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Adolescent Girls' Offending and Health-Risking Sexual Behavior: The Predictive Role of Trauma

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Abstract

Several studies have highlighted high levels of risk for girls who have been exposed to traumatic experiences, but little is known about the exact relationship between traumatic experiences and problems with delinquency and health-risking sexual behavior (e.g., precipitory and/or exacerbatory roles). However, numerous short- and long-term detrimental effects have been linked to trauma, delinquency, and health-risking sexual behavior. The utility of diagnostic and experiential trauma measures in predicting the greatest risk for poor outcomes for delinquent girls was examined in this study. Results indicate that the experiential measures of trauma (cumulative and composite trauma scores) significantly predicted adolescent offending and adolescent health-risking sexual behavior, whereas the diagnostic measures of trauma (full and partial diagnostic criteria) did not.

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Exposure to a traumatic event can result in significant psychological disturbance. Common symptoms include posttraumatic stress disorder (PTSD), other anxiety disorders, depressive symptoms, and a variety of behavioral problems (American Academy of Child and Adolescent Psychiatry, 1998). Furthermore, untreated PTSD symptoms and trauma experiences have been associated with numerous debilitating outcomes (Mullen, Martin, Anderson, Romans, & Herbison, 1996;Neumann, Houskamp, Pollock, & Briere, 1996). Youths meeting full or partial criteria for PTSD are significantly more likely to experience serious behavioral, emotional, and health-related problems (Giaconia et al., 1995) and, when not effectively treated, tend to be at risk for experiencing similar or exacerbated problems in adulthood (Briere & Runtz, 1993;Browne & Finkelhor, 1986;Goodwin, 1988;Kendall-Tackett, Williams, & Finkelhor, 1993;Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995;Kolko, 1996;Lindberg & Distad, 1985;Roesler & McKenzie, 1994;Rowan & Foy, 1993). Therefore, developing strategies for early, accurate identification of those at high risk is crucial.

Research has identified a link between early childhood trauma and high rates of health-risking sexual behavior, conduct problems, and criminal offending in adolescence (Brener, McMahon, Warren, & Douglas, 1999;Brown, Henggeler, Brondino, & Pickrel, 1999;Cunningham, Stiffman, Dore, & Earls, 1994;Herrenkohl, Herrenkohl, Egolf, & Russo, 1998;Lodico & DiClemente, 1994;McClanahan, McClelland, Abram, & Teplin, 1999;McCord, 1983;Siegel & Williams, 2003;Springs & Friedrich, 1992;Smith & Thornberry, 1995;Widom & White, 1997). Girls who are exposed to childhood trauma and who have PTSD symptoms are at increased risk to have comorbid mental health problems (Breslau, Davis, Andreski, & Peterson,

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1991;Dembo, Williams, & Schmeidler, 1993;Horowitz, Weine, & Jekel, 1995;Kessler et al., 1995;Ritter, Stewart, Bernet, Coe, & Brown, 2002), to engage in health-risking sexual behavior, and to be involved in violent crimes (Brener et al., 1999;Cunningham et al., 1994;Lang et al., 2003;Paxton, Myers, Hall, & Javanbakht, 2004;Springs & Friedrich, 1992;Widom & White, 1997). The link between trauma, health-risking sexual behavior, and delinquency is of particular concern in adolescent females due to the serious public health implications associated with this constellation of behaviors (i.e., the well-documented link between adolescent criminality, the selection of antisocial partners, early pregnancy, and the intergenerational transmission of antisocial behavior; Bardone, Moffitt, Caspi, Dickson, & Silva, 1996;Quinton & Rutter, 1988;Woodward & Fergusson, 1999;Zoccolillo, Meyers & Assiter, 1997;Zoccolillo, Pickles, Quinton, & Rutter, 1992).

Although the association between childhood trauma and engagement in health-risking sexual behavior and delinquency is well documented, the specific nature of the cause or mechanism for the link between trauma exposure and the development of these behavior problems is not known. One speculation is that trauma exposure exacerbates the development of a coercive process between a youth and his or her parents, whereby the traumatized youth is more emotionally overreactive and more likely to engage in coercive and noncompliant behaviors (Snyder, Schrepferman, & St. Peter, 1997). It has also been suggested that the reaction to traumatic events accounts for many of the features central to conduct problem behavior: lack of empathy, impulsivity, anger, acting-out, and resistance to treatment (Greenwald, 2002). It has also been suggested that health-risking sexual behavior is a negative outcome of antisocial behavior that operates through two processes: lack of parental monitoring and increased associations with deviant peers (Capaldi, Stoolmiller, Clark, & Owen, 2002;Metzler, Noell, Biglan, Ary, & Smolkowski, 1994;Miller, Forehand, & Kotchick, 1999;Underwood, 1998;Whitbeck, Yoder, Hoyt, & Conger, 1999;Woodward & Fergusson, 1999). Some findings suggest that girls are at especially high risk for these processes (Griffin, Botvin, Scheier, Diaz, & Miller, 2000;Metzler et al., 1994). Despite the identification of childhood trauma as a risk factor for the development of health-risking sexual and antisocial behavior, its role as a predictor for the development of these problems in female adolescents has not been well examined.

In this paper, we examined various measurement strategies for identifying girls who were at the highest risk for experiencing serious health-risking sexual behavior and delinquency outcomes. The predictive utility of two diagnostic measures of trauma (full and partial DSM-IV diagnostic criteria for PTSD) and two experiential measures (cumulative trauma score [sum of traumatic experiences] and composite trauma score) were examined. These four measures were chosen based on research showing that diagnostic and experiential measures of trauma are indicative of high risk for the development of later emotional and behavioral problems in girls. The aim of this study is to advance strategies for future early accurate identification of this high-risk population of girls.

Method

Participants

The sample was comprised of 88 (N = 90, but diagnostic data were not available on 2) adolescent girls who were referred to treatment for chronic conduct problems by the Oregon State juvenile justice system after being court-mandated to out-of-home care. Inclusion criteria for the study were as follows: history of arrest, court-mandated to out-of-home placement, and female, aged 13–17 years. At placement, the girls were approximately 15 years old (M = 15.32; SD = 1.1). The ethnic composition of the sample was as follows: 74% Caucasian, 2% African American, 9% Hispanic, 12% American Indian, 1% Asian American, and 2% other or mixed

ethnic heritage. At the time of the study, 93% of girls (aged 13–19) in the region were Caucasian (U.S. Department of Commerce, 1992).

Procedure

Girls and their caregivers (92% of caregivers were biological parents) participated in an assessment prior to placement in out-of-home care. The multimethod, multiagent assessment approach consisted of a standardized interview for the girl and caregiver, an interview with the caseworker, questionnaires for the girl and caregiver, and the collection juvenile court records. Assessments were aimed at measuring youth and family demographics, youth behaviors, and youth mental health. All interviews were conducted in person and lasted approximately 2 hr.

Measures: Predictors

Diagnostic measures of trauma—The Diagnostic Interview Schedule for Children (DISC; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) was used to assess PTSD symptoms. The DISC covers diagnostic criteria from Diagnostic and Statistical Manual of Mental Disorders (American Psychological Association, 1994) and the International Classification of Diseases (World Health Organization, 1992). Girls who met full criteria for PTSD and girls who met partial criteria for PTSD (i.e., three or more criteria, one of which being avoidance or reexperiencing) during the 12 months prior to assessment were identified. The decision to include girls who met partial criteria for PTSD was based on research suggesting that PTSD symptoms often have a delayed onset (especially in youths) and can be experienced as episodes that recur and remit over time (Deblinger, Lippmann, & Steer, 1996;Fletcher, 1996) and on research indicating that girls meeting partial criteria for PTSD commonly experience functional impairments across several domains (e.g., social, emotional, and behavioral). In our sample, 46% (40 of 88) of the girls were found to meet partial criteria for PTSD, and 16% (14 of 88) of the girls were found to meet full criteria for PTSD. [1]

Experiential measures of trauma—Childhood trauma was measured with eight indicators representing a multiagent perspective on childhood abuse: (a) lifetime trauma (Traumatic Stress Schedule; Norris, 1990), (b) documented physical abuse, (c) documented sexual abuse, (d) self-reported sexual abuse (Childhood Sexual Experiences Questionnaire; Zaidi et al., 1991), (e) the witnessing of domestic violence, (f) the experience of parent incarceration, (g) the number of parental transitions, and (h) the number of out-of-home placements. Each of these measures is described in detail below. Trauma rates are reported in Table 1.

The Traumatic Stress Schedule was used to assess the impact of traumatic events, the degree of loss, the scope of the event(s), the threat to life and property, and the girl's sense of blame. A continuous score of lifetime trauma was used (range = 0–6), with higher scores reflecting more trauma experiences. The traumatic experiences of the girls included robbery (15%), assault (51%), serious motor vehicle accident (24%), injury or property damage from a natural disaster (11%), unexpected death of a loved one (32%), and other traumatic events (83%). On average, girls had experienced two traumatic events as measured by the Traumatic Stress Schedule, with 100% of girls having experienced at least one traumatic event over the course of their lifetime. Documented physical abuse and sexual abuse were coded from official reports from each girl's current caseworker. Such reports require substantiated claims of physical or sexual abuse investigated by the Department of Human Services. The documented abuse history of the girls included the following: sexual abuse (69%), physical abuse (88%), or sexual and physical abuse (63%); 93% of girls had experienced either sexual or physical abuse. We administered a computer-based, self-administered version of the Childhood Sexual

[1]A PTSD symptom count was examined as a possible diagnostic predictor but was not included in analyses due to its multicolinearity with the other PTSD measures.

Experiences Questionnaire to measure girls' self-reported sexual abuse. They reported whether any of 14 acts occurred before age 13 (*Yes*/*No* format). (The age-13 cut-off was chosen because sexual contact prior to age 13 is considered abusive by the juvenile court system.) To form a measure of self-reported sexual abuse, girls' responses were summed. Sample items included being exposed to sexual parts, being asked to commit sexual acts, and having forced sexual activity. The internal consistency of the scale was acceptable (α = .90). On average, the girls reported 5 sexual abuse acts prior to age 13, with 76% of them reporting at least one act of sexual abuse prior to age 13..

For the remaining indicators (the witnessing of domestic violence, the experience of parent incarceration, the number of parental transitions, and the number of out-of-home placements), data were collected on whether each event had occurred in each year of the girl's life. Using a cumulative measure of traumatic experiences has been suggested to provide a more accurate indication of the level of stress that an individual has experienced (Lehmann, 1997;Lloyd & Turner, 2003,Yehuda, Schmeidler, Siever, Binder-Brynesn & Elkin, 1997). Seventy-nine percent of girls reported having witnessed violence at home (*SD* = .41). Sixty-four percent of girls experienced at least one parent going to jail (*SD* = .48). The girls had experienced 4–36 parental transitions (*M* = 16.96, *SD*= 7.38). On average, girls experienced more than 1 parental transition per year, with 77% having experienced at least 1 out-of-home placement prior to referral (*M* = 2.96, *SD* = 3.29).

A cumulative score for witnessing domestic violence was computed by summing the number of years in which girls reported having witnessed at least one episode of violence in their home. Parental incarceration was collected from referral agencies (e.g., parole/probation officers and court counselors) and parents, both of which were asked whether either of the girl's biological parents had been incarcerated. These data were coded 0 (*Biological parent had no convictions*) and 1 (*Biological parent had one or more convictions*). The number of parental transitions was computed by summing the number of times the primary adult caretaker for a girl changed (e.g., mother incarcerated, so girl moved in with aunt). Parental transition data were computed as mean scores of parent reports and self-reports ($r = .36$, $p < .01$). The cumulative number of out-of-home placements was collected from the girls' caseworker.

Each indicator was standardized and then summed to form the composite trauma score (*M*= −. 017, *SD* = 7.89). Given the range of traumatic experiences included in the composite, neither high internal consistency nor inter-item correlation was expected. Rather, we considered it important to include items that provided a comprehensive coverage of trauma, had face validity, and avoided confounding other items in the models tested (Turner & Wheaton, 1995). Regardless, internal consistency for the trauma composite was in the acceptable range (α = . 68).

The cumulative trauma score was created using the same eight trauma indicators from the composite measure. Each categorical indicator was coded 0 (*No*) and 1 (*Yes*); continuous variables (lifetime trauma, self-report sexual abuse, parental transitions, and out-of-home placements) were recoded as dichotomous variables using a median split: 0 (*Less than or equal to median score*) or 1 (*Greater than median score*). Items were then summed (range = 0–8).

Age—Given the age variation in the sample and given that prior studies have suggested that girls who become arrested at an earlier age have less positive outcomes (Leve & Chamberlain, 2004), age was included as a covariate.

Measures: Outcomes

Delinquency—Each girl's number of criminal referrals during the 12 months prior to baseline was collected using state police records and circuit court data. Court records have been found

to be reliable indicators of externalizing behavior problems (Capaldi & Patterson, 1991;Capaldi & Stoolmiller, 1999).

Health-risking sexual behavior—Health-risking sexual behavior was measured using the Sex Survey (Capaldi et al., 2002), which assesses sexual knowledge and behavior, with an emphasis on health-risking behaviors. We formed a health-risking sexual behavior composite by aggregating the girls' responses to five items about sexual behavior over the preceding 12 months: whether she had sex with someone she had known for less than 24 hours, whether she had sex with someone who injected drugs, the number of her sexual partners, the frequency with which she discussed safe sex practices with a new partner, and the percentage of times that safe sex practices were used. Scores were collapsed into values ranging from 0 (*No risk/ no behavior committed*) to 1 (*High risk/multiple behaviors committed*) for each item, and a mean of the five items was computed. Internal consistency for the health-risking sexual behavior composite was acceptable ($\alpha = .70$).

Results

Analytic Approach

Analyses were aimed at examining the predictive value of childhood trauma experiences and PTSD symptoms on girls' adolescent delinquency and health-risking sexual behavior. The four trauma measures (full criteria PTSD diagnosis, partial criteria PTSD diagnosis, composite trauma score, and cumulative trauma score) were used as predictors of delinquency. Eight regression models were conducted to examine the relative strength of each predictor.

Relationship Between Childhood Trauma and Adolescent Offenses

Linear regression was used to examine the relationships between PTSD symptoms and offending behavior and between traumatic experiences and offending behavior; age was included as a covariate. Results are presented in Table 2. Four regression models were conducted, one for each predictor variable. The cumulative ($\beta = .23$, $p < .05$) and composite ($\beta = .24$, $p < .05$) measures of trauma were predictive of high rates of criminal referrals, whereas the diagnostic measures did not. According to the models tested, there was no additive effect of age on offending behavior.

Relationship Between Childhood Trauma and Adolescent Health-Risking Sexual Behavior

We examined the relationships between PTSD symptoms and the health-risking behavior composite score and between traumatic experiences and the health-risking behavior composite score using the same analytic methods as described above. These results are illustrated in Table 3. In line with results of adolescent offending behavior, the cumulative ($\beta = .29$, $p < .01$) and composite ($\beta = .30$, $p < .01$) measures of trauma predicted of high rates of health-risking sexual behavior, whereas the diagnostic measures did not. According to the models tested, there was no additive effect of age on offending behavior.

Discussion

The girls in this study had been exposed to traumatic events at an alarmingly high rate, more than 200 times the average rate (U.S. Department of Justice, 2002). We found high rates of self-reported experiences of sexual abuse (76% of the girls had experienced at least one act of sexual abuse prior to age 13) and documented physical and sexual abuse (63% of the girls had experienced both physical and sexual abuse; 93% of the girls had experienced physical or sexual abuse). These rates of documented physical and sexual abuse are 200 to 300 times that of the national population (U.S. Department of Health and Human Services, 1997,2004). In addition, study girls experienced trauma due to high rates of family chaos: witnessing of

domestic violence (79%), parental incarceration of at least one parent (64%), and high rates of parental transitions (M = 16.96, SD = 7.38). This is in line with previous research showing that the families of girls with conduct problems often experience high levels of chaos (Brown et al., 1999;Calhoun, Jurgens, & Chen, 1993;Eme, 1992;Henggeler, Edwards, & Borduin, 1987;Lewis et al., 1991;Leve & Chamberlain, 2005) and highlights the nature and frequency of family-related disruption and discord experienced by girls in the juvenile justice system.

Given this high level of trauma, it was not surprising that 16% of the sample met full criteria for PTSD and that 46% of the sample met partial criteria for PTSD. This rate of comorbid PTSD symptoms and conduct problems is similar to rates found in previous studies (Abram et al., 2004;Cauffman, Feldman, Waterman, & Steiner, 1998;Wood, Foy, Goguen, Pynoos, & James, 2002). The lack of predictive value of the diagnostic measures was surprising. Research has suggested that co-occurring difficulties are associated with exacerbated negative outcomes and that PTSD is associated with emotional and behavioral problems (Briere & Runtz, 1993;Browne & Finkelhor, 1986;Goodwin, 1988;Kendall-Tackett et al., 1993;Kessler et al., 1995;Kolko, 1996;Lindberg & Distad, 1985;Roesler & McKenzie, 1994;Rowan & Foy, 1993) and health-risking sexual behavior (Lang et al., 2003;Wingood & DiClemente, 1998). Given this, it was expected that the diagnostic measures of full or partial PTSD diagnoses would be predictive of the girls who were at the greatest risk for engaging in delinquent and health-risking sexual behavior. However, in this sample, the strongest predictors of adolescent offending and health-risking sexual behavior for delinquent girls were the experiential measures of traumatic experiences.

The significant predictive relationship between the composite and cumulative trauma measures and offending and health-risking sexual behavior builds on previous studies indicating that exposure to multiple forms of victimization and traumatic events is related to high levels of trauma-related mental health symptoms (Follett, Polusny, Bechtle, & Naugle, 1996). In light of this, perhaps, the compilation of multiple traumas is a better predictor of negative outcomes in delinquent girls than meeting full or partial criteria for trauma diagnoses. Although the cumulative trauma measure used here suggested this, we did not test for the specific effects of individual trauma experiences (e.g., sexual abuse vs. physical abuse) on outcomes. These findings highlight the potential for identifying girls who are at the highest risk for delinquency and health-risking sexual behavior outcomes and who appear to need trauma treatment services even though they do not meet criteria for trauma diagnoses. Although many studies of trauma intervention identify participants based on PTSD diagnoses, our findings suggest that delinquent girls who have experienced high rates of trauma but who are not currently exhibiting PTSD symptoms might also benefit from trauma treatment services.

Findings from the present study suggest that traumatic experiences might have negative effects that potentiate the development of delinquency in female adolescents and support results from previous studies linking childhood maltreatment to increased rates of delinquency, health-risking sexual behavior, and other problems (e.g., anxiety, depression, PTSD, suicidal ideation, and personality disorders; Braver, Bumberry, Green, & Rawson, 1992;Elze, Auslander, McMillen, Edmond, & Thompson, 2001;Gross & Keller, 1992;MacMillan et al., 2001;McCauley et al., 1997). Given that the average age of the girls in this study was 15 years, the risk for these girls to contract sexually transmitted infections and to experience early pregnancy appears to be very high. In this respect, our results build on previous research suggesting that girls with conduct problems are at high risk for cascading negative outcomes, including teenage parenthood, choosing antisocial partners, domestic violence, school drop out, financial difficulty, and involvement in the child welfare system (Cairns, Cairns, & Neckerman, 1989; Furstenberg, Brooks–Gunn, & Morgan, 1987;Giordano, Millhollin, Cernkovich, Pugh, & Rudolph, 1999;Lewis et al., 1991;Zoccolillo et al., 1997).

In summary, our results contribute two main findings to the existing research base. First, they corroborate previous research findings that delinquent girls have high rates of trauma experiences and PTSD symptoms. Second, they suggest that experiential measures of trauma are significant predictors of delinquency and involvement in health-risking sexual behavior. These findings highlight the possibility that measuring girls' traumatic experiences might be an effective method of identifying those who are at the greatest risk for negative outcomes. By identifying girls who might benefit from trauma treatment services (even in lieu of diagnostic symptoms), such experiential trauma measures have the to potential to guide prevention and intervention efforts to decrease negative outcomes that impact the health and well-being of delinquent girls, the safety of the community, and the well-being of delinquent girls' offspring.

Limitations and Future Directions

There are several limitations to the present study. First, the sample was comprised entirely of girls. As such, it is unclear whether similar processes exist for boys. Second, our models applied to a sample that was selected based on the presence of serious delinquency. Thus, it is unclear if similar results would be found in a prospective study of girls. Third, despite having utilized a multimethod, multiagent approach, our measures of early childhood trauma took place during a baseline assessment when girls were an average of 15 years old, resulting in a reliance on historical and retrospective reports of abuse experiences. Although this study provides some evidence that early childhood trauma experiences might exacerbate or lead to the development of later criminality and health-risking sexual behavior, we neither tested for these specific causal mechanisms in our data nor tested for the impact of individual types of trauma experiences on delinquency or health-risking sexual behavior. Finally, although the experiential measures of trauma were significant predictors of poor outcomes, the amount of variance explained by these variables was relatively low. In light of these limitations, future research should aim to replicate these findings and prospectively examine developmental models on the effects of early trauma for girls and boys using mediation models and longitudinal study designs.

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Table 1

Rates of Childhood Trauma

Childhood trauma	Rate
Traumatic Stress Schedule	
Robbery	15%
Assault	51%
Serious motor vehicle accident	24%
Injury or property damage from a natural disaster	11%
Unexpected death of a loved one	32%
Other traumatic event	83%
Documented abuse	
Physical abuse	88%
Sexual abuse	69%
Self-reported sexual abuse	76%
Witness domestic violence	79%
Experience parent(s) being jailed	64%
Average number of parental transitions	17
Average number of out of home placements	3

Table 2

Regression Models Predicting Adolescent Offenses

Variable	β	*SE*	R^2
Model 1[a]			.08
Age	.10	.82	
Trauma composite score	.24*	.24	
Model 2[b]			.07
Age	.12	.81	
Cumulative trauma score	.23*	.50	
Model 3[c]			.03
Age	.15	.83	
Full PTSD criteria	−.11	2.52	
Model 4[d]			.02
Age	.14	.84	
Partial PTSD criteria	.05	1.86	

[a] Overall model significance: $F(2, 87) = 3.61$, $p < .05$.

[b] Overall model significance: $F(2, 87) = 3.46$, $p < .05$.

[c] Overall model significance: $F(2, 85) = 1.44$, $p = .24$.

[d] Overall model significance: $F(2, 85) = 1.06$, $p = .35$.

* $p < .05$.

Table 3

Regression Models Predicting Health-Risking Sexual Behavior

Variable	B	*SE*	R^2
Model 1[a]			.12
Age	.13	.29	
Trauma composite score	.30**	.08	
Model 2[b]			.11
Age	.14	.29	
Cumulative trauma score	.29**	.18	
Model 3[c]			.04
Age	.18	.30	
Full PTSD criteria	−.08	.92	
Model 4[d]			.05
Age	.17	.30	
Partial PTSD criteria	.12	.67	

[a] Overall model significance: $F(2, 86) = 5.61$, $p < .01$.

[b] Overall model significance: $F(2, 86) = 5.46$, $p < .01$.

[c] Overall model significance: $F(2, 84) = 1.59$, $p = .21$.

[d] Overall model significance: $F(2, 84) = 1.96$, $p = .15$.

** $p < .01$.