The Natural History of Conduct Disorder Symptoms in Female Inmates: On the Predictive Utility of the Syndrome in Severely Antisocial Women

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This study examined the utility of the conduct disorder (CD) diagnosis in predicting antisocial personality disorder (ASPD) among incarcerated women. It was surprising that most female inmates did not meet standard criteria for ASPD. This was due to a low occurrence of CD symptoms reported before age 15. Cluster analysis of CD symptoms revealed 4 types that characterized women with criminal histories. One type, which was characterized by a history of CD with interpersonal and physical aggression, was more predictive of ASPD than the traditional CD diagnosis. Yet another type, characterized by destruction of property, also represented an improvement over the traditional CD diagnosis. Overall, the results suggest that the types of CD behaviors, rather than their number, may be a more important indicator for identifying women at risk for future antisocial personality pathology.

Antisocial and criminal activities committed by women differ considerably from those committed by men, in both quantity and quality and across the life span (Snyder & Sickmund, 1999; U.S. Department of Justice, 2000). Men exhibit higher rates of both violent crime and overall criminal behavior compared with women (Snyder & Sickmund, 1999). Likewise, the two psychiatric diagnoses most highly associated with criminal and antisocial behavior, conduct disorder (CD) and antisocial personality disorder (ASPD), are also far more prevalent in men (American Psychiatric Association [APA], 1994; Kessler et al., 1994).

Historically, research on female criminality has been a secondary consideration. However, with the recent growth in numbers of female offenders (Snyder & Sickmund, 1999), a new area of research has emerged to investigate the development of antisocial behavior as it relates specifically to women and girls (Fergusson & Horwood, 2002; Keenan, Loeber, & Green, 1999; Moffitt & Caspi, 2001; Odgers & Mor-

etti, 2002; Silverthorn & Frick, 1999). Thus far, few definitive conclusions can be made except that we know relatively little about the psychological causes and course of development for violent, criminal, and other forms of severe antisocial behavior in women.

A primary aim of this study is to clarify the nature of the relation between adolescent CD and later criminal behavior in women. Although there is considerable evidence that adolescent CD is predictive of later criminal behavior in men (Farrington, Loeber, & Van Kammen, 1990; Kratzer & Hodgins, 1997), the relationship between CD and later criminal behavior has not been established in women. The current study examines this issue retrospectively among women with known severe histories of antisocial behavior.

Diagnostic Considerations With Conduct Disorder

The conduct disorder diagnosis as defined in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*; APA, 1994) reflects a repetitive and persistent pattern of violating rules, social norms, and the rights of others. The criteria for CD include four classes of behaviors: (a) *aggressive conduct*, which threatens or causes physical harm toward people or animals; (b) *destructive conduct*, which causes damage or loss to property; (c) *deceitfulness* or *theft*, such as conning, breaking into homes, buildings, or cars, and stealing items of nontrivial value; and (d) *serious violations of rules*, such as breaking curfew before the age of 13, running away from home, and persistent acts of truancy. The *DSM–IV*

also specifies that individuals must evidence three or more of the criterion behaviors to meet the threshold for a diagnosis of conduct disorder.

Boys diagnosed with CD outnumber girls by roughly four to one in nearly all settings (Cohen et al., 1993; Costello et al., 1996; Kratzer & Hodgins, 1997; Newman et al., 1996; Robins & Regier, 1991). Gender differences have also been reported for the specific behavioral symptoms that make up the diagnosis. Physical aggression, such as fighting, stealing, vandalism, and disruptive behavior at school, is more commonly reported for boys, whereas behaviors such as lying, truancy, running away, and prostitution have been more commonly reported for girls with the disorder (APA, 1994; Goldstein, Prescott, & Kendler, 2001).

Because of the preponderance of physical aggression in the criteria and their subsequent application, one could argue that they lend themselves to greater identification of the syndrome in boys. A growing body of research suggests girls are more likely to engage in aggression of a relational rather than a physical form, including prominent use of socially aggressive tactics with peers (e.g., alienation and ostracism; Crick, Casas, & Nelson, 2002; Odgers & Moretti, 2002). The inclusion of relational aggression within definitions of aggressive problem behavior results in the identification of essentially equivalent numbers of aggressive boys and girls (Crick & Grotpeter, 1995). Gender differences raise questions as to whether disparate prevalence rates of CD are the result of true differences in boys' and girls' tendencies toward antisocial activity or whether systematic bias lies in the defining criteria and how they are applied.

At the specific behavioral level, there is evidence that the CD diagnosis is not equivalent across gender. Even boys and girls who have identical behavioral symptoms tend to follow different developmental trajectories. For example, within the entire community-based sample of the Epidemiologic Catchment Area study, 41% of men but only 15% of women who reported running away as youth later met criteria for a diagnosis of ASPD as adults (Robins & Regier, 1991). As running away is one of the most commonly reported criterion symptoms among girls with CD, it is important to consider how the selection of criterion behaviors for the CD diagnosis affects our understanding about the course and the prediction of risk in girls.

Whether or not the diagnosis captures the same phenomenon for boys and girls, it is clear that a diagnosis of CD predicts a range of very severe, negative social and psychological outcomes later on.

Girls with CD are more likely than girls without the diagnosis, as well as boys with CD, to be involved in a violent romantic relationship or to have antisocial partners (Pajer, 1998; Robins, 1991). These girls are also at greater risk for developing other major psychiatric and substance use disorders in adulthood, both when compared with nondisordered girls and when compared with boys with CD (Bardone, Moffitt, & Caspi, 1997; Keenan et al., 1999; Pajer, 1998). CD in girls is associated with higher rates of suicide attempts, psychiatric hospitalizations, drug abuse problems, and criminal convictions in adulthood (Robins, 1986). The list of negative outcomes linked to CD in girls appears almost endless and includes not only other psychiatric disorders but a range of poor educational, occupational, financial, and interpersonal outcomes (Fergusson & Woodward, 2000; Keenan et al., 1999; Robins, 1986).

Criminality and Conduct Disorder

CD is always prominent in discussions about risk factors for criminality. Although it is certainly a risk for juvenile delinquency, it is perhaps more important that CD has been a major predictor of persistence of criminality through adulthood. Among surveys of male inmates, a history of CD in adolescence is one of the few ubiquitous predictors of later criminal behavior. Yet the extent or strength of the relationship between adolescent CD and adult criminality remains to be adequately documented for women and girls (Farrington et al., 1990; Kratzer & Hodgins, 1997).

Furthermore, the most notable psychiatric outcome related to both CD and inmate status is the adult diagnosis of ASPD. Essentially, the diagnosis of ASPD must include evidence of CD prior to age 15 (APA, 1994). However, the taxonomic link between ASPD and CD has no known empirical justification in the study of women. Subsequently, concerns raised regarding the validity of the CD diagnosis for girls may be extended to a diagnosis of ASPD in women. Gender differences in the diagnosis of ASPD may result from absolute differences in levels of aggression and antisocial orientation per se or, again, may reflect a kind of bias in the definitions and applications of the aggressive and antisocial behavioral criteria used to identify cases for diagnosis.

Among men, a strong link exists between ASPD and criminality. Approximately 70% to 88% of male prison inmates also meet criteria for ASPD (Robins & Regier, 1991; Widiger et al., 1996). Some experts have even argued that ASPD is simply a proxy for criminal behavior rather than a true personality dis-

order that describes a coherent and pervasive style of interpersonal and affective functioning (Hare & Hart, 1995). Such criticism notwithstanding, even among prison inmates we see a wide gender difference in the prevalence of ASPD. In a direct gender comparison of inmates in New Zealand, 71% of sentenced male prisoners met criteria for ASPD, whereas only 39% of sentenced women did (Brinded, Mulder, Stevens, Fairley, & Malcolm, 1999). Similarly, among an inmate sample within the United States, Zlotnick (1999) found that only 40% of incarcerated women met *DSM–IV* criteria for ASPD. These data suggest a gap in our understanding both about the relation between CD and ASPD and about potential differences by gender.

Women represent roughly 7% of the total U.S. inmate population, with rates currently rising (U.S. Dept. of Justice, 2000). The psychiatric status of these women has only recently been subjected to close study. Initial reports suggest that incarcerated women are markedly distressed psychologically, more so on average than their male counterparts. Across studies, female inmates report high rates of violent victimization, histories of childhood abuse or neglect, major depression, and posttraumatic stress disorder (Browne, Miller & Maguin, 1999; Hurley & Dunne, 1991; Warren et al., 2002). Yet the role of CD as a definitive marker for future involvement of women with the criminal justice system has not been established.

To resolve some of the ambiguities regarding the diagnostic utility of CD and the developmental course of criminality among women, this study examines the symptoms and diagnosis of CD in a sample of incarcerated women. Our goals are two-fold: (a) to document the patterns of preadult conduct-disordered behavior as reported by women with known maladaptive and criminal outcomes as adults and (b) to test the construct validity of the criterion of adolescent-onset CD in the differential prediction of adult ASPD in women.

Method

Participants

Participants were 261 women incarcerated at a maximum-security prison in Virginia. The women were selected from a sample of 802 eligible inmates who completed an initial screening process. Those inmates represented 80% of the population at the facility during the course of the study. Those who agreed to participate in the initial screening and those who declined were compared on the basis of age, race, offense type, and length of sentence according to data from institutional files. Women who participated in the screening were slightly younger and had more counts of institutional misconduct but otherwise did not differ from nonpartici-pants on the variables of race, offense type, length of sentence, violent criminal offending, or security classifica-tion (see Warren et al., 2002).

The 261 participants making up the current sample were selected from the pool of 802 prescreened inmates on the basis of characteristics of their responses to the Brief Symp-tom Inventory (BSI; Derogatis, 1993) and the Structured Clinical Interview for *DSM–IV* Personality Screening ques-tionnaire (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). The intent of the larger study was to identify approximately 200 participants with at least one of the "dramatic, emotional, or erratic" Cluster B personality disorders identified within the *DSM–IV* (including border-line, narcissistic, histrionic, and ASPD) and 50 participants with no evidence of a Cluster B disorder (APA, 1994, pp. 629–630). These latter women might have had personality disorder diagnoses from either the "odd and eccentric" Cluster A (paranoid, schizoid, or schizotypal personality disorder) or the "anxious and fearful" Cluster C (avoidant, dependent, and obsessive–compulsive personality disorder) or no personality disorder diagnosis at all. During this stage, participants were also excluded from the sample if they scored higher than two standard deviations above the mean of the adult female standardization sample on the Psychoti-cism scale of the BSI. This final screen eliminated an-other 7.8% of the eligible participants and resulted in the 261 women included in the present study.

The participants' demographic characteristics and con-viction history are described in Table 1. The demographic characteristics of the current sample ($N = 261$) were then compared with the total prison population at the time of intake to the study. The sample participants did not differ statistically from the overall prison population on any mea-sured demographic variables, including age, minority status, or educational attainment. However, because the larger study goals involved oversampling for Cluster B personality pathology, the sampling process most likely resulted in a larger number of women with antisocial, borderline, histri-

Table 1

Demographic and Criminal History Characteristics of the Sample

Variable	%
Demographic characteristic	
High school diploma or equivalent	46.6
Marital status—never married	50.6
Minority status	65.9
Mother of children	79.8
Most serious current offense	
Assault	10.3
Drug related	23.8
Fraud	15.3
Murder	21.1
Robbery or theft	21.8
Other	3.8

Note. $N = 261$. Mean age = 33.6 years ($SD = 9.0$).

onic, or narcissistic personality disorders than otherwise be found in the general prison population.

Measures

The women were administered the SCID-II (First et al., 1997) by trained clinical psychology graduate students. It is a semistructured interview providing the diagnostic information for all 10 personality disorders in the *DSM–IV*. The interview includes a question for each criterion listed for the 10 disorders. Responses to these questions are scored to determine whether an individual meets the threshold number of criteria required for a diagnosis. Diagnostic reliability was computed via the intraclass correlation coefficient, which corrects for chance agreement between raters and is therefore a more stringent statistic than percentage of agreement. With strict diagnostic criteria (e.g., present or absent), reliability ranged from .45 to .93. Reliability coefficients were further improved when continuous symptom scores were applied (.78–.90). Among the 10 personality disorder diagnoses, schizoid personality disorder had the lowest reliability, whereas borderline and narcissistic personality disorders had the highest interrater reliabilities.

To diagnose ASPD according to requirements set forth in the *DSM–IV*, the SCID-II interview also includes items to assess a diagnosis of CD prior to age 15. For the purposes of this study, the diagnosis of ASPD, including the CD diagnosis before age 15, is referred to as *full ASPD*. ASPD in women who otherwise meet the adult ASPD criteria but do not meet the criteria for a diagnostic history of CD prior to age 15 is referred to as *adult-onset ASPD*.

Review of institutional, state, and federal records was used to obtain information about each participant's criminal history as well as demographic data regarding age, race, years of education, and family status. History information available from file review included history of convictions, sentence length, sentence start date, and record of institutional misconduct.

Procedure

The Virginia Department of Corrections does not allow payment of inmates for participation in research; however, women were provided with refreshments as an incentive for their participation. For all assessments, participants were escorted from their building of residence to the education building on the compound so that interviews could be completed in a more private setting. Interviews were conducted individually by trained graduate research assistants who were not affiliated with the correctional facility. Participants were assured their responses would be held in privacy from the facility staff. Interviews lasted from 1 hr to 3 hr, depending on the background and history of each woman.

Results

Prevalence of Disorders

The sample prevalence rates of CD and *DSM–IV* personality disorders are shown in Table 2. Despite an overrepresentation of women with Cluster B disorders in the sampling procedure, only about one third of the inmates met criteria for full ASPD. This was because less than half of the women in the sample (39.5%) met criteria for a diagnosis of CD by history before age 15. The majority of women who met criteria for adolescent CD also met criteria for ASPD. It is interesting that nearly half of the sample (47.5%) met criteria for what we identified as adult-onset ASPD (meaning they did not have CD in adolescence but endorsed the adult behavioral criteria of the diagnosis).

Given the sampling strategy to include 200 Cluster B diagnoses, it is not surprising that the majority of women (63.6%) met full criteria for at least one *DSM–IV* diagnosis of personality disorder. Comorbid diagnoses were also quite common, with 36.5% of the women meeting criteria for two or more personality disorders. However, high diagnostic prevalence

Table 2

Prevalence of Antisocial Personality Disorder (ASPD) and the Nine Other DSM–IV Personality Disorders in Women Both With and Without a History of Conduct Disorder (CD)

DSM–IV diagnosis (%)	All (N = 261)	No history of CD (n = 158)	History of CD (n = 103)[a]
Full ASPD	34.1	—[b]	86.4*
Adult-onset ASPD	28.7	47.5*	—
Avoidant	13.8	10.1*	19.4*
Borderline	23.8	13.9*	38.8*
Dependent	4.2	3.8	4.9
Histrionic	3.5	1.9	5.8
Narcissistic	9.2	3.8*	17.5*
Obsessive–compulsive	14.9	15.2	14.6
Paranoid	26.1	14.6*	43.7*
Schizoid	5.0	3.8	6.8
Schizotypal	3.5	2.5	4.9

Note. Values are percentages. *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).
[a] Prevalence of history of CD for the entire sample was 39.5%. [b] By definition, the no history of CD cases do not meet criteria for CD before the age of 15 by history and therefore cannot meet criteria for *DSM–IV* ASPD (designated in the table as full ASPD).
* Chi-square test on the difference between prevalence rates for women with a history of CD and those for women with no history of CD significant at $p < .05$.

rates were not specific to the Cluster B series. After ASPD, paranoid (Cluster A) and borderline (Cluster B) personality disorders were the second and third most prevalent personality disorders, followed next by obsessive–compulsive (Cluster C), avoidant (Cluster C), and narcissistic (Cluster B) personality disorders. Histrionic, dependent, schizotypal, and schizoid personality disorders were each present in less than 5% of the women.

Also shown in Table 2, women with a positive history of CD before age 15 had higher prevalence rates across the other personality disorders compared with women without this history. It is notable that women with a history of CD had statistically and clinically significantly higher rates of avoidant, borderline, narcissistic, and paranoid personality disorders when compared with women without a history of CD.

Conduct Disorder Symptoms

Because prevalence rates for adult personality disorder were differentially related to a positive history of the CD diagnosis, further analysis sought to ascertain the degree to which the number of CD symptoms by history might be related to adult diagnostic status. The mean number of CD symptoms endorsed for the sample as a whole was 2.7 ($SD = 2.9$; range $= 0–13$) out of a potential 15 symptoms listed. The mean number of CD symptoms for women with a diagnosis of full ASPD was 3.7, versus a mean of 0.9 ($SD = 0.8$; range $= 0–2$) among women with adult-onset ASPD. The mean for women with any $DSM–IV$ personality disorder was 3.6 ($SD = 3.2$; range $= 0–13$ symptoms), compared with 1.0 ($SD = 1.3$; range $= 0–7$ symptoms) for women without any

$DSM–IV$ personality disorder, $t(259) = -9.2$, $p < .001$. As shown in Table 3, the mean number of CD symptoms was statistically higher for women who met the $DSM–IV$ criteria for ASPD and also for those who met criteria for borderline, histrionic, narcissistic, and paranoid personality disorders.

Conduct Disorder Symptom Typologies

The rates of endorsement for specific CD symptoms are shown in Table 4. Among women with a positive diagnosis of CD by history, the three most common symptoms endorsed included stealing, initiating physical fights, and lying. A cluster analysis of CD symptom criteria was conducted to identify patterns of adolescent CD behaviors independently of the $DSM–IV$ diagnostic algorithm. The CD symptoms were first aggregated into four composites according to the four types of behavior described in the $DSM–IV$ nomenclature: (a) aggression to people or animals, (b) destruction of property, (c) deceitfulness or theft, and (d) serious violations of rules. The numbers of symptoms endorsed within each of the four composites were summed and then standardized as z scores for inclusion in a K-means cluster analysis (via SPSS). After examination of the loading patterns and replication in three randomized subsamples, a four-cluster solution was determined to be the most statistically and theoretically sound. Women were assigned a single cluster membership according to the mean scores on each of the four symptom composites.

The cluster centers for adolescent CD symptoms are represented graphically in Figure 1. The first and largest cluster ($n = 160$) was labeled *no CD*, as these inmates did not, on average, endorse a significant number of the CD symptoms and had lower than average scores on all four of the symptom compos-

Table 3

Mean Number of Conduct Disorder Symptoms by History According to Presence or Absence of DSM–IV Adult Personality Disorder Diagnosis

Personality disorder	Diagnosis absent		Diagnosis present		$t(259)$	p
	M	SD	M	SD		
Antisocial (full criteria)	0.96	1.4	3.67	3.2	7.89	<.0001
Avoidant	2.53	2.9	3.50	2.9	1.86	.08
Borderline	2.14	2.7	4.32	3.3	5.27	<.0001
Dependent	2.66	3.0	2.73	2.8	0.08	ns
Histrionic	2.54	2.8	6.22	4.5	3.73	<.0001
Narcissistic	2.38	2.7	5.45	3.8	5.04	<.0001
Obsessive–compulsive	2.66	3.0	2.67	3.0	0.01	ns
Paranoid	2.06	2.6	4.38	3.3	5.88	<.0001
Schizoid	2.62	3.0	3.78	2.9	1.14	ns
Schizotypal	2.64	3.0	3.15	3.1	0.61	ns

Note. There are 15 possible symptom criteria for conduct disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM–IV*).

Table 4
Percentage of Women Reporting Specific DSM–IV Conduct Disorder (CD) Criterion Symptoms

Symptom	Total sample (*n* = 261)	No history of CD (*n* = 158)	History of CD (*n* = 103)
Aggression toward people and animals			
Bullies or threatens others	24.9	4.4	56.3
Initiates physical fights	27.2	5.7	60.2
Used a weapon	16.5	1.9	38.8
Physically cruel to people	9.6	0.0	24.3
Physically cruel to animals	8.4	3.2	16.5
Stolen while confronting victim	7.7	0.0	19.4
Forced someone into sexual activity	1.2	0.0	2.9
Destruction of property			
Deliberate fire setting	4.6	2.5	7.8
Deliberate destruction of others' property	16.5	2.5	37.9
Deceitfulness or theft			
Broken into house or car	10.3	2.5	22.3
Often lies to obtain goods or favors	28.7	10.1	57.3
Stolen items of value without confronting victim	36.8	15.8	68.9
Serious violations of rules			
Stays out at night, beginning before age 13	30.3	14.6	54.4
Has run away from parental home overnight	19.2	1.9	45.6
Often truant from school, beginning before age 13	24.5	5.7	53.4

Note. "Forced someone into sexual activity" is the only criterion for which prevalence rates are not significantly different from the sample base rate. For all other criteria, cases with the CD diagnosis have a greater prevalence of symptom endorsement (chi-square test significant at $p < .05$). *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).

ites. The second cluster, named *moderate CD* (*n* = 53), consisted of women with higher than average scores on the dimensions of deceitfulness or theft and serious violations of rules as well as mild elevations on the dimension involving aggression to people or animals compared with the rest of the sample. The mean number of CD symptom criteria endorsed by members of this moderate CD cluster was 5.0 (*SD* = 1.9) out of the total possible 15 criteria listed. The third cluster was named *destructive* (*n* = 24) and consisted of women who only reported elevated levels of symptoms on the destruction of property dimension but no elevations on other dimensions. The *destructive* cluster had a mean of 3.6 (*SD* = 1.5) CD
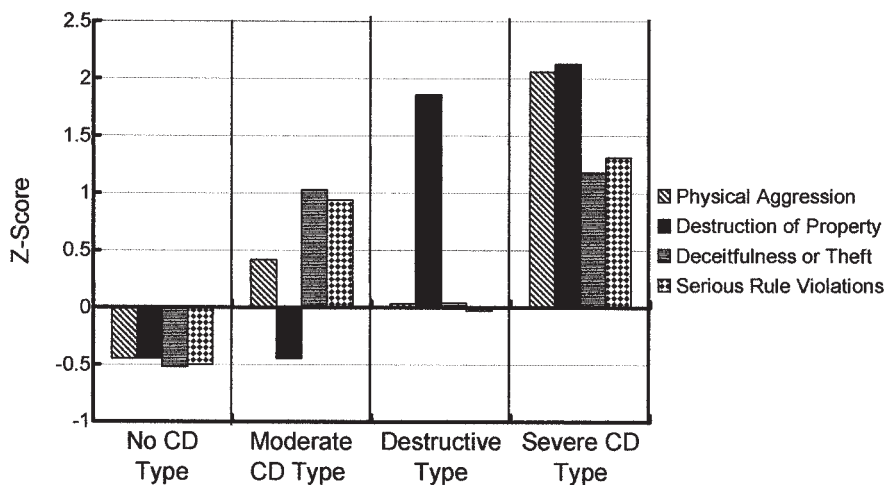

Figure 1. The four cluster types as profiles of mean scores on the four *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) conduct disorder (CD) symptom composites.

criteria endorsed overall. The fourth and final cluster was named *severe CD* (*n* = 24) and consisted of women with highly elevated scores on all four dimensions of the CD criteria. The overall number of CD criteria endorsed by the *severe CD* cluster was 9.1 (*SD* = 1.8).

Predictive Validity of CD and Cluster Membership

Finally, sensitivity, specificity, and accuracy statistics were computed to test the predictive utility of the *DSM–IV* diagnosis of CD as well as the four cluster types that emerged empirically in this sample. Diagnostic accuracy represents a measure of correctly identified cases and correctly identified noncases out of all possible diagnostic determinations made in a sample. The cluster types were tested to see whether they would improve on the prediction of a diagnosis of adult full ASPD when compared with the conventional application of the *DSM–IV* CD diagnosis.

Table 5 contains information concerning the predictive validity of the *DSM-IV* diagnosis of *CD* and of the four cluster types for classifying cases of full ASPD in women. A positive *DSM–IV* diagnosis of CD was accurate 66% of the time in classifying cases of ASPD diagnosis. This accuracy estimate of CD reflects a high specificity (86%) in correctly identifying the noncases of ASPD but only a modest sensitivity threshold of 54% in identifying true positive cases of ASPD.

Because membership in the *no-CD* cluster type was characterized by low rates of CD symptom endorsement, this cluster was expected to have low accuracy in the prediction of adult antisocial person-

ality pathology. As such, the *no-CD* cluster displayed very low accuracy (6%–9%) for classifying cases of *DSM–IV* diagnoses of both CD and ASPD.

The three remaining cluster types, however, were more predictive of adult antisocial personality. Membership within the *moderate CD* cluster resulted in the correct classification of 81% of the women with respect to CD and 80% with respect to ASPD. The *moderate CD* cluster had 100% specificity for CD in that it identified correctly all inmates who also met the conventional *DSM–IV* diagnosis of CD by history. Membership in this *moderate CD* cluster was the most accurate at classifying cases of both CD and ASPD. Membership within the *destructive* cluster resulted in the correct classification of 64% of women with respect to a conventional *DSM–IV* CD diagnosis and 68% with respect to ASPD. Finally, membership within the *severe CD* cluster resulted in the correct classification of 70% of the women with respect to CD and 74% with respect to ASPD. The *severe CD* cluster also had 100% specificity for CD, identifying only inmates with the conventional *DSM–IV* diagnosis of CD, but it was notably less accurate than the *moderate CD* cluster for adult personality pathology overall. Although none of the methods was more than a modestly sensitive predictor of ASPD, these three empirical clusters each improved over the *DSM–IV* diagnosis of CD in terms of diagnostic specificity and diagnostic accuracy for adult ASPD in women.

Discussion

This study highlights several key observations regarding the development of antisocial behavior in

Table 5

Accuracy Statistics for the Prediction of DSM–IV Antisocial Personality Disorder Using the DSM–IV Conduct Disorder (CD) Diagnosis and the Symptom Cluster Types

Diagnosis and cluster	DSM–IV CD			DSM–IV antisocial personality		
	Sensitivity	Specificity	Accuracy	Sensitivity	Specificity	Accuracy
DSM–IV diagnosis						
CD				.53	.86	.66
Cluster type						
No CD	.09	.04	.06	.07	.11	.09
Moderate CD	.52	1.00	.81	.51	**.95**	**.80**
Destructive	.17	.96	.64	.17	**.95**	**.68**
Severe CD	.23	1.00	.70	.26	**.99**	**.74**

Note. Accuracy statistics were calculated as follows: Sensitivity (the proportion of cases correctly classified out of the total number of cases identified) = true positives/(true positives + false negatives); specificity (the proportion of noncases correctly classified out of the total number of noncases identified) = true negatives/(true negatives + false positives); accuracy (the proportion of correctly classified cases and noncases out of all cases categorized) = (true positives + true negatives)/total cases. Cases in boldface represent specificity and accuracy statistics for the CD cluster types that were higher than those computed for the *DSM–IV* diagnosis of CD. *DSM–IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed.).

women. It is surprising that, among a sample of female inmates with known criminal behavior, the majority did not meet criteria for full ASPD. The low prevalence of full ASPD could be directly linked to the low prevalence of a history of the diagnosis of CD (39.5%) within the sample, which is a required criterion to make a diagnosis of ASPD in the *DSM–IV*. This finding is in contrast to the typical finding that approximately two thirds of men in prison meet criteria for the diagnosis of ASPD (Robins & Regier, 1991; Widiger et al., 1996).

In addition, further analysis of CD symptoms revealed that the patterns of behavioral symptoms may be more important to the prediction of ASPD than the presence or absence of a diagnosis. For example, the *destructive type*, which was characterized by the relative absence of most CD symptoms (except the destruction of property or fire setting during adolescence), still exhibited an improved accuracy over the traditional CD diagnosis in the prediction of adult ASPD. Such findings raise several important issues relating to the etiology of antisocial behavior among women.

Revisiting the Link Between Conduct Disorder and Antisocial Personality Disorder

The taxonomic link between the diagnoses of CD and ASPD that exists for men may not be the most effective characterization of antisocial behavior in women. Several theorists have hypothesized that antisocial women are like their male counterparts in that they exhibit a continuous pattern of aggressive and antisocial behavior that begins early in childhood and lasts through adulthood (Moffitt, Caspi, Rutter, & Silva, 2001; Silverthorn & Frick, 1999). Yet in our investigation of women with known severe antisocial adult outcomes, only about one third had a history that suggested this form of developmental continuity in behavior. Instead, our findings suggest that women at risk for later ASPD cannot be identified readily through the current CD diagnosis. In fact, a full third of the women in the sample failed to meet a *DSM–IV* diagnosis of either CD or ASPD, which is somewhat surprising in light of their status as inmates at a maximum-security prison.

CD among male inmates has been well recognized as a homotypic and continuous behavioral style in its manifestations from juvenile to adult forms of criminality; however, this pattern is less distinct in female offenders. Rates of CD were relatively low in this large inmate sample of women, for whom high rates of adult antisocial behavior and criminality are estab-

lished. Ideally, to improve on this form of diagnostic prediction, it is important to identify new CD symptom criteria through the prospective study of the childhood and adolescent behaviors of women who eventually became antisocial. In light of the difficulty associated with prospectively identifying women with such extreme outcomes, however, we might also wish to reconsider our goals for the diagnosis of CD.

Undoubtedly, continued study is required to understand the different outcomes girls with CD will face in adulthood as well as how these outcomes may be prevented. However, because so many antisocial women do not clearly exhibit signs of CD in adolescence, we may also need to develop more gender-specific theories to account for the emergence of criminal behavior. As a starting point, we began by exploring which existing constellations of CD symptoms were most predictive of later ASPD in women. Analysis of specific patterns of behavior did imply that some CD behaviors could be relatively more informative in the prediction of adult outcomes, at least in this extreme spectrum of the population.

The *severe CD* type, although quite small in number, reported a unique history that corresponded most closely to what has been described in men as the *life-course persistent* pathway of antisocial behavior (Moffitt, 1993). The group represented the clearest analogy to the subset of men who engage in a developmentally continuous and escalating pattern of antisocial behavior across the life span. However, this group was only about 9% of our sample of incarcerated, maximum-security prison inmates and cannot account for the vast majority of women who have been judged antisocial by current legal standards.

Similarly, a broader variety of antisocial behaviors, such as the pattern reported for our *moderate CD* type, even in the absence of high levels of physical aggression or any property destruction, could be useful as a predictor of later antisocial personality in women. Although all the women in the *moderate CD* cluster also met diagnosis for CD, it is notable that their histories were characterized by a span of just a few behaviors, but at least one behavior each in three of the four symptom dimensions of the *DSM–IV*, and that this pattern was also a very accurate predictor of ASPD.

In contrast, women in our *destructive type* reported a very specific pattern of behavior that was all but limited to property destruction or fire setting. This type of behavior was highly specific as a predictive test of ASPD in adulthood, despite the fact that not all women in this cluster met *DSM–IV* criteria for CD. This finding suggests that the presence of unusual destructive behavior in girls, even in the absence of

other antisocial activities, may be a pathognomic sign of later and persistent personality pathology.

Finally, the high rate of comorbid personality disorders within our sample suggests the need to explore the relationship between CD and alternative outcomes for women. CD was a significant predictor of borderline, histrionic, narcissistic, and paranoid personality disorders in addition to the expected ASPD. This particular finding reinforces the idea that childhood or adolescent CD in girls probably serves as an important but more general marker of severe adult psychopathology rather than a specific predictor for antisocial personality.

Study Limitations

An important limitation of the current study involves the use of retrospective reporting of CD behavior. It is unclear how retrospective recollections might have influenced reporting of symptoms, because women were simultaneously reporting on current personality as well as past CD symptoms. Most likely, concurrent reporting led to a tendency toward overstating the association between personality pathology and CD in this sample. Future study of the behavior and personality characteristics of inmate samples should ideally involve prospective data collection or at least separate data collection points for retrospective versus current symptom histories and, of course, the use of multiple data sources. Nor do we know the extent to which being housed in a maximum-security correctional facility influenced (exaggerated) symptom reports.

Another limitation relates to the generalizability of the empirically derived CD typology. The validity of any typology requires replication in additional samples. It is important to note that, because all women in this sample were incarcerated, our typology excludes any women who might have engaged in conduct-disordered behavior in adolescence but then desisted in adulthood. The inclusion of nonincarcerated women with a history of CD may result in more identified types. Furthermore, although we know that CD was not a particularly sensitive test of ASPD in an incarcerated sample, we do not know how sensitive a test it would be in a community-based analysis. Because the women in this sample had known severe criminal behavior, in fact, the relationship between CD and ASPD might have been overestimated.

Diagnostic and Clinical Implications

We conclude from this study that women who exhibit criminal or severe antisocial behavior in adulthood

have come about this outcome from a rather different developmental pathway than that more typically characterized by incarcerated men. Girls who meet the diagnosis of CD will likely exhibit a variety of serious negative adult outcomes. However, a large number of women who become antisocial as adults have never exhibited the diagnosis or even many symptoms of CD in their youth. The process is quite different from that often cited for men; namely, most boys with CD do not go on to suffer extreme negative outcomes in adulthood, neither criminality nor ASPD, but it is the case that nearly all criminally antisocial men exhibited signs of CD in their youth.

In women, the adolescent diagnosis of CD is not simply tantamount to risk for a single disorder (ASPD) or even the comorbid clustering of two specific personality disorders in adulthood. Nor is a history of CD a particularly sensitive marker of ASPD in women with established criminality. Future research efforts need to address the etiology of CD through study of two particular populations—girls with CD and women with known antisocial behavior—and from a developmental perspective, with the understanding that these two groups do not always overlap. Finally, we suggest that identification of specific behaviors or behavioral tendencies, rather than the use of a monolithic CD diagnosis, be considered as a potentially more useful method to further our understanding of the development of antisocial behavior in women.

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