

## BRIEF REPORT

# Adolescents' and Parents' Agreement on Posttraumatic Stress Disorder Symptoms and Functioning after Adolescent Injury

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*Few investigations have simultaneously assessed concordance between youth and parent ratings of posttraumatic stress disorder (PTSD) symptoms and functioning. Randomly sampled adolescent injury survivors ages 12–18 and their parents were assessed on the inpatient ward and again at 2, 5, and 12-months postinjury (N = 99). Adolescent PTSD symptoms and functioning were rated by both adolescents and parents. Parent PTSD was also assessed; 27% of parents endorsed symptoms consistent with a diagnosis of PTSD over the course of the year after adolescent injury. The PTSD positive parents demonstrated significantly greater discordance in ratings of adolescent PTSD symptoms, family cohesion, and mental health functioning. These findings suggest caution in clinical and policy applications of parental ratings of adolescent symptomatic and functional outcomes after injury.*

Each year in the United States, between 250,000–600,000 adolescents incur injuries so severe that they require inpatient hospital admission (Centers for Disease Control and Prevention, 1993). Symptoms of posttraumatic stress disorder (PTSD) occur frequently after injury in youth (Kassam-Adams, Garcia-Espana, Miller, & Winston, 2006; Shemesh et al., 2005; Stoddard & Saxe, 2001). Life threatening injuries requiring hospital admission constitute a Criterion A PTSD stressor according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-*

*IV*; American Psychiatric Association, 1994) not only for injured adolescents, but also their families. A literature review suggests that between 9–31% of exposed parents develop symptoms consistent with a diagnosis of PTSD over the course of the weeks, months, and years after a child's injury (Hall et al., 2006; Rizzone, Stoddard, Murphy, & Kruger, 1994).

When both parents and children are asked to rate children's PTSD symptoms after a traumatic exposure, discrepancies have been observed between reports. The rationale for collecting

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parental ratings of child symptoms is that external reports can enhance or validate child self-reports. This, however, sometimes is not the case, and parents' own symptoms may impact their ratings of their children. Shemesh et al. (2005) measured symptoms in medically ill children and found that parents' own PTSD symptoms were significantly correlated with their reports of their children's symptoms. In a cohort of unintentionally injured children and their parents, Kassam-Adams et al. (2006) found that parents with acute stress disorder symptoms (ASD) overestimated child ASD symptoms. A series of other investigations have documented similar parent-child discrepancies in PTSD symptom ratings (Korol, Green, & Gleser, 1999; Landolt, Vollrath, Ribbi, Gnehm, & Sennhauser, 2003; Scheeringa, Wright, Hunt, & Zeanah, 2006).

Injury can lead not only to PTSD, but to functional impairment as well. Researchers have also asked parents to assess their children's functional outcomes. These assessments utilize measures like the Child Health Questionnaire (CHQ) to elicit both parent and youth assessments of child functioning (Landgraf, Abetz, & Ware, 1996). As with PTSD ratings, parent-youth discrepancies have been reported on the CHQ (Waters, Stewart-Brown, & Fitzpatrick, 2003).

Our investigation sought to examine the associations between parent PTSD symptoms and parents' ratings of both adolescent PTSD symptoms and adolescent functioning after injury. Previous investigations have not assessed discrepancies between parent and child PTSD ratings longitudinally, nor have they considered parent PTSD when analyzing parent-child discrepancies in ratings of functional outcomes.

We hypothesized that substantial discordance between parent and adolescent ratings of adolescent PTSD and functioning would be observed. We also hypothesized that parents with symptoms consistent with a diagnosis of PTSD would demonstrate the greatest PTSD rating discrepancies. In addition, we explored the impact of parent PTSD symptoms on the agreement between parent and adolescent ratings of functional outcomes.

## METHOD

### Participants

The participants included in the study were injured adolescents ages 12–18 who were admitted to the University of Washington's Harborview Medical Center, a Level I trauma center, between July 2002 and August 2003. Ninety-nine adolescent/parent dyads participated in the longitudinal portion of the study. Adolescents and parents were each interviewed in the hospital ward and again over the telephone at 2-, 5-, and 12-months postinjury.

All study procedures were approved by the University of Washington's Institutional Review Board; for patients under age 18, both adolescent assent and parental consent were obtained. Previous reports provide an in-depth description of study procedures (Zatzick et al., in press).

### Measures

Adolescent posttraumatic stress symptoms were assessed with the adolescent version of the UCLA PTSD Reaction Index for DSM-IV (PTSD-RI; Steinberg, Brymer, Decker, & Pynoos, 2004). We utilized the 20 PTSD-RI items assessing the *DSM-IV* PTSD symptom clusters. All items are rated on a 5-point Likert scale ranging from 0 (*none of the time*) to 4 (*most of the time*).

The 87-item Child Health Questionnaire was used to assess adolescent functional outcomes (Landgraf et al., 1996). The CHQ is scored as a continuous measure on a 0 to 100 scale, with 100 representing an optimal state of health or function, and has established reliability and validity. We used modified versions of the 10 CHQ subscales that were rated by both adolescents and their parents at all four time points.

To measure parents' PTSD symptoms, we used the 17-item civilian version of the PTSD Checklist (PCL-C.; Weathers, Huska, & Keane, 1991). Parent symptoms were measured in relation to the adolescent traumatic event. Parent symptoms consistent with a diagnosis of PTSD were assessed using the *DSM-IV* diagnostic algorithm.

Parents were administered the PTSD-RI and asked to rate their child's symptoms on the same items. Parents were given the 50-item CHQ to rate their children's functioning.

### Data Analysis

We first examined the longitudinal course of PCL-C symptoms consistent with a diagnosis of PTSD for parents over the course of the year after adolescent injury. Next, we examined the longitudinal course of adolescent PTSD-RI scores and, using the kappa statistic, assessed agreement between adolescent and parent ratings on adolescent PTSD caseness by dichotomizing PTSD RI scores  $\geq 38$ .

To determine whether any observed discrepancies were associated with parent PTSD symptom status, we divided parents into two groups: PTSD positive (PTSD algorithm positive on the PCL-C) and PTSD negative (PTSD algorithm negative). We included parents with symptoms consistent with a diagnosis of PTSD at any time over the course of the year in the PTSD positive group. We computed absolute differences on both the PTSD-RI and CHQ and assessed for significant differences between ratings by PTSD positive and negative parents.

We next performed exploratory mixed model regression analyses to assess for significant longitudinal discrepancies in ratings for PTSD positive and negative parents. The first mixed model used absolute differences between adolescent and parent PTSD-RI ratings at each time point as the dependent variable. For this model, time was entered as a random effect, and PCL-C symptoms consistent with parent PTSD (positive/negative) was entered as a fixed effect. Similar models assessed for significant longitudinal

**Table 1.** Adolescent & Parent Child Health Questionnaire (CHQ) Subscale Ratings Over the Course of the Year After Injury

	Physical function	General health	Role/social,			Bodily pain	Family activities	Mental health	Self-esteem	Family cohesion
			Behavior	emotional-behavioral	Role/physical					
T1 Adolescent report <i>M</i> ( <i>SD</i> )	98.1 (8.4)	83.4 (15.6)	81.1 (12.0)	95.4 (14.0)	98.7 (7.8)	89.7 (15.9)	89.6 (14.9)	80.2 (13.1)	81.1 (12.0)	80.0 (24.7)
T1 Difference ( <i>CI</i> )	0.6 (0.2-2.0)	-2.5 (-5.1-1.4)	6.5 (0.1-6.4)	6.4 (1.0-11.4)	1.6 (0.1-3.7)	1.1 (-3.1-4.7)	1.8 (-3.2-5.5)	-1.6 (-4.4-1.0)	0.6 (-4.5-3.4)	4.8 (-8.0-3.1)
T2 Adolescent report <i>M</i> ( <i>SD</i> )	68.5 (28.1)	67.0 (19.8)	82.0 (12.7)	91.1 (17.5)	71.6 (30.7)	60.9 (26.1)	73.8 (21.2)	75.0 (16.5)	79.9 (14.8)	70.7 (26.6)
T2 Difference ( <i>CI</i> )	13.8 (11.5-20.7)	-8.2 (-12.2-3.4)	7.7 (2.9-9.9)	10.3 (2.7-15.5)	18.1 (11.5-28.9)	3.1 (-1.6-9.7)	3.0 (-2.8-8.2)	2.1 (-2.2-4.8)	12.2 *** (8.2-16.5)	1.6 (-5.2-9.3)
T3 Adolescent report <i>M</i> ( <i>SD</i> )	86.4 (19.3)	69.9 (16.9)	82.2 (11.9)	93.3 (15.3)	88.9 (20.7)	69.0 (28.2)	86.3 (18.4)	76.7 (15.7)	83.0 (16.4)	69.4 (27.3)
T3 Difference ( <i>CI</i> )	3.0 (1.3-9.1)	-5.4 (-8.0-0.3)	4.9 (3.0-10.5)	6.1 (0.8-13.4)	2.2 (0.6-10.2)	0.5 (-2.7-8.9)	-1.7 (-7.3-1.9)	-2.1 (-1.5-5.4)	3.7 (5.9-13.9)	-3.2 (-10.6-2.4)
T4 Adolescent report <i>M</i> ( <i>SD</i> )	88.8 (23.3)	69.9 (16.9)	82.2 (11.9)	93.0 (15.2)	90.6 (21.0)	69.0 (28.2)	86.3 (18.4)	76.7 (15.7)	83.0 (16.4)	64.8 (29.1)
T4 Difference ( <i>CI</i> )	0.5 (-1.4-6.5)	-5.4 (-8.1-0.6)	4.9 (2.0-10.0)	2.3 (-2.8-9.4)	2.2 (0.3-8.2)	0.5 (0.7-10.9)	-1.7 (-6.0-6.4)	-2.1 (-4.3-3.2)	3.4 (1.2-9.3)	-8.7 (-12.7-0.0)

*Note.* T1 = Preinjury baseline; T2 = 2-months postinjury; T3 = 5-months postinjury; T4 = 12-months postinjury; CI = confidence interval for a difference between parent and adolescent CHQ subscale reports.

discrepancies in functional outcomes, using absolute differences on each of the 10 CHQ subscales as the dependent variable.

## RESULTS

The investigation achieved greater than 80% adolescent and parent follow-up at each postinjury assessment. Twenty-seven percent ( $n = 27$ ) of parents reported symptoms consistent with a diagnosis of PTSD at one or more time points. At baseline the mean PCL-C score for parents was 35.8 ( $SD = 16.2$ ), at the 2-month follow-up interview the mean PCL-C score was 30.9 ( $SD = 13.7$ ), at the 5-month follow-up interview the mean PCL-C score was 27.1 ( $SD = 11.0$ ), and at the 12-month follow-up interview the mean PCL-C score was 26.7 ( $SD = 11.5$ ).

When we examined concordance between adolescent and parent dichotomized PTSD-RI ratings, kappa statistics revealed poor agreement at Time 1 ( $\kappa = .04$ ) and Time 2 ( $\kappa = .13$ ) and moderate agreement at Time 3 ( $\kappa = .56$ ) and Time 4 ( $\kappa = .51$ ).

When we divided parents into groups, PTSD-positive parents demonstrated consistently greater discrepancies in their rating of adolescent PTSD symptoms across time points than did PTSD negative parents (Figure 1). These comparisons achieved statistical significance at each cross-sectional time point: Time 1  $t(98) = 11.50$ ,  $p < .001$ ; Time 2  $t(87) = 10.57$ ,  $p < .001$ ; Time 3  $t(81) = 20.75$ ,  $p < .001$ ; Time 4  $t(82) = 7.89$ ,  $p < .001$ . Mixed-model regressions demonstrated a significant longitudinal effect for parent PTSD status ( $B = 11.36$ ,  $SE = 2.08$ ,  $p < .01$ ).

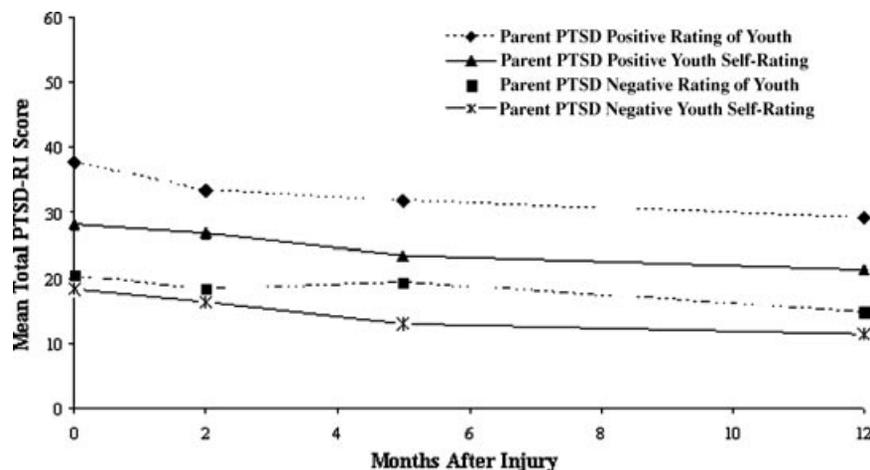
We next examined agreement between parent and youth ratings of adolescent CHQ subscales (Table 1). We observed multiple parent-child discrepancies, of varying magnitude, across CHQ subscales and time points. When we examined ratings of PTSD

positive parents vs. PTSD negative parents, PTSD positive parents demonstrated consistently greater absolute CHQ subscale discrepancies with their children's ratings. Mixed-model regressions demonstrated a significant longitudinal effect for the family activities ( $B = 3.81$ ,  $SE = 3.70$ ,  $p < .01$ ) and mental health ( $B = 5.43$ ,  $SE = 1.25$ ,  $p < .01$ ) CHQ subscales.

## DISCUSSION

The investigation found that parents and adolescents often do not share the same perception of adolescent symptomatic and functional recovery after traumatic injury. Moreover, parental PTSD symptoms can affect perceptions. Over one-fourth of parents endorsed symptoms consistent with a diagnosis of PTSD at some point over the course of the year after adolescent injury, and symptomatic parents reported higher levels of posttraumatic stress symptoms in their children than did the adolescents themselves. This observation is consistent with previous literature documenting discrepancies between parent and youth symptom reports (Kassam-Adams et al., 2006; Korol et al., 1999; Landolt et al., 2003; Scheeringa et al., 2006; Shemesh et al., 2005). The investigation expands upon prior reports by documenting that high levels of parent PTSD symptoms may also impact concordance between youth and parent ratings of adolescent functional outcomes.

This investigation has several limitations. A limited sample size may have reduced power to detect significant differences in parent ratings of adolescent functional outcomes. In addition, because of the relatively small sample, we were not able to assess for other factors, such as adolescent gender or age, which may have impacted parental ratings. Finally, we were not able to determine why some time points demonstrated greater parent-youth concordance.



**Figure 1.** Comparison of parent and youth ratings of adolescent posttraumatic stress symptoms over time on the UCLA PTSD Reaction Index for DSM-IV (Steinberg et al., 2004). PTSD Positive = Parent symptoms consistent with a diagnosis of PTSD on the PCL-C (Weathers et al., 1994). At Baseline, Adolescent  $N = 99$ , Parent  $N = 99$  (Parent PTSD Positive  $n = 27$ , Parent PTSD Negative  $n = 72$ ).

Nevertheless, this study has important implications. Despite the potential clinical and policy relevance of using parent assessments of youth symptomatic and functional outcomes, the findings suggest caution. Discrepancies in adolescent–parent ratings appear to be linked to greater levels of parent posttraumatic distress. Whenever possible, parents' own symptom status should be assessed when parents are asked to assess youth symptomatic and functional outcomes. When conducting policy relevant studies that link youth symptomatic and functional outcomes, investigators may want to consider collecting collateral assessments beyond child and parent reports (Zatzick et al., in press).

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