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Symptoms of Posttraumatic Stress Disorder in Adolescents With Conduct Disorder: Sex Differences and Onset Patterns

Abstract: Examined sex differences in the rate and symptoms of posttraumatic stress disorder (PTSD), trauma exposure, and onset patterns in youth with conduct disorder (CD). 45 male and 31 female 10–17 yr olds admitted to a clinical facility for severe behavior problems completed the Diagnostic Interview for Children and Adolescents—Revised (DICA-R) to assess the presence of CD and PTSD. Over one-half of CD youth reported exposure to trauma, yet only 17% met criteria for PTSD. PTSD was more frequent in CD girls (28%) than in boys (10%), and girls experienced greater symptom intensity and anhedonia, difficulty feeling love or affection, and disturbance of sleep and concentration. Girls more frequently reported sexual assault, while boys were more likely to report accidents, physical assaults, and witnessing the death of a loved one. Retrospective reports indicated that PTSD tended to develop subsequent to CD. (PsycINFO Database Record (c) 2010 APA, all rights reserved)

Objective: To examine sex differences in the rate and symptoms of posttraumatic stress disorder (PTSD), trauma exposure, and onset patterns in youth with conduct disorder (CD).

Method: Youth admitted to a clinical facility for severe behaviour problems completed the Diagnostic Interview for Children and Adolescents - Revised (DICA-R) to assess the presence of CD and PTSD.

Results: Over one-half of CD youth reported exposure to trauma, yet only 17% met criteria for PTSD. PTSD was more frequent in CD girls (28%) than in boys (%), and girls experienced greater symptom intensity and anhedonia, difficulty feeling love or affection, and disturbance of sleep and concentration. Girls more frequently reported sexual assault, while boys were more likely to report accidents, physical assaults, and witnessing the death of a loved one. Retrospective reports indicated that PTSD tended to develop subsequent to CD.

Conclusions: Exposure to trauma is common among CD youth; however, diagnostic procedures should be adapted for increased sensitivity to PTSD. The development of CD may increase the risk for PTSD, particularly in girls, by exposing youth to situations in which they are traumatized. The role of trauma in CD should be routinely examined by clinicians and warrants further research.

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Key Words: conduct disorder, posttraumatic stress disorder, comorbidity

Investigators have recently focused on the prevalence of posttraumatic stress disorder (PTSD) in adolescents who are involved in criminal and other delinquent activities ([1](#), [2](#)). Studies demonstrate elevated rates of PTSD in delinquent adolescents and young adults, presumably because exposure to trauma potentiates both delinquent behaviour and PTSD. For example, in a study of incarcerated male juvenile offenders, Steiner and others found that over one-half of the participants fulfilled partial (20%) or full (32%) criteria for PTSD ([1](#)). They noted that these rates far exceeded those found in a nonclinical adolescent comparison group. Male juvenile offenders most frequently reported traumatic events involving interfamilial violence (for example, abuse, murder, or serious injury) and exposure to community violence (gang-related activities). In a subsequent study, Cauffman and others found that approximately two-thirds of the incarcerated female juvenile offenders they studied met partial (12%) or full (49%) criteria for PTSD ([2](#)). These rates were significantly higher than those noted for comparable male juvenile offenders. Further, compared with male offenders, female offenders more frequently reported being victims of violent acts (51%; 15% for males) rather than witnesses to such acts (17%; 48% for males).

Although delinquency and conduct disorder (CD) are not interchangeable terms, it is generally agreed that there is substantial overlap. Both CD and PTSD show strong associations with other psychiatric conditions. Although research shows that CD can occur in isolation, it occurs most frequently in conjunction with Axis I disorders, including attention-deficit hyperactivity disorder, depression, anxiety disorders, and substance use disorders ([3-8](#)), and Axis II personality disorders ([9](#)). Researchers have also consistently reported that PTSD is associated with various psychiatric conditions ([10](#)). Axis I disorders that are frequently comorbid with PTSD include depression ([11](#), [12](#)), anxiety disorders ([13](#), [14](#)), substance use disorders ([15](#)), and eating and somatization disorders ([16](#)). Comorbid Axis II disorders including borderline personality disorder, have also been noted ([1](#)). Since CD and PTSD each carry a high level of comorbidity on both Axis I and Axis II, the association between them poses a challenge for researchers and clinicians.

Sex differences in the clinical presentation of PTSD and CD further complicate efforts to understand comorbidity between these disorders. Well-established is the sex difference in the prevalence of CD--while it is predominantly a male disorder ([4](#), [18](#)), it is the second most prevalent psychiatric disorder in girls ([18](#), [19](#)). Some researchers report that CD symptoms differ in boys and girls ([18](#), [20](#)), while others have failed to find such differences ([21](#), [22](#)). Comorbidity of CD with other psychiatric conditions also appears to differ for girls and boys, with girls showing higher levels of comorbidity than boys, particularly with internalizing disorders and substance use disorders ([23](#), Moretti, Lessard, Wiebe & Reebye, unpublished observations).

Sex differences in the presentation of PTSD have also been examined. In a study of survivors of the Buffalo Creek Dam collapse, girls reported more symptoms of distress than did boys ([24](#)). Studies have also found that girls exposed to trauma experience greater difficulties with emotional processing and affective reactivity compared with boys, although it is not certain that the differences persist over time ([24-26](#)). Yet, some studies show that boys are more

symptomatic than girls ([27](#), [28](#)), and others have not found any sex differences in PTSD symptoms ([14](#)).

Although studies of sex differences in the separate presentations of CD and PTSD are far from conclusive, progress is being made. In contrast, very little is known about the sex differences when CD and PTSD occur together. For example, previous research suggests that the rate of PTSD in CD girls is likely higher than that in CD boys ([16](#)). In addition, CD girls may show different PTSD symptoms than boys. Sex differences in the exposure of CD youth to traumatic events associated with PTSD are also relevant. Girls are at higher risk for PTSD when they are exposed to risk factors such as sexual abuse ([16](#)). Finally, it is important to explore sex differences in the developmental path to comorbid PTSD and CD. CD may precede the development of PTSD because engaging in high-risk or delinquent activities places adolescents at risk for exposure to trauma. For example, girls who become involved in delinquent groups may become targets of sexual victimization. Alternatively, exposure to trauma may result in acting-out behaviour that then warrants a diagnosis of CD.

This study investigated the rate of PTSD in a sample of youth diagnosed with CD. We predicted that the comorbidity between CD and PTSD would be significantly elevated in females. Sex differences in PTSD symptoms, exposure to trauma and history of PTSD and CD onset were examined. In addition, this study investigated the types of trauma reported by CD youth who met PTSD criteria versus CD youth who did not.

[Method Participants](#)

The participants were 94 youth consecutively admitted to a provincial public health facility for assessment of severe behavioural problems. Of these 94 adolescents, 18 were excluded at various stages of the assessment process because they refused to participate ($n = 3$), had severe intellectual deficits ($n = 4$), or failed to complete the assessment ($n = 11$). The final sample consisted of 76 youth (45 boys and 31 girls), who ranged in age from 10 to 17 years (mean 14.13 years, SD 1.33) (note 1). The sample was Primarily white (82%), but 12% were First Nations adolescents. Over one-half of the youth were living with their natural parents (62%); the rest were in foster care or a group home (32%), with adoptive parents (3%), or in other care facilities (3%).

The socioeconomic status (SES) of adolescents' families was scored on Hollingshead's 9-step scale for parental occupation ([29](#)), using the higher-status occupation in each household. Most households were identified as low (44%) or middle (47%) class, with only 9% identified as upper-middle or upper class. Intellectual functioning, based on the Wechsler Intelligence Scale for Children (WISC-III), ranged from 70 to 113, with a mean full-scale WISC-III quotient of 90.42 (SD 12.24).

[Measures](#)

The Diagnostic Interview for Children and Adolescents -- Revised Adolescent Version (DICA-R) ([30](#)) was administered to each participant by a psychiatrist or trained research assistant. The DICA ([31](#)) is a semistructured interview that assesses the presence or absence of symptoms

indicative of child and adolescent DSM-III-R disorders. Youth were systematically queried on the frequency, impact, and age of onset of various symptoms. Standard neutral probes were used when needed to help participants recall the age of onset of endorsed problems (for example, "What grade were you in then?" or "Was that before or after event x?") and to determine the clustering of disorders (for example, "Were X, Y, and Z all happening around the same time?"). Good concordance has been found between DICA-generated and clinician-derived diagnoses ($\kappa = 0.75$) ([31](#)).

In this study, 3 broad categories of disorders were assessed: externalizing disorders (that is, conduct, oppositional defiant, and attention-deficit hyperactivity disorders), internalizing disorders (that is, overanxious, separation anxiety, and mood disorders, as well as PTSD), and substance use disorders (that is, abuse of or dependence on alcohol, marijuana, or street drugs). Interrater reliability, estimated by the kappa coefficient based on a subset of 20 cases, was high for all classes of disorders ($\kappa = 0.95$ for externalizing disorders, 0.76 for internalizing disorders, and 0.90 for substance use disorders).

[Procedure](#)

Participants were assessed within 2 weeks of their admission to the facility. The limits of confidentiality were fully explained to them, and informed consent to participate was obtained in writing from the 76 youth and their legal guardians. The participants received a \$20 honorarium for taking part in the study.

[Results Sex Differences in Comorbid PTSD in CD Youth](#)

Comorbidity was estimated based on the rates of current diagnoses for CD and PTSD. Only 17% of the 65 youth diagnosed with CD were also diagnosed with PTSD ($n = 11$), but all youth who met the criteria for PTSD also met the criteria for CD. Of the 25 CD girls in the sample, 7 (28%) also met the criteria for PTSD. In contrast, only 4 (10%) of the 40 CD boys in the sample met the criteria for both disorders ($\chi^2_{1,65} = 3.55, P < 0.06$). Likelihood ratios were calculated for CD and PTSD using Fleiss's guidelines for clinical significance (greater than or equal to 2.5) ([32](#)). For the entire sample, the probability of comorbid PTSD and CD was clinically significant (4.85); however this value was not statistically significant. When girls and boys were analyzed separately, this finding remained clinically, though not statistically, significant for girls (5.27) but not for boys (1.36).

[Sex Differences in PTSD Symptoms](#)

To assess further the sex differences in comorbidity, PTSD symptom patterns for girls and boys who met the criteria for both disorders were examined on several dimensions, including the type, severity, and range of PTSD symptoms endorsed.

Type of Symptom. Table 1 presents the rates of symptoms endorsed by CD girls and boys who met the criteria for PTSD. Girls were more likely than boys to report losing interest in things they used to like, experienced difficulty feeling love or affection, had trouble sleeping, and experienced difficulty concentrating.

Symptom Severity. For each of the 18 symptoms of PTSD, participants indicated the frequency with which it was experienced on a 5-point interval scale (1 = never, 2 = rarely, 3 = sometimes, 4 = quite a bit, 5 = often). A mean level of symptom severity was obtained for each youth who met both CD and PTSD criteria by averaging the frequency with which each PTSD symptom was reported. The average severity of symptoms was significantly higher in girls (mean 4.06, SD 0.50) than in boys (mean 3.28, SD 0.55) ($t_{(9)} = 2.42, P < 0.05$).

Range of Symptoms. The total number of PTSD symptoms endorsed was tabulated for each youth who met criteria for comorbid CD and PTSD. The mean number of PTSD symptoms was slightly greater, though not significantly so, for girls (mean 13.86, SD 2.2) than for boys (mean 11, SD 3.46) ($t_{(9)} = -1.73, ns$).

Types of Traumatic Events

The rate of exposure to traumatic events was high in this sample. Over one-half (56%) of the 65 CD youth reported having experienced a traumatic event, but only 11 adolescents met PTSD criteria. The types of traumatic events reported by CD youth who met PTSD criteria were comparable to those reported by youth who did not. A significant difference was found, however, in the types of traumatic events reported by CD girls and boys, regardless of whether they met PTSD criteria or not. As shown in Table 2, girls were more likely than boys to report being victims of sexual assault (47% versus 0%). In contrast, boys were more likely than girls to report being involved in vehicle accidents (35% versus 0%), near fatal falls from a cliff, tree, or vehicle (20% versus 7%), physical assaults (10% versus 0%), or witnessing the death or attempted suicide of a loved one (0% versus 7%).

Developmental Course

In an attempt to understand the development of sex differences in adolescent comorbid PTSD and CD, onset patterns for girls and boys were investigated separately. Only youth who met criteria for both PTSD and CD were included in the analysis. Age of onset was defined as the earliest age at which the requisite number of symptoms for each disorder was reported to be present. No sex differences were found in the mean ages of onset for PTSD (girls: mean 11.67 years, SD 3.44; boys: mean 12.50 years, SD 2.38) or CD (girls: mean 9.33 years, SD 3.27; boys: mean 11.25 years, SD 2.36). The PTSD symptoms of youth presenting with comorbid CD and PTSD tended to emerge approximately 2 years after the onset of CD. This time lag was slightly greater for CD girls (mean 2.40 years, SD 5.42) than for boys (mean 1.25 years, SD 1.26) ($t_{(7)} = 0.41, ns$).

Discussion

This study examined sex differences in the rate and characteristics of PTSD in CD youth. Based on previous research, it was anticipated that PTSD would be relatively common in CD youth and more frequently present in CD girls than CD boys. Contrary to his prediction, PTSD was present in only a minority of our sample: 17% of the CD youth were also diagnosed with PTSD. Likelihood ratios indicated that youth diagnosed with CD were more than 4 times as likely to be also diagnosed with PTSD than youth not diagnosed with CD. Although this result is clinically significant, it did not reach statistical significance. As predicted, PTSD was more frequently

present in CD girls than boys: over one-quarter (28%) of CD girls were diagnosed with comorbid PTSD. Girls diagnosed with CD were more than 5 times as likely to be also diagnosed with PTSD than non-CD girls, a result that was clinically but not statistically significant. In contrast, only 10% of CD boys met PTSD criteria. CD boys were no more likely to meet criteria for PTSD than were non-CD boys.

Although these results confirm a higher level of PTSD in CD youth than in the general population, the findings show a lower level of comorbidity between PTSD and CD than was expected based on the findings of previous research of PTSD in juvenile offenders (1, 2). The low level of comorbidity between the conditions is evidenced by comparing the overall level of comorbidity found in this study with estimates from other studies, as well as from comparisons for girls and boys separately. The difference between these results and the findings reported for juvenile delinquents may be due to differences in the nature of the sample. Not all CD youth can be considered juvenile delinquents, nor do all juvenile delinquents meet criteria for CD. In addition, participants in studies by Steiner and others (1) and Caffman and others (2) were generally older (13 to 22 years) than the participants in this sample (10 to 17 years).

Finally, differences in diagnostic procedures may have produced higher observed levels of PTSD in the previous research compared with this study. Caffman and others permitted participants to complete the PTSD interview even if they failed to report exposure to a traumatic event that they felt they were reliving (2). If participants recalled such an event as the interview progressed, the symptom was rescored and, depending on the nature of their responses to probes about other symptoms, a diagnosis of PTSD could be made. Caffman and others note that this was necessary because juvenile offenders are well known to "forget" or avoid discussion of traumatic experience (2). Our impressions during diagnostic interviewing for PTSD were similar; therefore, our subsequent research emulates Caffman's procedures.

Like Caffman and others (2), trauma was found to be a common experience in CD youth. Over one-half (56%) of all CD youth reported exposure to a trauma. CD girls were more likely to report exposure to sexual assault, whereas CD boys were more likely to report exposure to vehicle accidents, dangerous falls, physical assaults, and witnessing the death or attempted suicide of a loved one. These results are consistent with previous findings that link exposure to sexual abuse and victimization to the development of PTSD in females (15, 16, 33). Similarly, the greater involvement of boys in risk-taking activities and exposure to violent acts is consistent with Steiner and others' findings in a juvenile delinquent sample (1). In combination with the current results showing that PTSD develops subsequent to CD, this finding suggests that boys and girls with CD may become involved in different types of antisocial behaviours that place them at risk. For example, boys may become more involved in perpetrating aggressive acts, and girls may become more involved in situations that place them at risk for sexual exploitation. In other words, the paths from CD to PTSD may be sex-specific.

Sex differences were also evident in the type of PTSD symptoms reported by girls and boys. Girls were more likely to report loss of interest in things that they used to like, experiencing difficulty feeling love or affection, having trouble sleeping, and experiencing difficulties concentrating. While the average frequency or severity of symptoms was significantly higher in girls than boys, the total number of symptoms was not significantly different. Again, these

results are consistent with those of Shannon and others, who noted that girls had greater difficulty with emotional processing and affective reactivity than boys (25). The preoccupation of girls with the emotional consequences of trauma may prolong the course of PTSD. In contrast boys may distract themselves from their emotional distress, and this may act as a buffer, at least in the short term, against the impact of trauma.

Finally, this study provides preliminary results on the developmental sequence of CD and PTSD: when PTSD develops in CD youth, it emerges approximately 2 years after the onset of CD. This time lag was only slightly greater for girls than boys in this sample. As previously noted, these results suggest that lifestyle factors frequently accompanying CD are likely to increase exposure to trauma, and thus result in the emergence of PTSD. This is particularly true for CD girls. However, this does not imply that trauma exposure is restricted to the period following the development of CD.

Research suggests that youth who develop CD are exposed to trauma in early development (for example, physical abuse or family violence). Once they develop CD, however, their exposure to traumatic events increases and their capacity to cope with these events decreases. Further research is required to assess the specific and cumulative effects of traumatic events on the development of CD and PTSD.

This study suggests that CD girls are more likely than CD boys to experience comorbid PTSD. This may be related to sex differences in exposure to types of traumatic events; for example, sexual assault was more often experienced by girls. In addition, the type of symptoms endorsed by girls may account for more frequent diagnosis of PTSD. In coping with traumatic experiences, girls may be more likely than boys to focus on the event, thereby losing interest in other activities and people and having trouble sleeping and concentrating.

Our results have several implications for treatment. First, when CD is the primary diagnosis, the presence of PTSD should be routinely assessed. The ruminative symptoms that are frequently present in girls with comorbid PTSD and CD may be diminished by interventions that assist them in developing more adaptive coping strategies. In contrast, boys may minimize the impact of traumatic events, and this may have negative repercussions in the longer term.

Some caution is warranted in extending these results. First, the sample consisted of adolescents diagnosed with CD. According to their family histories, most of these adolescents had been exposed to or had witnessed violence, physical abuse, or sexual trauma. Despite these experiences, relatively few adolescents reported exposure to traumatic events during the structured interview. This may be due to the braudo frequently displayed by CD youth or to the limitations of the interview in exploring peritraumatic events.

Because CD youth typically are exposed to chronic abuse and family violence, they may simply fail to identify traumatic events as such. In their lives, these events are commonplace. Even if such events are not identified as traumatic, they can nonetheless produce significant posttraumatic pathology. Future investigation of the impact of trauma in CD youth would thus benefit from adopting assessment techniques that are sensitive to this response bias. For example, observational measures or alterations to diagnostic interview procedures should be considered. In addition, it

would be advantageous for researchers to examine the impact of exposure to single versus multiple traumas to assess whether traumas that involve attachment-related issues (or example, physical or sexual assault by parent) are more damaging than those that are unrelated to interpersonal relationships (for example, natural disasters).

This study provides a preliminary examination of the expression of PTSD in CD youth. Our finding that PTSD develops subsequent to CD warrants further exploration. Specifically, it would be advantageous to examine which symptoms of each disorder develop over time and how these symptoms increase the risk for both disorders. Some symptoms may be more significant in increasing risk than are others. Both the number of symptoms and the nature of those symptoms need further examination. Future studies could also examine whether symptom clusters have specific consequences for the developmental course of both disorders.

Clinical Implications

- When conduct disorder (CD) is the primary diagnosis, the presence of posttraumatic stress disorder (PTSD) should be routinely assessed. This is particularly important for girls with CD.
- The ruminative symptoms that are frequently present in girls with comorbid PTSD and CD may be diminished by interventions that assist them in developing more adaptive coping strategies.
- Boys may minimize the impact of traumatic events, and this may have negative repercussions in the longer term.

Limitations

- Despite family histories indicating trauma or abuse, relatively few adolescents reported exposure to traumatic events during the structured interview. This response bias may be due to the bravado of participants, definitional differences, or limitations of the interview.
- Some symptoms may be more significant in increasing risk than others (both in frequency and nature).
- Future studies should examine whether symptom clusters have specific consequences for the developmental course of CD and PTSD.

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Note

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[sup1]. Of the 76 youth in our sample, 3 (3.9%) were under 13 years of age at the time of their admission. Since none of these 3 children met PTSD criteria, all 11 children who met the criteria for both CO and PTSD were 13 years or older.

[Table 1. Symptoms endorsed by male and female youth who met criteria for conduct disorder \(CD\) and posttraumatic stress disorder \(PTSD\)](#)

Legend for chart:

- A1=Persistently re-experienced (at least 1)
- A2=Repeated thinking about event
- A3=Repeated dreaming about event
- A4=Felt sense of event recurring
- A5=Upset when reminded of event
- A6=Persistent avoidance (at least 3)
- A7=Avoid reminders of event
- A8=Avoid thinking about event
- A9=Inability to recall aspects of event
- B1=Diminished interest in usual activities[supa]
- B2=Feeling of detachment from others
- B3=Difficulty feeling love or affection[supa]
- B4=Foreshortened sense of future
- B5=Increased arousal (at least 2)
- B6=Trouble sleeping[supa]
- B7=Irritability
- B9=Anger outbursts
- C1=Difficulty concentrating[supa]
- C2=Restless or on edge more
- C3=Easily startled
- C4=Tearful, shaky when reminded of event

PTSD symptoms	Male (n = 4)		Female (n = 7)	
	Number	%	Number	%
A1				
A2	4	100	6	86
A3	3	75	4	57
A4	3	75	5	71
A5	2	50	5	71
A6				
A7	3	75	6	86
A8	3	75	6	86
A9	3	75	6	86
B1	1	25	6	86
B2	3	75	7	100
B3	1	25	5	71
B4	2	50	4	57

B5				
B6	1	25	5	71
B7	2	50	3	43
B9	1	25	4	67
C1	2	50	7	100
C2	3	75	6	86
C3	4	100	7	100
C4	2	50	5	71

[sup]X[sup2] P < 0.05

Table 2. Traumatic events experienced by male and female youth with conduct-disorder

Events	Male		Female	
	Number	%	Number	%
Physical abuse or assault	2	10	0	0
Sexual abuse or assault	0	0	7	47
Vehicle accident	7	35	0	0
Witnessed death or attempted suicide	2	10	1	7
Witnessed abuse	0	0	1	7
Threatened with a weapon	2	10	2	13
Near fatal fall	4	20	1	7
Other (for example, witnessed accident, excessive drinking, chased by a wild animal)	2	10	1	7
Refused to talk about event	1	5	2	13

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