Trauma in Forensic Adolescent Females: Predictors, Correlates and Mental Health Outcomes

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Published online: 28 May 2018

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Abstract

This study investigated the demographic predictors of trauma in adolescent females. The role of trauma in the outcomes of psychopathology were examined. Additionally, alcohol and substance use were examined as a product of trauma and leading cause of forensic status. Finally, the mental health of the present sample was compared to paired national averages. Participants included 35 adolescent females currently in the juvenile justice system. Results indicate that the present forensic sample demonstrated significantly worse mental health than non-forensic youth. Additionally, those with a history of trauma showed worse outcomes than youth with fewer traumas experienced. Several demographic factors were predictors of trauma, and trauma in turn predicted alcohol abuse. Those with a history of trauma showed significantly poorer behavioral and academic functioning in addition to mental health difficulties. Implications for the juvenile justice system and mental health treatment are discussed.

Keywords Adolescents · Trauma · Psychopathology · Forensic · Alcohol abuse

Introduction

Research that examines the unique needs of court-involved adolescent females is scarce and does not adequately address the psychological, developmental, and interpersonal needs of these young women (Hipwell and Loeber 2006). Although juvenile crime rates have been decreasing, the number of adolescent females who are involved with the juvenile justice system continues to increase, with approximately 27% of juvenile delinquency cases now involving adolescent females (Sickmund and Puzzanchera 2014). Although female offenders account for a minority of such cases, it is important to note that in contrast to the overall decrease in male juvenile delinquency cases since the mid-1990s, the number of female juvenile delinquency cases increased from 1992 through 2012 (Sickmund and Puzzanchera 2014). The fact that this increase has not been fully explained or addressed by treatment raises implications for renewed study with immediate applications for clinical attention.

The Office of Juvenile Justice and Delinquency Prevention (OJJDP) describes the typical adolescent female offender as being between the ages of 14 to 16, a member of an ethnic minority group, residing in an economically disadvantaged neighborhood with high crime rates, and having experienced physical, sexual, and/or emotional abuse (Maniglia 1998). These young women often experience family dysfunction, trauma-related complications, academic difficulties, and associate with deviant peers (Hubbard and Pratt 2002). They are also at an increased risk for psychological difficulties, domestic violence, and death at an early age (McCabe et al. 2002).

Socio-Emotional Functioning

Although it has been demonstrated that mental health difficulties generally predict criminal behavior in adolescents (Trzesniewski et al. 2006), the paucity of research for female adolescents with a history of law-breaking in particular substantially limits our understanding of the nature of psychopathology for these youth (Jasper et al. 1998). Approximately 65–70% of forensic adolescents have at least one mental health diagnosis (Bonham 2006). However, the research to date has not fully explored the directionality, diagnostic specificity, or common factors between particular diagnoses and law-breaking. Intuitively, some relationship exists between adolescent acting-out behaviors and mental health. This has

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been substantiated by literature in both adults and adolescents worldwide (Gosden et al. 2003). However, as studies continue to explore the relationship between psychopathology and criminal behavior, this relationship needs to be fully explored and explained.

The rates of psychological disorders in forensic youth are astronomically high. Rates for depressive disorders, including major depressive disorder and dysthymic disorder, have been found to be as high as 48% and frequency of anxiety disorders was found to be 18% (Rohde et al. 1997). Wasserman et al. (2002) found that 10% of adolescents within the juvenile justice system currently met the criteria for affective disorders and 20% met the criteria for anxiety disorders, significantly higher than estimated rates of psychopathology in community samples of children and adolescents under the age of 18 compared to less than 5% (NASEM 2015) and 8% respectively (Merikangas, Nakamura & Kessler, 2009). Further, Pliszka et al. (2000) found that 60% of adolescent offenders met the criteria for conduct disorder and 24% met for oppositional defiant disorder. Regarding substance abuse, Pliszka et al. (2000) found that 28% of adolescents involved in the juvenile justice system met the criteria for alcohol dependence, 46% met the criteria for marijuana dependence, and 14% fell into the other classification of substance abuse disorders. Adolescent females involved in the juvenile justice were also found to experience ADHD at a rate of 68% (Timmons-Mitchel et al. 1997). This is a particularly interesting finding in the context that ADHD in girls is typically much lower in the general population, with estimates of lifetime prevalence for attentional disorders in girls being slightly under 6% (Akinbami et al. 2011).

Court-involved adolescent females have been found to experience higher rates of psychological disturbance than their court-involved male peers (Teplin et al. 2002). Roughly 80% of court-involved adolescent females meet the diagnostic criteria for at least one psychological disorder, compared to approximately 67% of court-involved adolescent males (Bonham 2006). Additionally, while court-involved adolescent males and females tend to experience similar rates of externalizing disorders, adolescent females tend to experience higher rates of internalizing disorders (Bonham 2006).

Although rates of psychopathology have varied from study to study (Merikangas et al. 2010), it is clear that adolescent offenders experience an array of psychological difficulties that may relate to juvenile delinquency in adolescent females. These young women in the court system experience higher rates of both internalizing and externalizing disorders than their peers who are not involved in the court system. The amount of psychological distress that these young women experience is vastly disproportionate to non-offending youth, as is their rate of psychological disorders. While broad epidemiological studies have thus found higher rates of mental illness in forensic youth, they have also documented the lack

of research further exploring the nature and causes of this relationship.

Trauma

The link between trauma and psychological distress is well established (Ickovics et al. 2006). As evidence of the duration of the effects of childhood trauma, trauma that occurs in childhood is known to relate to PTSD well into adulthood (Yehuda et al. 2001). Trauma relates to short-term neurological changes (Hauck et al. 2010) and a variety of forms of psychopathology (Gershuny et al. 2004).

Childhood trauma in particular has also been found to relate to many difficulties later in life. Pediatric trauma has been shown to relate to adolescent depression (Wiersma et al. 2009), anxiety (Kar and Bastia 2006), ADHD (Koyuncu et al. 2016), ODD (Ford 2002) and various other forms of psychopathology (Read et al. 2005). Additionally, childhood sexual trauma is associated with later risk-taking behavior and substance abuse (Kalichman et al. 2004). A history of trauma in adolescence is related to significantly higher rates of alcohol and substance abuse than those without (Kilpatrick et al. 2003).

Despite the fact that corresponding alcohol and substance abuse following adolescent trauma may result in legal complications for adolescents, relatively little research has explored the relationship between childhood trauma and law-breaking behavior in adolescents. Although it has not adequately been researched, it may be the case that childhood trauma is a central factor linking the observed correspondence between mental illness and court-involvement in adolescents. This relationship may be largely accounted-for by adolescent use of acting-out behaviors such as drug and alcohol use to alleviate corresponding, self-treated internalizing and externalizing illness such as depression and ADHD respectively. Although as a result of their behaviors these adolescents may be found and treated in a forensic setting, it is possible that these behaviors in fact represent maladaptive coping strategies to alleviate the psychological symptoms of trauma.

In support of this conceptualization, trauma in adolescents has been shown to relate to alcohol-related risks (Spain et al. 1997), violence (Song et al. 1998) and various other criminal behaviors (Chamberlain and Moore 2002). Trauma has also been shown to increase likelihood of risk-taking sexual behavior (Smith et al. 2006) and adolescent substance abuse (Kilpatrick et al. 2003). Trauma has in fact been shown to be significantly more present in a sample of forensic female adolescents in comparison to both forensic adolescent males and the general population (Cauffman et al. 1998).

In addition to behaviors related to risk-taking, alcohol and substance abuse, it is possible that other aspects of behavioral functioning such as academic would be found to demonstrate lower levels in response to traumatic history as well. It has

previously been found that maltreatment in early childhood demonstrated poorer academic performance in a community sample (Lansford et al. 2002) and in African American youth in particular (Thompson and Massat 2005). However, the research on this point is very limited and has not examined the academic functioning of forensic adolescents either combined-gender or female-specific.

One aspect of childhood trauma that merits additional exploration is that of numerical frequency of trauma and the possible gradient of severity of mental health difficulties according to the number of traumatic events endured. The sensitization model of trauma posits that as traumas occur, the threshold for the renewal of corresponding mental health difficulties becomes lower, rather than higher (Grasso et al. 2012). Research has suggested a link between events preceding the development of PTSD and neurobiological correlates (Friedman 1993), potentially joining the sensitization model of trauma to the previously-mentioned CNS dysregulation pathways affected.

Consistent with this framework, it was found that previous exposure to trauma increased the likelihood of PTSD in adults faced with a new traumatic event, with the number of previous traumas experienced positively relating to the likelihood of the development of PTSD following a new traumatic event in adulthood (Breslau et al. 1999). The presence of childhood trauma also strongly predicts substance dependence in a sample of adult veterans receiving treatment for PTSD (Van Voorhees et al. 2012) compared to those without childhood trauma. Additionally, the cumulative number of traumatic events reported has been shown to predict PTSD and depression in adolescence (Suliman et al. 2009).

The present study aims to further explore if childhood trauma may be positively related to both acting-out behaviors and mental health symptoms, which would lend support to the explanation that these behaviors are possible responses to the psychological distress induced by trauma. To this end, the following hypotheses are tested in the present study:

1. Demographic factors will significantly relate to trauma and psychopathology.
2. Trauma as a factor in lower levels of psychological and behavioral functioning
 - 2a. Adolescents who report a higher numerical frequency and severity of trauma will report higher levels of psychopathology.
 - 2b. Adolescents who report higher frequencies and severity of trauma will report higher rates of alcohol and substance abuse.
 - 2c. Levels of trauma will negatively relate to academic and interpersonal functioning as measured by grades, extracurricular participation, and social functioning.

3. Possible motivators of illicit behaviors

3a. Adolescent females in a forensic setting will demonstrate higher rates of trauma than adolescents in the general population.

3b. Adolescents who report higher rates of psychopathology will report higher rates of alcohol and substance abuse than adolescents will lower rates of psychopathology.

Method

Adolescent Participants

Adolescent females currently in the juvenile court system in a given upper Midwestern location were eligible to participate ($N = 35$). The mean age was 16.4 (range 14–18, $SD = 16.4$). The majority of participants self-identified as Caucasian ($N = 29$, 82.9%) with lesser frequencies for Native American ($N = 4$, 11.4%), African American ($N = 1$, 2.9%), and those declining to respond ($N = 1$, 2.9%).

Research has shown (Moffitt and Caspi 2001) that there are two primary trajectories for youth who engage in delinquent behavior: (1) “early-onset/persistent offenders,” youth who become engaged in illegal activity as children (before the age of 13) and continue to engage in escalating law-breaking behavior throughout their lifetime, and (2) “late-onset adolescent-limited” offenders, youth who begin engaging in delinquent behaviors at 13 years of age or older and whose criminal behaviors are typically limited to their adolescent years. Given these two distinct trajectories, youth under the age of 13 and youth who engaged in illegal behaviors prior to the age of 13 were excluded from the study. A plurality of participants ($N = 15$, 42.9%) reported living with both biological parents, with lower rates reporting living with one biological and one step-parent ($N = 11$, 31.4%); living with the biological mother ($N = 7$, 20%) or currently with one grandparent ($N = 1$, 2.9%).

The most common legal charge reported by the present sample was possession or use of alcohol ($N = 22$; 63%), with the second-most commonly reported charge being theft valued at over \$40 ($N = 9$, 22.9%). Nearly two-third of participants were charged with non-alcohol or drug-related crimes ($N = 22$, 62%). Less frequently reported were breaking curfew ($N = 4$, 11.4%), disorderly conduct ($N = 3$, 8.6%) and breaking and entering ($N = 3$, 8.6%). Two participants (5.7%) each reported being charged with buying, receiving, or possessing stolen property; possession or use of drugs; reckless driving and truancy. The following charges were reported by one (2.9%) adolescent: motor vehicle theft, robbery, simple assault, forgery and counterfeiting, running away, driving under the influence, terrorist threats, and driving without a license.

Adolescents were asked to report both delinquent and status offenses with which they had been formally charged, while alcohol use was reported independent of legal charges.

The modal income range reported by parents/guardians was \$31,000–\$40,999 ($N = 7$, 20%), with fewer reporting \$20,000–\$30,999 ($N = 4$, 11.4%); three reports each (8.6%) for the ranges of \$41,000–\$50,999, \$61,000–\$70,999, \$71,000–\$80,999, and \$91,000; minimal respondents ($N = 2$, 5.7%) reporting \$10,000–\$19,999 and one (2.9%) reporting income below \$9999.

Procedure

Individuals were eligible to participate if they were between 13 and 18 years of age and were referred by the court for participation after committing a legal offense. Participants were excluded if they reported having committed law-breaking prior to the age of 13, as the present study intends to study a “late-onset” forensic population to decrease the likelihood of including those individuals whose behaviors and mental health difficulties evidence a distinct etiology, particularly one less related to pediatric trauma. Participants were provided with all inventories contained in a researcher-addressed envelope. Following approval by a district court judge and the juvenile court services probation officer, the IRB of the university in which the research was conducted approved the present study. Parental consent and adolescent assent was received before beginning data collection with any participant.

Parent/Guardian participants and adolescent participants both completed assessment measures for the study. Parent/guardian participants completed the Child Behavioral Checklist for Ages 6–18 and the Family Demographics Form: Parent Form. Adolescent participants completed the Youth Self-Report for Ages 11–18; Child Parental Acceptance-Rejection Questionnaire with Control Scale: Mother; Child Parental Acceptance-Rejection Questionnaire with Control Scale: Father; Teacher Acceptance-Rejection Questionnaire; Student Questionnaire #1, Student Questionnaire #2, and Family Demographics Form: Adolescent Form.

Materials

Demographic Information

The Family Demographics Form: Parent Form was created for this study. This 16-item survey was completed by parent/guardian participants. The survey asked parent/guardian participants to identify their relationship to the adolescent participant (e.g., biological mother, biological father, step-mother, step-father, grandmother, grandfather). The survey then asked parent/guardian participants to report information pertaining to family structure (who the child resides with), household

income, parent/guardian ages and ethnicities, family involvement with the law, and child’s academic history.

The Family Demographics Form: Adolescent Form was created for this study. This 10-item survey was completed by adolescent participants. The survey asked adolescent participants to report information about their age, schooling, ethnicity, current living situation (who the child resides with), and legal and mental health histories.

Adolescent Socio-Emotional Functioning

The Youth Self-Report for Ages 11–18 (YSR/11–18) (Achenbach and Rescorla 2001) was used to assess problem areas related to internalizing and externalizing disorders generally, ADHD, conduct disorder, social problems, oppositional defiant disorder, anxiety, and depression. Adolescents rate the degree that each prompt currently applies to them, or has applied to them within the past six months, using a 3-point Likert-scale (“Not True,” “Somewhat or Sometimes True,” and “Very True or Often True”). Items on the CBCL and YSR/6–18 were developed based upon data obtained from comprehensive literature reviews, consultations with professionals in the fields of mental health and special education, and initial testing rounds with children, guardians, and teachers.

Trauma

The University of California Post-Traumatic Stress Disorder (UCLA PTSD) (Steinberg et al. 2004) Index was used to assess components of trauma. This included each diagnostic criteria of PTSD, as well as indices for severity, frequency, and overall full or partial diagnosis. The Adolescent Version presently administered consists of 22 questions. It is a self-report inventory, and includes both lifetime-prevalence traumatic incidences and the presence of symptoms of trauma occurring over the last month on a 4-point scale ranging from “0 none” to 4 most”.

Data Analyses

All analyses were conducted using SPSS 16.0 for Windows. First, responses to scales contained in the YSR/11–18 were used to determine the presence of clinically significant symptoms. Child clinical cut-off scores as outlined in the Manual for the ASEBA School-Age Forms & Profiles (Achenbach and Rescorla 2001) were used to calculate the presence of clinically significant symptoms. Second, after the cut-off scores had been determined for each subscale on the YSR/11–18, descriptive statistics were calculated in order to determine frequencies and percentages of specific emotional and behavioral problems in court-involved adolescents. Following this, a one-sample chi-square test was conducted to assess

whether court-involved adolescents reported fewer, equivalent or more psychological problems than general population youth. As the number of participants with any given disorder were at or above five, a chi-square analysis was considered appropriate (McHugh 2013).

To better identify the relationship between demographic factors and psychological symptoms/trauma as well as explore trauma in relation to psychological distress, Pearson product-moment correlations were examined. Following this, to examine the relationships between demographic and trauma as independent variables and mental health symptoms as dependent variables, multivariate general linear modeling (GLM) was used to conduct multivariate analyses of variance. A modified GLM was used to conduct multiple regression analyses on the continuous independent variables, such as number of traumas reported. Cross-tab likelihood ratio analyses were used for those pairings in which both the independent and dependent variable were binary, such as presence or absence of a given trauma diagnostic criteria in relation to the presence or absence of a given disorder. Stepwise binary logistic regression was used to examine the four diagnostic criteria in relation to alcohol abuse. Finally, components of trauma and psychopathology in the present sample were compared to national averages. A p value of less than .05 was established for significance for all analyses. As with chi-square analyses, the use of crosstabs is considered highly appropriate for sample sizes.

Results

Psychopathology Relationships

As compared to nationally-representative female-specific values collected during the development of the YSR (Achenbach and Rescorla 2001), adolescents in the present sample demonstrated significantly higher rates of PTSD ($t(34) = 2.655, p = .01$). Additional significance was found in conduct disorder ($t(34) = 3.326, p < .01$), oppositional defiant disorder ($t(34) = 3.856, p < .0001$), externalizing disorders ($t(34) = 2.410, p < .05$) and ADHD ($t(34) = 2.563, p < .05$). Though this is not meant to provide a representative sample of forensic settings in general, the findings are taken to relate to the hypotheses that forensic adolescent females will have significantly greater levels of psychopathology than adolescent female community samples. Significant differences were not identified in internalizing disorders, depression or anxiety.

As demonstrated in Table 1, age of first law-breaking was inversely related to the presence of conduct disorder, externalizing disorders, and the presence of at least one diagnosis in both correlations and a chi-square analysis. Current age also negatively related to externalizing disorders and presence of at least one diagnosis, although given the adolescent sample,

current age may functionally equate to age of legal onset. The presence of a family member with a criminal history was associated with CD, ODD, and externalizing behaviors. Therapy was positively related to externalizing in a chi-square ($LR = 4.88, p < .05$), with near-significance for both internalizing disorders and anxiety. Neither living situation nor zip code-based income estimates showed significant relationships with psychopathology. Externalizing disorders demonstrated the strongest overall relationships with demographic variables, with relations including current age ($r = -.43, p < .05$), age of lawbreaking ($r = -.50, p < .05$) and family legal involvement ($r = .54, p < .05$).

Numerous aspects of trauma related significantly to psychopathology. Both DSM IV-TR criterion A (presence of a trauma) and criterion B (intrusive recollection) significantly related to conduct disorder and depression, while criterion B was the only PTSD criterion to show a significant relationship with externalizing disorders ($r = .36, p < .05$). Criterion C (avoidant/numbing) was associated with both the presence of one diagnosis and depression, while criterion D (hyper arousal) with only the presence of at least one diagnosis ($r = .37, p < .05$). The combined presence of either full or partial PTSD showed nearly identical correlates with PTSD severity, in that both significantly related to conduct disorder, externalizing disorders, anxiety, depression, and the presence of at least one diagnosis. The only discrepancy between full PTSD and either full or partial PTSD was that the latter related to externalizing disorders ($r = .39, p < .05$) while full alone did not.

The number of traumas demonstrated the highest number of significant relationships, significantly related to all forms of psychopathology presently measured in both correlation and chi-square except for internalizing disorders.

Background and Trauma

Trauma showed a significant relationship with several demographic variables. The presence of at least one family member with a criminal history demonstrated both correlational and chi-square significance with Criteria B, the number of traumas, and the severity of PTSD. Alcohol abuse significantly related to both Criteria A and the presence of PTSD. Mixed relationships were shown between the age at first criminal involvement and living situation with dimensions of trauma, with relationships demonstrating significance either in correlation or chi-square but not in tandem. A strong relationship was found between the number of traumas and family involvement in law-breaking ($r = .64, p < .01$).

Trauma and Behavioral Functioning

The number of traumas experienced negatively related to only sports participation ($r = -.41, p < .05$). Partial PTSD

Table 1 YSR: correlations: regressions/likelihood ratio crosstabs (r-value: beta/LR value)

	Conduct Disorder		ODD		Externalizing		Internalizing		Anxiety		Depression		ADHD		1 Diag.	
DEM. GLM																
Age	-.25	-.11	-.22	-.10	-.43*	-.19**	.02	.01	-.08	-.03	.00	.00	-.28	-.12	-.43*	-.21*
ZIncome	-.11	-.00	-.01	-.00	.02	.00	-.14	-.00	.02	.00	.02	.00	-.06	.00	.02	.00
Age 1stLaw	-.39*	-.14*	-.22	-.09	-.50*	-.18**	.12	.02	-.13	-.04	-.19	-.05	-.33	-.11 ^A	-.46*	-.18**
Living_Sit	.08	-.82	.11	.55	.15	-.73	-.22	.00	-.15	.09	-.26	.00	.01	.27	.29	-.36
DEM. CT																
Fam_law	.44*	5.81*	.38*	4.48*	.54*	8.76**	.13	.46	.11	.39	.31	2.69	.28	2.37	.31	3.21
Therapy	.18	3.27	.22	5.01*	.23	4.88*	.20	3.73 ^A	.21	3.70 ^A	.08	.84	.13	1.94	.14	3.34
TRAU. GLM																
#traumas	.37*	.06*	.36*	.06*	.51*	.09**	.30	.03	.34*	.05*	.53	.07**	.38*	.06*	.41*	.08*
PTSD sev.	.46*	.02**	.18	.01	.36*	.01*	.25	.00	.41*	.01*	.55*	.01**	.22	.01	.53*	.02**
TRAU. CT																
PTSD_A	.40*	5.81*	.14	.70	.27	2.62	.25	3.02	.26	2.43	.42*	8.11**	.15	.81	.32	3.61
PTSD_B	.36*	4.83*	.22	1.72	.36*	4.83*	.24	2.77	.23	2.03	.40*	7.44**	.12	.51	.37*	4.92*
PTSD_C	.31	3.38	.18	1.17	.31	3.38	.27	3.28	.28	2.88	.45*	8.83**	.32	3.67	.38*	5.26*
PTSD_D	.11	.41	.22	1.72	.11	.41	.24	2.77	.07	.17	.23	2.03	-.02	.01	.37*	4.92*
PTSD full	.44*	6.44*	.08	.20	.30	3.00	.39*	5.32*	.47*	6.85**	.65*	14.85**	.11	.39	.45*	8.11**
PTSD eith.	.52*	9.55**	.27	2.54	.39*	5.25*	.30	3.85 ^A	.33	3.92*	.50*	10.46**	.25	2.15	.52*	10.05**

negatively related to both hobbies and doing things alone, suggesting individuals who meet partial criteria for PTSD prefer unstructured group activities. Full PTSD related positively to repeating a grade, while either full or partial related negatively to organizational participation and positively to repeating a grade. PTSD showed a strong relationship to repeating a grade ($r = .47, p < .01$).

Substance and Alcohol Abuse

A significant relationship between trauma and alcohol was identified with a notable relation between PTSD criterion A (experience of a trauma) and alcohol abuse ($r = .44, p < .01$) with significance also demonstrated by full ($r = .39, p < .05$) or either full/partial ($r = .43, p < .05$) PTSD. No significant relationship was observed between substance abuse and any indicator of trauma or psychopathology. The only other mental health diagnosis to demonstrate a significant relationship with alcohol abuse was conduct disorder ($r = .39, p < .01$).

Discussion

Age of first criminal behavior and family legal history demonstrated the most robust relationships with both trauma and psychopathology, while therapy showed modest relations with psychopathology and living situation related to trauma. This is consistent with literature, which has found that an earlier age of onset is associated with such correlates as greater severity, worse prognosis, higher comorbidity in conditions such as

alcohol abuse (Johnson et al. 2000) and various other forms of psychological distress (Goodwin and Hamilton 2002). The association of age of law breaking with psychopathology provides support for the conceptualization that law-breaking (particularly alcohol abuse and related offenses) may represent an attempt to cope for those adolescents who may not have yet learned healthy coping mechanisms. While the finding that family criminal involvement predicts psychopathology and criminal involvement in youth has previously been found (Dallaire 2007; Rodríguez et al. 2011), the present study extends these findings by investigating the effects on individuals still in adolescence rather than as adults recounting adolescent troubles. This is an important contribution as it allows for a better clarification of the progression of criminal involvement, such as from underage alcohol/substance use to other offenses, and the role of trauma history in behavioral and emotional outcomes.

Consistent with hypotheses, all components of trauma examined in the present study significantly related to psychopathology. However, individual features of PTSD such as the presence of a trauma were associated with fewer diagnoses than the combined presence of full or partial PTSD, which related to nearly all present diagnoses. The relationship of PTSD to various forms of psychopathology including externalizing disorders, depression and conduct disorder are consistent with expectations, and lend support to the conceptualization of trauma as an underlying factor in the development of mental health difficulties and corresponding acting-out behavior.

The fact that the quantity of traumatic events showed a broader relationship with mental health diagnoses than any

other component of trauma supports the hypothesis that the number of traumas in particular would be associated with increased psychopathology. This finding lends support to the sensitization model of trauma, which posits that additional adverse events may more easily trigger a resurgence of mental health difficulties in those with a history of psychological difficulties than in those without (Johnsen et al. 2002). It is possible, then, that the children in the present sample with pediatric trauma may be less equipped to deal with present adversity in a healthy manner, and may demonstrate resulting difficulties in mental health. Additionally, the number of traumas was the only dimension of trauma presently measured to relate significantly to either ODD or ADHD. It is possible that individuals with a greater number of traumas represent a more severely-traumatized subset for whom the degree of comorbidity is higher. Given the lack of research exploring the sensitization hypothesis rather than the dichotomized presence or absence of PTSD, this finding is considered to be an important contribution to extant literature.

The presence of a trauma did significantly relate to alcohol abuse, as did the presence of PTSD. This is consistent with literature regarding PTSD and alcohol abuse in adolescents (Kilpatrick et al. 2003) and supports the hypothesis that trauma would show a positive relationship with alcohol abuse. Given that alcohol use in adolescents is an illegal behavior, the role of trauma in corresponding alcohol abuse may partially explain the relationship between trauma and adolescent forensic behavior. Specifically, because 60% of the sample were in the juvenile justice system for alcohol possession, notably higher than the second-most frequent crime of theft (22.9%), this substantiates the hypothesis that the presence of adolescents in the juvenile justice system is often a function of maladaptive coping of childhood trauma.

The present sample of forensic adolescent females did demonstrate significantly more psychopathology than non-forensic peers in the areas of PTSD, CD, ODD, externalizing and ADHD, but not internalizing, anxiety or depression. It is possible that adolescents may be more likely to underreport these disorders. Additionally, it is likely that disorders that explicitly include criminal/antisocial behaviors such as conduct disorder and oppositional defiant disorder may be more heavily represented in a forensic population. As those disorders with increased prevalence in this sample were also strongly paired with trauma, these findings support the possibility that children who experience trauma are more likely to struggle with related mental health difficulties and criminal behavior.

Strengths and Limitations

The present study presents a few limitations to consider. The present study chose to use adolescent self-report for trauma, psychopathology and demographics. Although this does limit

the degree to which an objective assessment can be made, it also increases the sensitivity of the instruments as many of the adolescents have not been treated for or otherwise previously disclosed some aspects of trauma and psychopathology. Additionally, the comparatively small sample size does present a limitation to the present findings. As the present study included only adolescent females in a forensic setting, the sample chosen deliberately to explore the possibility of trauma as an underlying factor in psychopathology and criminal behavior necessitated a limitation on the number of available participants.

Numerous strengths are reflected in the present study as well. As was previously mentioned, there is a documented lack of research in the population of female forensic adolescents (Zahn et al. 2008). The present study offers an in-depth examination of background/ demographic factors in adolescent trauma, psychopathology, and behavioral functioning. Many of the present findings, such as the relationship of dimensions of trauma to certain aspects of functioning, represent unique contributions to the literature. Additionally, the examination and support of the sensitization model of trauma (Grasso et al. 2012) holds a number of implications for both research and practice. Because of the comprehensiveness with which the experience and presentation of trauma were assessed, the present study offers valuable knowledge towards understanding the dimensions of trauma in relation to adolescent psychopathology.

Implications

The present study presents a number of implications for continued research and clinical outreach. Results of the study indicate that family criminal history and age of first law-breaking relate to psychopathology. By better identifying children and adolescents with a family history of criminal behavior or early presentation of psychopathology, clinicians can more actively promote treatment and wellbeing prior to institutionalization.

The relationship between therapy and some disorders (internalizing and externalizing) but not others (ADHD, conduct disorder) suggests that perhaps some disorders are more visible or received by mental health practitioners, with clear implications for improving outreach and treatment of disorders not adequately addressed, and it may be the case that these pathologies are also more likely to be identified and treated in a forensic setting. The observed relationship between living situation and trauma suggests that school counselors or other professionals may maintain an awareness of the living situation of students to identify students at an increased risk of trauma and corresponding psychopathology and law-breaking. Additionally, further research may explore the relationship between living situation and trauma with greater clarity to

better understanding the relationship that exists between these factors.

The finding that the number of traumas experienced is the only aspect of trauma presently measured to relate significantly to ODD or ADHD suggests that additional research may benefit from inclusion of this variable rather than relying solely on diagnosis or severity. Despite the ease of the administration of a PTSD diagnostic screening, the present findings suggest that the number of traumas experienced presents a unique set of implications and depth of information not provided simply by the presence of a diagnosis. This finding lends itself to implications for both clinical work and research. In order to provide appropriate treatment for adolescents, it is important to recognize that the number of traumas experienced relates strongly to the development of psychopathology and acting out behaviors.

The present study presents a number of unique findings and builds on previous findings to build implications for research and clinical intervention. For continued research, the present findings suggest additional exploration is warranted in the areas of demographics as predictors of trauma and behavioral functioning, the role of the number of traumas as a correlate of psychopathology, and the relationship between substance use and trauma. Clinically, the results suggest that certain disorders such as depression may not be met with the level of treatment given to more visible behaviors such as externalizing disorders. Additionally, implications are presented for improving treatment by identifying adolescents with certain risk factors such as family history, lack of organizational involvement and living situation for trauma and corresponding psychopathology and criminal behavior. The present article adds to the depth of understanding regarding the relationship between trauma, psychopathology and law-breaking with the contribution of unique findings and increased clarity within these areas.

Compliance with Ethical Standards

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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