differences in patterns of cognitive appraisals, processing and coping styles following exposure to PTEs (Gavranidou & Rosner 2003; Olff et al. 2007), and sex differences in styles of meaning making (Freedman et al. 2002). Furthermore, it is possible that the process of being labeled a "sexually abused child" may be associated with negative psychological effects (Holguin & Hansen 2003), and that the stigma associated with this label, as well as the label's meaning and social significance, may be different for girls and boys. Finally, some researchers have suggested that women's apparent greater vulnerability to PTEs is a result of research and methodological biases (Gavranidou & Rosner 2003; Simmons 2007). For example, Gavranidou and Rosner (2003) review literature suggesting that researcher biases toward expecting women to have more psychological difficulties following traumatic events than men may contribute to detected differences.

In contrast, other findings support the possibility that the higher rates of PTSS and PTSD in women merely reflect women's higher rates of experiencing sexual PTEs. Indeed,

there is some evidence that when type of PTE is controlled for, sex differences in rates of PTSD significantly reduce or disappear, and that women and men are equally likely to develop trauma symptoms in response to the same PTE (Freedman et al. 2002). Furthermore, a few studies, including a meta-analysis (Tolin & Foa 2006), have failed to detect sex differences in rates of PTSD following childhood sexual abuse (Ackerman et al. 1998; Merry & Andrews 1994; Silva et al. 2000). According to this line of research, females are not innately more vulnerable to developing PTSS and PTSD than are males, but are simply exposed to the types of PTEs most closely associated with PTSD at significantly higher rates than are males (Gavranidou & Rosner 2003; Cortina & Kubiak 2006; Pimlott-Kubiak & Cortina 2003; Saxe & Wolfe 1999).

The varied nature of the findings on sex differences in PTSS following exposure to PTEs suggests that additional study is needed in this domain. Furthermore, there are several limitations to the applicability of this general body of research to childhood sexual abuse (CSA) survivors, and to the clinical utility of the findings for clinicians treating CSA victims still in their youth. First, only a few of the existing studies on sex differences in psychological trauma responses to sexual PTEs were conducted with CSA victims still in their youth. In contrast, much of the literature on sexual PTEs has been conducted with samples of adults who were either sexually assaulted or raped in adulthood (Cortina & Kubiak 2006), or who were reporting retrospectively on childhood sexual abuse experiences (Ullman & Filipas 2005; Briggs & Joyce 1997; Finkelhor et al. 1990). Given the multitude of differences between children and adults in terms of psychological, biological, sexual, and social development, findings from research conducted with adults might not generalize to children. Furthermore, sex differences in willingness to report specific types of abuse or neglect may produce biases or inconsistent findings, and several studies have demonstrated how unreliable retrospective recall of traumatic events often is (e.g. Hardt & Rutter 2004).

Second, most studies of sexual PTEs have focused on older adolescents (Cuffe et al. 1998; Garnefski & Diekstra 1997; Gwadz et al. 2007; Giaconia et al. 1995; Singer et al. 1995), including several major national survey studies that have examined psychological trauma symptoms in response to CSA (Kessler et al. 1995; Creamer et al. 2001). A significant amount of the trauma research with younger children has focused on non-sexual traumas such as car accidents and natural disasters (Boksztzanin 2007; Green et al. 1991; Vernberg et al. 1996). This is likely because researchers interested in studying the effects of trauma on preadolescents are often limited by school board and institutional review board restrictions on how much they can ask children about sexual experiences and sexual PTEs (Springer & Padgett 2000). Studies that avert this challenge

by using clinical or inpatient samples to examine sex differences in PTSS reactions to childhood sexual PTEs may yield results with limited generalizability to the overall population of CSA survivors, because there are a multitude of external factors that affect which children are most likely to end up in treatment following abuse, and therefore to end up in clinical research samples (e.g. Deblinger et al. 1989). Studies utilizing convenience samples or other unique samples, such as homeless youth (Gwadz et al. 2007), may also yield results with limited generalizability. Nonetheless, given that youth at different ages have been found to respond to sexual PTEs differently (Feiring et al. 1999), it is important to study PTSS in young sexual abuse victims in order to best inform theory and intervention.

Third, many studies of both adult and youth trauma victims have been cross-sectional and have not followed victims longitudinally. As far as we are aware, no prior research has examined whether there are sex differences in the *trajectories* of PTSS over time following exposure to PTEs, and especially following sexual abuse. This is an important line of research, however, as some initial evidence suggests that PTSS may be more chronic in females than in males (Breslau et al. 1998).

Finally, it is possible that the context of the sexual abuse may influence whether or not children experience PTSS and PTSD. For example, PTSD may be most likely to arise when children have experienced recurrent abuse over a long period, or if they have experienced penetrative abuse (Beitchman et al. 1991; Molnar et al. 2001). To the extent that some of these abuse characteristics are more common among female than male sexual abuse victims (Maikovich & Jaffee 2008), they could account for observed sex differences in PTSS and PTSD. It is also possible that the decisions caseworkers make following their investigations of sexual abuse allegations regarding how much harm they think the abuse caused a specific child, or whether or not to substantiate alleged abuse, may have direct or indirect effects on children's psychological functioning. The decisions caseworkers make may differ for girls and boys, and/or may affect girls and boys differently. To the best of our knowledge, research has not yet examined these questions.

Research on sex differences in children's PTSS and symptom trajectories is warranted because many researchers, clinicians, and policy makers appear to currently ascribe to the female vulnerability theory even though evidence exists to the contrary. Claims such as the following are not rare: adolescent males have better control over their emotions and feelings than females or younger children and so are less vulnerable to psychological trauma reactions (Bokszczanin 2007); and public health measures targeting PTSD should focus on women (Stein et al. 1997).

If clinicians operate on an unfounded assumption of female vulnerability and fail to consider that male sexual

abuse victims may also be at high risk for PTSS, then they might not assess for trauma as comprehensively and adequately in their male patients as in their female patients. Subsequently, they might not realize that undetected PTSS could be a factor undermining their treatment of more visible and "masculine" reactions such as conduct problems. In general, given how little overall is known about male victims of childhood sexual abuse, it is important to better understand how their PTSS patterns are likely to be different from or similar to female victims'.

The present study addresses the question of sex differences in posttraumatic stress symptom levels and trajectories in a relatively large sample of children between the ages of 8–16 years who were reported to Child Protective Services (CPS) for alleged sexual abuse. Sex differences in PTSS were first examined at three specific time points spanning a 36 month period. Second, potential sex differences in PTSS trajectories were examined over that time period, while the effects of a number of child and abuse characteristics were simultaneously estimated. Although the extant literature is sparse and the findings are mixed, we predict that girls' and boys' symptom levels and trajectories will not differ significantly given findings from the adult literature that sexual PTEs are among the PTEs most likely to elicit psychological trauma reactions in females and males.

## Method

### Participants

The National Survey of Child and Adolescent Well-Being (NSCAW) is a nationally-representative sample of United States children who have had contact with Child Protective Services (Dowd et al. 2004b). The full cohort includes 5,501 children (50% female), less than 1 year to 16 years of age when first sampled, who were subjects of child abuse or neglect investigations conducted by CPS from October 1999 to December 2000. Active consent to participate was obtained from all caregivers and caseworkers. Caregivers consented on behalf of children, although active assent was obtained from children 7 years and older. Current caregivers were paid \$50 for their participation and children were given gift certificates worth \$10–\$20. The study procedures were approved by the participating universities' Institutional Review Boards. Additional information about sample composition is available from Dowd and colleagues (Dowd et al. 2004a).

The present study involved a subsample of the full cohort and was restricted to children between the ages of 8 to 16 years who, according to caseworker reports, experienced sexual abuse ( $n=389$ ). Within the subsample,

77% of children were female, although among children aged 11 years and older, 82% were female. The average age of children in the subsample was 11.31 years ( $SD=2.16$ ). Children under the age of 8 years were not included because they were not administered the measure of psychological trauma symptoms used in this study. Forty-five percent of children in the study sub-sample were White (non-Hispanic), 26% were Black (non-Hispanic), 20% were Hispanic, and 8% were of other races or ethnicities.

## Measures

**Posttraumatic Stress Symptoms** Youth were administered the Post Traumatic Stress Disorder section of a version of the Trauma Symptom Checklist for Children adapted for NSCAW (Briere 1996), a pencil-and-paper assessment consisting of 10 trauma symptoms presented on a 4-point Likert-type scale (0 = never; 1 = sometimes; 2 = lots of times; 3 = almost all of the time). For example, youth were asked how often they have “bad dreams or nightmares,” and how often “scary ideas or pictures just pop into [their] head.” The measure was administered as part of a battery of measures administered in-person in a one-to-one setting. Internal consistency reliability on this measure was good ( $\alpha=0.84$ ). Standardized t scores were used in all analyses. T scores at or above 65 are traditionally considered clinically significant (Briere 1996), and are consistent with a diagnosis of PTSD.

**Abuse Severity** Several potential indicators of the severity of victims’ sexual abuse experiences were considered. First, children’s investigative caseworkers were asked to disregard the actual outcome of the case (such as whether or not it was substantiated), focus only on their knowledge of the victims’ actual sexual abuse experiences, and rate the level of *harm* to the child (0 = none; 1 = mild; 2 = moderate; 3 = severe). Caseworkers also indicated whether or not the alleged abuse was substantiated by CPS (0 = no; 1 = yes).

Three abuse characteristics frequently considered to be indicators of more “severe” sexual abuse (Beitchman et al. 1991; Molnar et al. 2001) were also considered. First, caseworkers categorized the specific type of sexual abuse children experienced, which was transformed into a dichotomous variable indicating whether the abuse was penetrative (1) or non-penetrative (0). Penetrative abuse included vaginal/anal intercourse, digital penetration of the vagina/anus, and oral copulation of an adult if the perpetrator was male. Non-penetrative abuse included fondling/molestation, masturbation, oral copulation of the child, oral copulation of an adult if the perpetrator was female, and “other less severe types.” Second, caseworkers indicated the other types of maltreatment children simulta-

neously experienced (physical abuse, emotional abuse, or neglect), which was transformed into a dichotomous variable indicating whether children had experienced multiple forms of maltreatment (1) or only sexual abuse (0). Third, caseworkers indicated the duration of the abuse incident that brought the child to the attention of CPS (1 = days; 2 = weeks; 3 = months; 4 = years).

**Services Utilization** A dichotomous variable indicated whether or not children were receiving CPS services at the time of data file compilation, based on caseworker report (0 = no; 1 = yes). Conclusions about rates of service utilization cannot be drawn from this study because children receiving services were over-sampled in the original sampling procedure. Furthermore, information on children’s non-CPS services receipt and receipt of services over the 36-month time span of the study was not available. Nonetheless, it is important to at least crudely control for services receipt when examining psychological trauma outcomes.

## Analysis Approach

First, the means, standard deviations, and ranges for all continuous measures within the full sample, as well as within each sex, were calculated. For dichotomous measures, the percentage of children who met each criterion (such as the percentage of children who experienced penetrative abuse, and the percentage of children who met the trauma score clinical cut-off) were calculated. Finally, tests were conducted to determine whether there were sex differences in the mean levels of each measure using independent sample t-tests or logistic regression, as appropriate.

Next, three latent trajectory models (LTMs) were used to test the hypothesis that male and female sexual abuse victims would not have significantly different PTSS trajectories, and to test whether abuse severity measures were associated with initial symptom levels or symptom trajectories. First, an unconditional linear growth model was estimated in order to test the overall model fit and to verify that the intercepts and slopes of individual trajectories varied significantly across children. Then, a conditional LTM with only sex entered as a predictor was used. Finally, a third LTM was used to test whether sex predicted the intercept and slope of the symptom trajectories, above and beyond the effects of age, abuse severity indices, and services receipt.

All models were estimated using MPlus 4.1 software (Muthén and Muthén 2006), and employed the Maximum Likelihood Ratio (MLR) estimator. In order to evaluate model fit, the likelihood ratio (LR) test (model chi-square)



was used; however, the interactive effect of sample size and model error on the LR test typically causes the model chi-square to be statistically significant with large samples even when the model represents a close fit to the data (MacCallum 1990). Therefore, three additional fit indices were employed: the comparative fit index (CFI; Bentler 1990), the Tucker-Lewis index (TLI; Tucker & Lewis 1973), and the root mean square error of approximation (RMSEA; Steiger 1990). Model chi-square values with accompanying  $p$  values greater than 0.05 indicate a good model fit. CFI and TLI values greater than 0.95 and RMSEA values less than 0.05 indicate a good fit; CFI and TLI values between 0.90–0.95 and RMSEA values between 0.05–0.08 indicate an acceptable fit. (For a discussion of the various fit indices see Medsker et al. 1994, and Browne & Cudeck 1992).

Missing data ranged from 0 to 43% across measures: 0% substantiation status and services receipt; 5% trauma score at baseline; 8% multiple maltreatment status; 9% caseworker-rated harm; 17% trauma score at 36 months; 18% trauma score at 18 months; 26% penetration status; and 43% abuse duration. Data were analyzed using the Full Information Maximum Likelihood (FIML) procedure in MPlus under the assumption that the data were missing completely at random (MCAR) or for reasons that could be explained by other variables included in the model (Little & Rubin 1987). In technical terms, a covariance coverage matrix is created that provides the proportion of available observations for each time point and pairs of time points. FIML is a widely accepted method of dealing with missing data while allowing for the inclusion of all available data points (Arbuckle 1996; Enders 2001; Raykov 2005). In the present study, all 389 subjects were retained for the analyses. Given that the NSCAW weights are highly variant whole sample weights, they are not appropriate for use with small subsamples (Dowd et al. 2004b), and so were not used in these analyses.

## Results

### Descriptive Results

One of the primary questions of interest was whether girls and boys differed in their mean levels of PTSS at baseline, 18-months, and 36-months post-baseline, which independent  $t$ -tests indicated they did not (Table 1). Logistic regression analyses indicated that there also was not a sex effect at any time point for the percentage of youth with  $t$  scores consistent with a PTSD diagnosis (i.e.  $t$  scores at or above 65; Table 1).

Means, standard deviations, ranges, and percentages for all CSA severity index measures are presented in Table 1 for the full sample, as well as by sex. As shown in Table 1,

independent samples  $t$ -tests indicated that caseworkers rated girls significantly higher than boys on the subjective rating of child harm, and logistic regression indicated that girls' sexual abuse was substantiated at a significantly higher rate than boys' sexual abuse. However, on the three measures of abuse severity characteristics (penetrative versus non-penetrative abuse, whether or not the abuse co-occurred with other types of maltreatment, and the duration of the abuse), boys and girls did *not* differ significantly (Table 1). Girls and boys also did not differ in their likelihood of receiving services, although, again, this variable should be treated with caution since children receiving services were over-sampled. See Table 2 for a correlation matrix incorporating all measures.

### Latent Trajectory Model Results

*Unconditional model* First, an unconditional LTM was estimated for the repeated measure of PTSS as assessed at baseline, 18 months post-baseline, and 36 months post-baseline (Fig. 1). The first estimated latent factor defined the intercept of the developmental trajectory of posttraumatic stress symptoms (with all factor loadings set to 1.0); a second estimated latent factor defined the linear slope of the trajectory (with factor loadings set to 0, 18, and 36 to define a monthly time metric).

The unconditional model fit the observed data well:  $\chi^2(1)=1.61$ ,  $p=.20$ ; CFI=1.00; TLI=0.99; RMSEA=0.04. The model-implied group trajectory, based on the latent factor means, had a significant intercept of 51.54 (trauma symptoms  $T$  score) at baseline ( $z=92.25$ ,  $p<0.01$ ), and the slope was significantly decreasing at  $-0.08$  units per month ( $z=-4.70$ ,  $p<0.001$ ). Thus, the model-implied mean level of trauma symptoms decreased significantly from a  $t$  score of 51.54 to 48.66 from baseline to 36 months post-baseline.

The variances of the intercept ( $\psi=69.72$ ,  $z=5.99$ ,  $p<0.001$ ) and slope ( $\psi=0.04$ ,  $z=2.45$ ,  $p<0.05$ ) factors were both significant, indicating that there was enough variance in individual trajectories around the group mean values to justify testing a conditional LTM. The negative correlation between the intercept and slope factors ( $r=-0.69$ ,  $z=-1.91$ ,  $p=.06$ ) indicated that higher initial levels of PTSS were associated with steeper symptom decreases over time, although this only approached statistical significance. Thus, despite a general trend of decreasing PTSS over time, there was still a large amount of variability in individual trajectories, both in the initial level of symptoms and in the rate of change over time.

*Conditional model* Next, a conditional LTM was estimated with only sex included as a predictor, but sex did not predict PTSS levels or trajectories (analyses available from authors upon request). A second conditional LTM (Fig. 2)

**Table 1** Descriptive Results for Posttraumatic Stress Symptoms, Severity Indices, and Services Receipt

Measure	Overall sample	Girls only	Boys only	T score,OR [95% CI], or RRR [95% CI]
<b>PTSS score at baseline</b>				
Mean (SD); Range	51.74 (11.25); 33–87	51.55 (10.91); 33–83	52.39 (12.37); 34–87	<i>t</i> =0.59, <i>ns</i>
<b>PTSS score at 18 months</b>				
Mean (SD); Range	49.55 (10.13); 33–76	49.70 (10.30); 33–76	49.00 (9.58); 34–72	<i>t</i> =−0.52, <i>ns</i>
<b>PTSS score at 36 months</b>				
Mean (SD); Range	48.90 (10.32); 33–87	48.92 (9.99); 33–87	48.86 (11.43); 34–80	<i>t</i> =−0.04, <i>ns</i>
<b>PTSD-consistent score at baseline</b> (percent <i>t</i> scores ≥ 65)				
	13.9	13.3	15.7	0.79 [0.44, 1.42]
<b>PTSD-consistent score at 18 months</b> (percent <i>t</i> scores ≥ 65)				
	9.7	10.0	8.5	0.90 [0.53, 1.54]
<b>PTSD-consistent score at 36 months</b> (percent <i>t</i> scores ≥ 65)				
	8.3	7.6	11.0	0.79 [0.46, 1.36]
<b>Harm</b>				
Mean (SD); Range	1.84 (1.08); 0–3	1.92 (1.06); 0–3	1.56 (1.10); 0–3	<i>t</i> =−2.66**
<b>Percent substantiated</b>	72.0	77.0	55.1	2.73** [1.66, 4.49]
<b>Percent penetrative abuse</b>	48.6	50.7	41.8	1.37 [0.85, 2.21]
<b>Percent multiple-maltreated</b>	41.7	41.6	42.2	1.02 [0.64, 1.65]
<b>Duration of abuse</b>				
% incident lasting “days”	21.5	22.4	18.4	1.24 [0.55, 2.79] <sup>1</sup>
% incident lasting “weeks”	5.8	5.2	8.2	0.64 [0.19, 2.21] <sup>1</sup>
% incident lasting “months”	72.6	72.4	73.5	–
<b>Percent receiving CPS services</b>	86.1	83.5	88.8	0.74 [0.35, 1.53]

\* *p*<0.05; \*\**p*<0.01

<sup>1</sup> Relative risk ratio for girls compared to boys, for period of time indicated compared to “months”

was then estimated to examine the effects of sex on children’s posttraumatic stress symptoms, while controlling for the effects of child age, caseworker-rated harm, substantiation status, penetrative abuse, multiple-maltreatment status, abuse duration, and services receipt. The model fit the data well:  $\chi^2(10)=13.12, p=.22; CFI=0.98; TLI=0.95; RMSEA=0.03.$

As shown in Table 3, there was a significant effect of caseworker-rated harm on children’s initial level of PTSS, with higher harm ratings predicting higher initial PTSS levels. There was also a significant effect of substantiation status on the rate of symptom change; substantiated abuse predicted shallower decreases in children’s PTSS over time. There was not a significant effect of any other variables,

**Table 2** Correlation Matrix of All Variables in Conditional Latent Trajectory Model

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
<b>1. Sex</b>	1.00										
<b>2. Age</b>	0.18**	1.00									
<b>3. Substantiation</b>	0.21**	0.01	1.00								
<b>4. Penetrative abuse</b>	0.06	0.05	0.20**	1.00							
<b>5. Multiple maltreatment</b>	−0.01	−0.03	−0.02	0.11*	1.00						
<b>6. Abuse duration</b>	−0.04	−0.18**	0.32**	0.14**	0.15**	1.00					
<b>7. Services receipt</b>	−0.04	−0.01	0.23**	0.05	0.05	0.15**	1.00				
<b>8. Caseworker-rated harm</b>	0.14**	−0.05	0.48**	0.28**	0.09	0.28**	0.19**	1.00			
<b>9. PTSS score baseline</b>	−0.03	−0.09	0.08	0.02	0.03	0.10*	0.03	0.14**	1.00		
<b>10. PTSS score 18 months</b>	0.04	−0.00	0.04	0.09	−0.00	0.07	0.04	0.12*	0.50**	1.00	
<b>11. PTSS score 36 months</b>	0.02	−0.06	0.16**	0.03	−0.04	0.01	−0.03	0.12*	0.38**	0.56**	1.00

\* *p*<0.05; \*\**p*<.01

This is the correlation matrix generated using the Full Information Maximum Likelihood method of dealing with missing data.

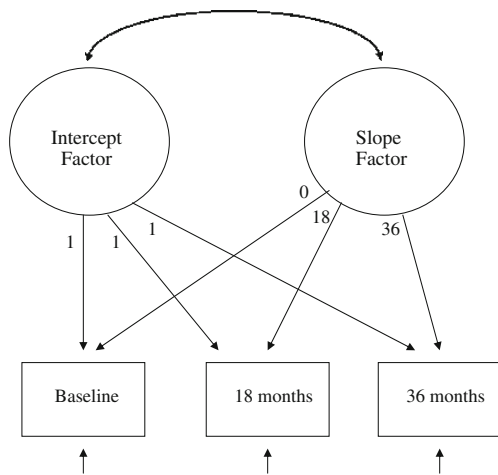


Fig. 1 Unconditional latent trajectory model

including sex, on initial symptom levels or on the rate of symptom change.

**Discussion**

The primary question this study addressed was whether there were sex differences in posttraumatic stress symptom levels and/or symptom trajectories across 36 months in a sample of youth reported to Child Protective Services for alleged sexual abuse. The results supported the hypothesis that there would *not* be sex differences. Also of interest was whether there were sex differences in a number of sexual abuse characteristics. It was found that, whereas investigative caseworkers substantiated girls’ abuse at higher rates

than boys’ abuse and rated girls significantly higher than boys on level of harm, there were *not* sex differences in three more objective measures of abuse severity characteristics (penetrative versus non-penetrative abuse, whether or not the abuse co-occurred with other types of maltreatment, and the duration of the abuse). Overall, higher caseworker ratings of harm predicted higher initial PTSS levels, and substantiation status predicted shallower decreases in symptoms over time.

This study had a number of methodological strengths. First, the sample was relatively large by sexual abuse sample standards ( $n=389$ ) and included a sizeable number of males, allowing for empirical tests of sex differences. Second, the victims in the sample were all still in their youth, thus preventing the problems often associated with retrospective studies of abuse (Hardt & Rutter 2004). Third, the sample relied on documented CPS reports of sexual abuse rather than self-reported sexual abuse. Fourth, youth reported on their own PTSS using an assessment measure with strong psychometric properties. This is important given that several studies have suggested that caregivers are not particularly accurate in their estimates of distress responses in their children (e.g. Handford et al. 1986). Fifth, children were followed prospectively, allowing for the examination of PTSS trajectories.

Implications for Theory and Intervention

Surprisingly few studies have directly tested whether girls and boys recently victimized by sexual abuse differ in their PTSS reactions. The results of the current study suggest that PTSS levels and trajectories across time do *not*

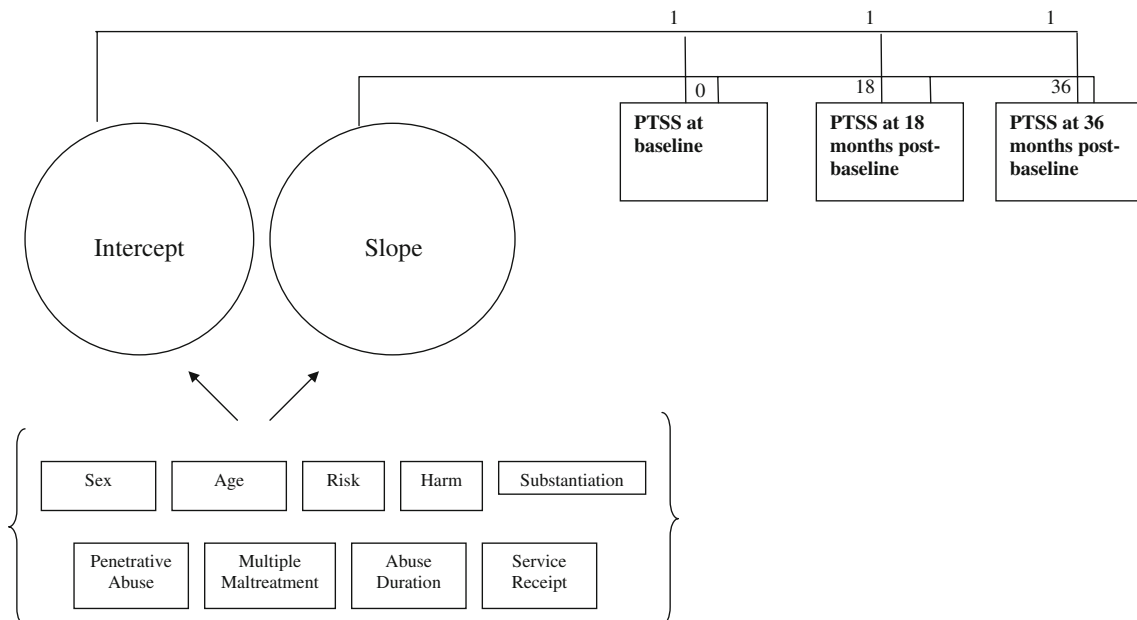


Fig. 2 Conditional latent trajectory model

**Table 3** Conditional Latent Trajectory Model Results

Predictor Variable	Intercept Factor			Slope Factor		
	Parameter	SE	Standardized estimate	Parameter	SE	Standardized estimate
Child sex	-0.38	1.39	-0.02	0.00	0.05	0.01
Child age	-0.22	0.27	-0.06	-0.00	0.01	-0.01
Harm	1.34	0.65	0.17*	-0.02	0.02	-0.10
Substantiation	-0.64	1.57	-0.03	0.11	0.05	0.23*
Penetrative abuse	-0.05	1.33	0.00	0.01	0.04	0.02
Multiple maltreatment	0.23	1.20	0.01	-0.02	0.04	-0.05
Abuse duration	0.84	0.92	0.08	-0.04	0.03	-0.17
Services receipt	0.34	1.69	0.01	-0.05	0.05	-0.09

\*  $p < 0.05$

significantly differ for girls and boys, even after accounting for several measures of abuse severity. This study, therefore, is consistent with the results of Tolin and Foa's (2006) meta-analysis that found no significant difference between male and female child sexual abuse victims' psychopathological responses (although it should be noted that the meta-analysis included only seven studies, two of which had child samples). Thus, although girls are more likely than boys to be sexually abused, the present study suggests that boys exhibit just as many PTSS as girls when they *are* sexually victimized. Rutter et al. (2003) point out that, in general, the literature base on whether girls and boys are differentially vulnerable to psychosocial risk factors when exposed at equal levels is inconsistent, and more research is needed in this domain.

Investigative caseworkers rated the level of harm to the child following the abuse as significantly higher for girls than for boys, and were significantly more likely to substantiate girls' abuse. In contrast, more objective indicators of abuse severity, such as abuse that was penetrative, of long duration, and that co-occurred with other forms of abuse (Beitchman et al. 1991; Molnar et al. 2001), were not more common in females than males. Given that most of the more objective abuse characteristics were significantly correlated with caseworkers' ratings of harm, it is likely that caseworkers were taking them into account, but other unmeasured factors must also have been influencing their evaluations. Complementary qualitative work is needed that examines the basis for caseworkers' judgments about the level of harm resulting to children who are sexually abused, and, specifically, why caseworkers may be more likely to judge harm to sexually abused girls as greater than harm to sexually abused boys.

Furthermore, future research should examine mechanisms explaining how individuals' appraisals of sexual abuse, such as caseworkers' ratings of the harm caused to the child, translate into higher levels of PTSS. In the present study, it is possible that caseworkers were simply

utilizing their knowledge of the child's psychological functioning in making their harm ratings (i.e., the relationship may be correlational), or that the caseworkers' ratings of the child as more harmed may have actually contributed to the child's PTSS in a causal way. Although research has not yet examined these potential causal mechanisms with respect to caseworkers, some researchers have suggested that the process of labeling a child as a sexual abuse victim may contribute to psychopathology. For example, individuals who come into contact with a child labeled as a sexual abuse victim may interact with the child differently than they would if he/she was not labeled in this way, or have different expectations of him/her because of the sexual abuse victim label, which may directly or indirectly impact the child's psychological functioning (see Holguin & Hansen 2003, for a thorough discussion of this issue). In general, more work should examine sex differences in how social meaning and stigma factors contribute to PTSS symptoms in sexually abused children, and how these mechanisms may differ for girls and boys.

This study also has potential implications for choosing the types of assessment tools used to evaluate child sexual abuse victims' psychological functioning. Tolin and Foa (2006) point out that many trauma studies have assessed trauma symptoms using some form of semistructured interview, despite the fact that males may be less likely to report emotional distress in an interview format than in a questionnaire format, especially following sexual or non-sexual assault. Furthermore, it is possible that boys may feel especially stigmatized after experiencing sexual abuse, and may be less willing than girls to report symptoms of distress in face-to-face interviews. Thus, studies that rely exclusively on interview assessment measures may artificially produce sex differences in PTSS levels. Consistent with this hypothesis, sex differences in trauma symptoms did not emerge in the present study, which assessed children's symptoms using a standardized paper-and-pencil measure.



Future studies could directly compare sex differences that emerge from measuring PTSS with standardized paper-and-pencil assessments versus interview assessments to directly test the possibility that these different techniques may produce inconsistent findings in the literature. It is also possible that more comprehensive assessment strategies that incorporate *both* forms of evaluation (as well as caregiver reports) may be most sensitive to the presence of PTSS among sexually abused youth.

Finally, it is worth noting that only a relatively small percentage of youth in our sample had trauma symptom levels consistent with a PTSD diagnosis (between 8–14% across waves), although many had at least some PTSS. Even PTSS levels not consistent with PTSD diagnoses should be taken seriously, given that sub-clinical levels of symptoms often have a significant negative effect on individuals' education, social and family functioning, physical health, and work (Giaconia et al. 1995; Stein et al. 1997; Carlier & Gersons 1995; Cuffe et al. 1998; Pfefferbaum 1997). Posttraumatic stress symptoms are also often associated with substance use and abuse problems (Giaconia et al. 1995). In addition, ample evidence suggests that CSA victims are at very high risk of developing a range of other psychopathological disorders (e.g. Putnam 2003; Trickett & McBride-Chang 1995), and the presence of PTSS could complicate the treatment of these other disorders. Finally, untreated trauma symptoms leave youth vulnerable to developing full-fledged PTSD in the future (Pfefferbaum 1997).

### Limitations

First, although this study included several abuse characteristics that can differ among sexual abuse experiences, there are other potentially important characteristics that were not examined, such as age-of-onset of abuse and perpetrator sex. Second, it is likely that many of the children in this sample came from chronically-stressed families and were exposed to other environmental risk factors for PTSS, such as domestic and community violence. There may be sex differences in the likelihood of exposure to these other risk factors, and/or they may be differentially predictive of psychological trauma for males and females. This study does not tease apart the unique contribution of sexual abuse or shed any light on how children's contexts further moderate experiences of abuse on their psychological well-being. Third, there was not enough statistical power to consider how PTSS levels and trajectories differed for girls and boys of different races and ethnicities. The cultures in which children of different races and ethnicities grow up may shape very different understandings of sexual abuse experiences, and the balance of risk and protective factors that characterize sexually abused boys and girls may

vary greatly as a function of race and ethnicity. Thus, it is not clear that our findings will generalize to racial and ethnic subgroups.

Despite these limitations, the present study provides new quantitative data on sex differences in PTSS levels and trajectories following childhood sexual abuse. The national nature of the sample, the sample's size, and the prospective nature of the findings contribute to the novelty and strength of the study. Nonetheless, significantly more research on sex differences in children's responses to sexual abuse (and other types of abuse and trauma) is needed before clinicians and intervention specialists can design and implement the most empirically-grounded assessments and treatments possible for this vulnerable population of youth.

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