
Clinical Syndromes, Personality Disorders, and Neurocognitive Differences in Male and Female Inmates

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This study examined clinical syndromes, personality disorders, and neurocognitive problems in adult male ($n=523$) and female inmates ($n=523$) and a sample of unincarcerated adult women ($n=523$). Inmates were administered the Coolidge Correctional Inventory (CCI), and the unincarcerated sample was given an identical test, the Coolidge Axis II Inventory. Although there were significant differences between the two inmate groups on a majority of the 32 CCI scales, only two scales achieved a medium effect size. The two inmate groups were found to be highly similar in a comparison of ranked personality disorder prevalence rates. Consistent with previous literature, male inmates had a significantly higher prevalence of antisocial personality disorder than female inmates (24% vs. 18%). Female inmates had double the prevalence of male inmates on the borderline and histrionic personality disorder scales. Female inmates also reported significantly more general neuropsychological dysfunction, specifically memory problems and neurosomatic symptoms, than male inmates. Female inmates also reported significantly higher levels of anxiety, depression, symptoms of schizophrenia, post-traumatic stress disorder, attention deficit hyperactivity disorder, and depersonalization than male inmates. Overall, the findings support previous research of high levels of psychological and neuropsychological problems in inmates, regardless of gender, and reinforces the need for comprehensive mental health screening of offender populations. Copyright © 2011 John Wiley & Sons, Ltd.

The evaluation of mental disorders and neurocognitive problems in prison inmates has become a problem of growing importance, particularly as the total number of incarcerated adults in the United States has increased over the past decade, especially the number of violent offenders (West, Sabol, & Greenman, 2010). In addition, the proportion of incarcerated women is increasing relative to men (West et al., 2010). Furthermore, there is not only a need for psychological and neuropsychological evaluation of inmates, but there is also an increasing need for their subsequent appropriate intervention and treatment. The Bureau of Justice Statistics reports that 73% of women incarcerated in state prisons self-report having a recent history or current symptoms of a mental health disorder, as opposed to 55% of men incarcerated in state prisons (James & Glaze, 2006). Steadman, Osher, Robbins,

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Case, and Samuels (2009) found that female inmates were more than twice as likely as male inmates to suffer from a serious Axis I disorder, and Binswanger and colleagues (2010) found that female inmates were almost twice as likely to suffer from a personality disorder as their male counterparts. Other studies have shown that 65% of prison inmates may have at least one or more personality disorders (Fazel & Danesh, 2002), and Teplin, Abram, McClelland, Dulcan, and Mericle (2002) found that 66% of male juvenile offenders had at least one serious mental disorder.

However, other studies of prisoners have not shown many statistically significant gender differences in psychopathology. Gunter and colleagues (2008) found few major prevalence differences between male and female inmates for major depression (23% and 27%, respectively), schizophrenia (9% and 7%), and antisocial personality disorder (37% and 27%), although they had a relatively small sample size for the women ($n=56$) and the prevalence estimates were not made according to the criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000). However, their study does support the previous findings of high rates of major types of psychopathology. There also has been a relative dearth of studies examining the prevalence of cognitive dysfunctions in inmates, undoubtedly because these types of studies are generally costly and time-intensive. The only major exception to the lack of studies of cognitive dysfunction in inmates has been investigations into attention deficit hyperactivity disorder (ADHD). For example, Coolidge, Segal, Klebe, Cahill, and Whitcomb (2009), in an examination of the 18 criteria for ADHD in the DSM-IV-TR in 3,962 prison inmates, found a prevalence rate of approximately 16%. Despite a large sample size, however, they did not provide a differential gender analysis. They also evaluated the levels of mild neurocognitive disorder (MND; a diagnosis from the appendix of DSM-IV-TR), and found that its prevalence varied from about 3% to 11%, depending on severity level, but again, they did not examine MND by gender.

Interestingly, it has been shown that men and women appear to vary as to their reasons for incarceration (Gunter *et al.*, 2008). For example, women are more frequently incarcerated for a drug-related charge, a parole violation, or a fraud or forgery charge. Gunter and colleagues noted that men were more likely to be incarcerated for abusing or assaulting someone else, drunk-driving under a suspension, or burglary. As noted earlier, Gunter and colleagues (2008) found that male inmates had higher rates of antisocial personality disorder than female inmates, although the difference did not reach statistical significance. These findings are provocative, particularly in light of the reasons for incarceration. One implication of these findings is that women who meet the criteria for antisocial personality disorder might have different levels of anger and dangerousness than men who meet these criteria. Large-scale studies that assess a diverse range of psychopathology among male and female inmates are necessary. The purpose of the present study, therefore, was to examine some major mental disorders (e.g., anxiety, depression, and schizophrenia), personality disorders, a variety of neurocognitive problems (e.g., ADHD, mild neurocognitive deficits, and executive function deficits), and the clinical traits of anger and dangerousness in a large sample of adult male and female inmates and a sample of purportedly normal, unincarcerated community-dwelling adult women.

METHOD

Participants and Procedure

A sample of psychological and neuropsychological tests from 1,046 inmates (men, $n=523$; women, $n=523$) was drawn from an anonymized larger sample of tests from 3,962 men and women incarcerated in the Colorado Department of Corrections. Upon entry into prison, all of the inmates were administered the Coolidge Correctional Inventory (CCI; Coolidge, 2004; Coolidge et al., 2009), a psychological and neuropsychological self-report measure aligned with the DSM-IV-TR. An additional matched sample (age and ethnicity) of psychological and neuropsychological tests from unincarcerated, purportedly normal adult women ($n=523$) was drawn from a normative sample of an identical test for the general population, the Coolidge Axis II Inventory (CATI; Coolidge, 2008; Coolidge & Merwin, 1992). This study was conducted with the approval of the Colorado Department of Corrections and the Institutional Review Board of the University of Colorado, Colorado Springs.

For the male inmates, ages ranged from 17 to 70 years ($M=33.6$, $SD=9.6$) with the majority being White (53%; 25% were Hispanic, 19% African American, 2% American Indian, and <1% Asian). For the female inmates, ages ranged from 17 to 62 years ($M=35.0$, $SD=8.7$) with the majority being White (60%; 21% were Hispanic, 17% African American, 2% American Indian, and <1% Asian). For the unincarcerated women, ages ranged from 16 to 85 years ($M=32.6$, $SD=19.5$), with the majority being White (80%; 11% were Hispanic, 4% African American, 4% Asian, and 1% American Indian).

Measures

The CCI is a 250-item, self-report questionnaire that measures six DSM-IV-TR Axis I clinical disorders: generalized anxiety disorder, major depressive disorder, post-traumatic stress disorder (PTSD), ADHD, schizophrenia (and a psychotic thinking subscale), and depersonalization disorder; 14 Axis II personality disorders (12 from DSM-IV-TR and two from DSM-III-TR); three neuropsychological syndrome scales measuring general neuropsychological dysfunction (with three subscales assessing language difficulties, memory problems, and neurosomatic symptoms), executive function deficits (with three subscales measuring decision-making difficulties, poor planning, and a failure to complete tasks), MND from the appendix of DSM-IV-TR; and two violence scales (anger and dangerousness). The median internal scale reliability was $\alpha=0.78$ for all of the CCI scales and subscales (see Coolidge et al., 2009 for additional information).

RESULTS

Internal Scale Reliabilities

For the female inmate sample, the median internal scale reliability for the 32 CCI scales and subscales was $\alpha=0.79$ (range: $\alpha=0.38$ for the poor planning subscale of the executive dysfunction scale to $\alpha=0.91$ for the MND scale). For the male inmate

sample, the median internal scale reliability for the 32 CCI scales and subscales was $\alpha=0.79$ (range: $\alpha=0.37$ for the poor planning subscale of the executive dysfunction scale to $\alpha=0.91$ for the schizophrenia scale). For the unincarcerated female sample, the median internal scale reliability for the 31 CCI scales and subscales (note that this sample was missing the ADHD items) was $\alpha=0.78$ (range: $\alpha=0.61$ for the neurosomatic symptoms subscale of the neuropsychological dysfunction scale to $\alpha=0.89$ for the depression scale).

Male Inmate versus Female Inmate CCI Profiles

Table 1 presents a comparison of the male and female inmates' *T* scores on the 32 CCI scales and subscales. For the six Axis I clinical disorders, the female inmates' means were all significantly higher than those of the male inmates; however, none of the effect sizes reached the medium criterion (and two scales failed to reach the criterion for a small effect size). For the 14 Axis II personality disorders, female inmates had significantly higher means than male inmates on seven of the scales, whereas males were significantly higher than the female inmates only on the sadistic scale. Again, however, none of the effect sizes met the criterion for medium, and four of the significantly different scales failed to reach even the criterion for a small effect size. Interestingly, the rankings of the means of the 14 personality disorder scales were remarkably similar for the male and female inmates [i.e., $r(13)=0.93$, $p<0.0005$].

For the neuropsychological dysfunction scales, female inmates scored significantly higher than the male inmates on the general neuropsychological dysfunction scale and the executive dysfunction scale. The former scale had a small effect size, while the latter failed to reach criterion for a small effect size. It appeared that the neurosomatic symptoms subscale of the general neuropsychological dysfunction scale accounted for the major difference between the genders, and there was a medium effect size for that subscale. An item analysis of the neurosomatic symptoms scale revealed that a greater proportion of female inmates complained of getting lost easily, changes in taste and smell, problems with balance, headaches, physical problems, and dizzy spells. However, the proportion of female inmates endorsing these items was not different than that for unincarcerated women. On the violence scales, male and female inmates were not significantly different on the anger and dangerousness scales, and the differences failed to meet even a small effect size.

Female Inmate versus Unincarcerated Female CCI Profiles

Table 2 presents a comparison of the female inmates' and unincarcerated women's *T* scores on the 31 CCI scales and subscales. For four of the Axis I clinical disorder scales and one subscale (again, there was no ADHD scale for the unincarcerated women), the female inmates' means were significantly higher than those of the unincarcerated women on the anxiety, depression, and schizophrenia scales, the psychotic thinking subscale, and the depersonalization scale. Only the depersonalization scale reached a medium effect size. There was no significant difference between the two groups on the PTSD scale. For the 14 Axis II personality disorders, female inmates had significantly higher means than the unincarcerated women on five of the scales. The antisocial, schizoid, and self-defeating scales met the criterion for medium effect size, whereas the paranoid and schizotypal scales met the criterion for small effect size. Unincarcerated

Table 1. Comparison of male and female inmates' *T* scores on the Coolidge Correctional Inventory (CCI) Axis I and II scales and subscales, neuropsychological dysfunction scales, and violence scales

	Male inmates	Female inmates	<i>t</i>	<i>p</i>	<i>r</i> ^a
	<i>M</i> (SD)	<i>M</i> (SD)			
Axis I clinical disorders					
Anxiety	48.23 (10.34)	51.05 (10.56)	-4.35	< 0.001	0.133
Depression	49.77 (10.71)	52.13 (10.41)	-3.61	< 0.001	0.111
Schizophrenia	48.86 (10.99)	51.60 (10.86)	-4.07	< 0.001	0.125
Psychotic thinking subscale	49.91 (11.17)	52.05 (11.79)	-3.01	0.003	0.093
PTSD	46.43 (10.15)	48.51 (10.12)	-3.32	0.001	0.102
ADHD	44.99 (12.98)	48.19 (13.84)	-3.86	< 0.001	0.118
Depersonalization	53.02 (8.74)	54.36 (8.70)	-2.48	0.013	0.077
Axis II personality disorders					
Antisocial	54.40 (11.25)	53.61 (10.65)	1.17	0.240	0.036
Avoidant	48.62 (9.04)	48.95 (9.31)	-0.58	0.564	0.018
Borderline	48.01 (8.72)	49.85 (9.35)	-3.29	0.001	0.101
Dependent	46.35 (9.18)	47.99 (10.46)	-2.70	0.007	0.084
Depressive	44.77 (10.79)	47.73 (11.46)	-4.30	< 0.001	0.132
Histrionic	43.40 (8.16)	45.19 (9.23)	-3.33	0.001	0.103
Narcissistic	42.66 (8.44)	42.09 (9.07)	1.05	0.293	0.033
Obsessive-compulsive	45.05 (9.64)	45.84 (10.09)	-0.29	0.195	0.036
Paranoid	51.35 (10.36)	51.54 (9.92)	-1.10	0.769	0.040
Passive-aggressive	46.42 (9.98)	47.11 (10.14)	-2.34	0.270	0.009
Sadistic	47.24 (10.05)	45.48 (9.37)	2.21	0.003	0.034
Schizoid	53.58 (10.71)	55.00 (10.04)	-2.93	0.028	0.068
Schizotypal	48.54 (10.52)	50.08 (10.78)	-4.96	0.019	0.072
Self-defeating	52.18 (9.96)	55.35 (10.65)	-1.30	< 0.001	0.152
Neuropsychological dysfunction scales					
General neuropsychological dysfunction	45.92 (10.75)	49.30 (11.92)	-4.81	< 0.001	0.147
Language difficulties	48.19 (10.22)	48.18 (10.74)	0.24	0.981	0.001
Memory problems	45.32 (10.48)	47.98 (11.42)	-3.93	< 0.001	0.121
Neurosomatic symptoms	47.47 (9.98)	53.05 (11.71)	-8.29	< 0.001	0.251
Executive dysfunction	47.07 (8.63)	47.86 (9.89)	-1.37	0.171	0.043
Decision-making difficulty	47.35 (9.04)	48.08 (10.45)	-1.21	0.228	0.037
Poor planning	48.20 (7.36)	48.21 (7.82)	-0.03	0.975	0.001
Task-completion difficulty	45.80 (9.39)	47.05 (10.14)	-2.07	0.039	0.064
Mild neurocognitive disorder	46.33 (10.11)	48.97 (11.28)	3.98	< 0.001	0.123
Violence scales					
Anger	45.94 (10.34)	45.49 (10.15)	-0.71	0.481	0.022
Dangerousness	53.07 (10.37)	52.37 (9.44)	-1.14	0.253	0.035

ADHD, attention deficit hyperactivity disorder; PTSD, post-traumatic stress disorder.

^aNote that *r* = correlation of effect size; small, *r* = 0.100; medium, *r* = 0.243; large, *r* = 0.371.

women were significantly higher than the female inmates on six scales (e.g., histrionic and narcissistic meeting the criterion for medium effect size; dependent, depressive, and obsessive-compulsive meeting the criterion for small effect size; and passive-aggressive failing to reach even the criterion for a small effect size). The rankings of the means of the 14 personality disorder scales for the two female groups were not similar [$r(13) = -0.32$, $p = 0.27$]. It is interesting to note that the top three personality disorders for the female inmates (by *T* score levels) were self-defeating, schizoid, and antisocial personality disorder, whereas the top three personality disorders for the unincarcerated women were histrionic, dependent, and avoidant personality disorder, demonstrating no overlap.

For the nine neuropsychological dysfunction scales and subscales, female inmates scored significantly higher than the unincarcerated women only on the neurosomatic symptoms subscale, although this difference failed to reach criterion for even a small effect

Table 2. Comparison of female inmates' and unincarcerated women's *T* scores on the Coolidge Correctional Inventory (CCI) and Coolidge Axis II Inventory (CATI) Axis I and II scales and subscales, neuropsychological dysfunction scales, and violence scales

	Female inmates		Unincarcerated women		<i>t</i>	<i>p</i>	<i>r</i> ^a
	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)			
Axis I clinical disorders							
Anxiety	51.05 (10.56)	49.60 (9.96)			2.28	0.023	0.070
Depression	52.13 (10.41)	49.29 (10.29)			4.43	< 0.001	0.136
Schizophrenia	51.60 (10.86)	48.37 (9.43)			5.15	< 0.001	0.159
Psychotic thinking subscale	52.05 (11.79)	48.40 (9.54)			5.51	< 0.001	0.172
PTSD	48.51 (10.12)	49.39 (10.02)			-1.41	0.159	0.044
Depersonalization	54.36 (8.70)	47.91 (8.79)			11.93	< 0.001	0.346
Axis II personality disorders							
Antisocial	53.61 (10.65)	47.08 (8.81)			10.79	< 0.001	0.322
Avoidant	48.95 (9.31)	49.97 (10.43)			-1.68	0.093	0.052
Borderline	49.85 (9.35)	49.88 (9.97)			-0.04	0.966	0.001
Dependent	47.99 (10.46)	50.78 (10.30)			-4.35	< 0.001	0.133
Depressive	47.73 (11.46)	49.91 (10.02)			-3.28	0.001	0.102
Histrionic	45.19 (9.23)	51.51 (9.72)			-10.79	< 0.001	0.317
Narcissistic	42.09 (9.07)	48.85 (10.05)			-11.42	< 0.001	0.335
Obsessive-compulsive	45.84 (10.09)	49.68 (10.17)			-6.14	< 0.001	0.187
Paranoid	51.54 (9.92)	47.67 (9.70)			6.38	< 0.001	0.194
Passive-aggressive	47.11 (10.14)	48.87 (10.05)			-2.82	0.005	0.087
Sadistic	45.48 (9.37)	46.45 (8.16)			-1.79	0.074	0.056
Schizoid	55.00 (10.04)	48.59 (9.84)			10.44	< 0.001	0.307
Schizotypal	50.08 (10.78)	47.95 (9.65)			3.37	0.001	0.104
Self-defeating	55.35 (10.65)	49.23 (10.21)			9.48	< 0.001	0.282
Neuropsychological dysfunction scales							
General neuropsychological dysfunction	49.30 (11.92)	50.50 (10.02)			-1.76	0.079	0.055
Language difficulties	48.18 (10.74)	49.39 (9.71)			-1.92	0.056	0.059
Memory problems	47.98 (11.42)	50.46 (10.01)			-3.73	< 0.001	0.116
Neurosomatic symptoms	53.05 (11.71)	51.26 (9.86)			2.67	0.008	0.084
Executive dysfunction	47.86 (9.89)	49.20 (9.92)			-2.19	0.029	0.067
Decision-making difficulty	48.08 (10.45)	50.32 (10.48)			-3.46	0.001	0.107
Poor planning	48.21 (7.82)	47.64 (9.75)			1.05	0.292	0.033
Task-completion difficulty	47.05 (10.14)	49.42 (9.78)			-3.85	< 0.001	.118
Mild neurocognitive disorder	48.97 (11.28)	51.02 (9.51)			-3.19	0.001	.099
Violence scales							
Anger	45.49 (10.15)	48.97 (10.03)			-5.58	< 0.001	.170
Dangerousness	52.37 (9.44)	47.53 (8.80)			8.58	< 0.001	.257

PTSD, post-traumatic stress disorder.

^aNote that *r*=correlation of effect size; small, *r*=0.100; medium, *r*=0.243; large, *r*=0.371.

size. The unincarcerated women scored higher on five of the other neuropsychological dysfunction scales and subscales, but only three of these barely met the criterion for small effect size and the other two failed to reach the criterion for small effect size. Interestingly, for the violence scales, the female inmates were significantly lower than the unincarcerated women on the anger scale with a small effect size. On the dangerousness scale, however, the female inmates scored significantly higher with a medium effect size.

Prevalence Rates of Personality Disorders and ADHD among the Three Samples

The prevalence rates of personality disorders and ADHD among the three samples are given in Table 3. With regard to antisocial personality disorder, although the mean *T*

Table 3. Prevalence of personality disorders among male and female inmates and unincarcerated women

Axis II personality disorders	Male inmates (<i>n</i> =523)	Female inmates (<i>n</i> =523)	Unincarcerated women (<i>n</i> =523)
Antisocial	24%	18%	6%
Avoidant	25%	25%	26%
Borderline	10%	20%	20%
Dependent	4%	6%	5%
Depressive	7%	10%	7%
Histrionic	9%	18%	28%
Narcissistic	14%	16%	32%
Obsessive–compulsive	21%	25%	43%
Paranoid	16%	17%	14%
Passive–aggressive	8%	7%	21%
Sadistic	11%	10%	8%
Schizoid	15%	17%	7%
Schizotypal	9%	10%	8%
Self-defeating	4%	9%	3%

score was not significantly different between the two incarcerated groups, the male inmates did have a significantly higher prevalence rate (24%) than the female inmates (18%) [$\chi^2(1, N=1,046)=4.54, p=0.033$].

As can be observed from Table 3, most of the personality disorder scales were elevated (i.e., > 10%), and the highest prevalence rates for both inmate groups were similar. The top four personality disorder prevalence rates for the male inmates were avoidant, antisocial, obsessive–compulsive, and paranoid. The top four personality disorder prevalence rates for the female inmates were avoidant, obsessive–compulsive, borderline, and antisocial. The rankings of the prevalence rates between the two inmate groups were also highly similar [$r(13)=0.81, p<0.001$]. The correlation of the rankings of the personality disorder prevalence rates were also more similar between the female inmates and the unincarcerated women [$r(13)=0.66, p=0.011$] than between the male inmates and the unincarcerated women [$r(13)=0.42, p=0.14$]. Despite the overall personality disorder prevalence similarities between the male and female inmates, two personality prevalence rates for the female inmates were at least double those of the male inmates: borderline (20% vs. 10%) and histrionic (18% vs. 9%) personality disorders.

Comorbidity of Personality Disorders among the Three Samples that met DSM-IV-TR Criteria for Antisocial Personality Disorder

The three samples were analyzed for the presence of antisocial personality disorder by determining whether they met three of the seven antisocial criteria (as required for a diagnosis in DSM-IV-TR). Table 4 shows that approximately 24% (*n*=123) of the male inmates, 18% (*n*=95) of the female inmates, and 6% (*n*=29) of the unincarcerated women met the DSM-IV-TR categorical criteria for antisocial personality disorder.

The top three comorbidities, ranked in order of prevalence, for the male inmates were avoidant, paranoid, and sadistic personality disorders. For the female inmates, the highest comorbidities with antisocial personality disorder, ranked in order of prevalence, were borderline, paranoid, and avoidant personality disorders. For the unincarcerated women, passive–aggressive, narcissistic, and obsessive–compulsive personality disorders had the highest comorbidity prevalence rates with antisocial

Table 4. Comorbidity of personality disorders for male and female inmates and unincarcerated women who meet *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) criteria for antisocial personality disorder

Axis II personality disorders	Male inmates (<i>n</i> =123)	Female inmates (<i>n</i> =95)	Unincarcerated women (<i>n</i> =29)
Avoidant	36%	45%	28%
Borderline	22%	56%	45%
Dependent	4%	21%	14%
Depressive	12%	26%	10%
Histrionic	13%	39%	38%
Narcissistic	24%	30%	62%
Obsessive–compulsive	20%	41%	59%
Paranoid	34%	46%	41%
Passive–aggressive	19%	31%	69%
Sadistic	33%	37%	45%
Schizoid	20%	32%	7%
Schizotypal	15%	32%	21%
Self-defeating	9%	31%	10%

personality disorder. It should be noted that passive–aggressive behavior, while having a high comorbidity with antisocial personality disorder in unincarcerated women, had less than half that prevalence rate within the inmate samples. Furthermore, comorbidity of schizoid behaviors in inmates was about three to four times higher than in the unincarcerated women sample. The rankings of the comorbidity percentages among the three samples were also compared, and the male and female inmates' profiles were strongly correlated [$r(13)=0.63$, $p=0.022$]. The female inmates' profiles were only weakly correlated with the unincarcerated women's profiles [$r(13)=0.36$, $p=0.228$]. It is also interesting to note that despite the minimal practical differences between the *T* score means for the two inmate samples, the prevalence rates of comorbid personality disorders with antisocial personality disorder demonstrated many significant differences between genders. For example, seven of the 13 comorbid prevalence rates for the female inmates were more than double those of the male inmates, and these included borderline, dependent, depressive, histrionic, obsessive–compulsive, schizotypal, and self-defeating personality disorders.

Analyses of Violence Scales

Two two-factor analyses of variance (ANOVA) were performed on incarceration status (male and female inmates and unincarcerated women) as a function of gender upon the anger and dangerousness scales. In both ANOVAs, all main effects were significant, but no interactions were significant. For the anger and dangerousness scales, all three groups that met the antisocial personality disorder criteria had significantly higher means than those who failed to meet the criteria. Interestingly, in a simple main effects analysis, the unincarcerated women who met the criteria for antisocial personality disorder had significantly higher anger levels than the incarcerated women, but their dangerousness levels were not significantly different. When comparing male and female inmates, there were no differences between genders on anger and dangerousness levels, but those who met the antisocial criteria were significantly higher on those scales than those who did not meet the criteria.

DISCUSSION

The present study examined major Axis I syndromes, personality disorders, and neurocognitive problems in a large sample of adult male and female inmates and a sample of purportedly normal, unincarcerated community-dwelling adult women. Nearly all 32 CCI scales and subscales demonstrated sufficient to good internal reliability in the three samples, with the exception of the poor planning subscale in both inmate groups ($\alpha=0.37$ and 0.38 for male and female inmates respectively). This lower reliability can be partially attributed to the low number of items on the scale ($n=4$), which has a negative influence on the reliability coefficient, although in the unincarcerated female sample the reliability of the scale was $\alpha=0.62$. The T scores for all three samples on the poor planning subscale were well within the normal range, so the subscale might require further investigation, although adding additional items to this scale appears to be an initial solution to the problem of the lower reliability.

Coolidge and colleagues (2009) previously noted that although female inmates often have significantly higher mean scores on dimensional measures of Axis I clinical disorders, Axis II personality disorders, and neurocognitive problems, the practical differences appear to be minimal (as measured by less than small and small effect sizes). In the present study, in terms of personality disorders, the rankings of the male and female inmates' T scores were remarkably similar ($r=0.93$). One implication of these findings is that mental health professionals who deal with inmates will not be faced with radically different mental health treatment challenges as a function of gender. The latter implication is also strengthened by the present finding that the female inmates' personality disorder profiles were not at all similar to those of the unincarcerated women sample ($r=-0.32$). Furthermore, the top three personality disorders for the female inmates (by T score levels) were self-defeating, schizoid, and antisocial personality disorder, and the top three personality disorders for the unincarcerated women were histrionic, dependent, and avoidant personality disorder. Male and female inmates' highest ranking personality disorders had the same top four: antisocial, schizoid, self-defeating, and paranoid. Again, it is interesting that the rankings of the prevalence of personality disorders between the inmate groups were also highly similar ($r=0.81$). However, this similarity in dimensional measures of personality disorders (i.e., T scores) and prevalence rates of personality disorders must be tempered: consistent with previous literature (e.g., Gunter et al., 2008), male inmates had significantly higher prevalence rates of antisocial personality disorder than female inmates (24% vs. 18%), and female inmates had double the prevalence rates of male inmates on two personality disorder scales (borderline and histrionic).

The prevalence rates for the two inmate groups for antisocial personality disorder were lower than rates reported recently by Gunter and colleagues (2008). It was already noted that the study by Gunter et al. did not adhere to official DSM-IV-TR criteria, and their female inmate sample size was nearly 10 times smaller than in the present study. The present antisocial personality disorder prevalence rates for the female inmates were three times higher than in the unincarcerated female sample. Interestingly, the latter group's prevalence rate (6%) was nearly six times higher than stated in the DSM-IV-TR for community samples of women (1%). The relatively high prevalence rate in this sample of unincarcerated women sample is not easily explained, although there was some indication that this sample had higher levels of education than the incarcerated samples. It has been previously suggested that antisocial traits are

reported at higher levels in college-educated women, primarily because the antisocial items are also thought to correlate with oppositional attitudes and critical attitudes of authority figures (Graham, 1987). It is a limitation of the present study that the unincarcerated female sample, although matched on age and ethnicity, was not matched on education; future studies should control for education levels.

The comorbid personality disorders were also examined for those inmates who met DSM-IV-TR criteria for antisocial personality disorder. The male and female inmates had similar comorbidities ($r=0.63$), and two of the top three personality disorder prevalence rankings were identical between genders (avoidant and paranoid). However, there were some important significant differences between the two inmate groups: the female inmates had more than double the male inmate prevalence rates on seven of the 13 comorbid personality disorders, i.e., borderline, dependent, depressive, histrionic, obsessive-compulsive, schizotypal, and self-defeating personality disorders.

Finally, the two violence scales (anger and dangerousness) were examined as a function of the presence of antisocial personality disorder and gender, and there were no surprises: those who met antisocial personality disorder criteria regardless of gender or inmate status had significantly higher levels of anger and dangerousness than those who did not, adding to the wealth of information about the volatility and dangerousness of individuals with antisocial personality disorder. One provocative finding was that the unincarcerated women who met antisocial personality disorder criteria had significantly higher self-reported levels of anger than the incarcerated women who met these criteria, although the two groups did not differ in their dangerousness levels. It is puzzling why a sample of unincarcerated women would self-report more anger than incarcerated women, although both groups met criteria for antisocial personality disorder. It seems plausible that incarcerated women may deny or learn to suppress their anger levels as a function of their incarceration. Further exploration of anger problems among female inmates appears warranted, perhaps with more fine-grained assessments of anger problems, for example, through a full clinical assessment.

Some strengths of the present study include the large sample sizes, the assessment of a diverse range of psychopathology and neuropsychological problems among male and female inmates and inclusions of a measure that is linked directly to the diagnostic criteria of the DSM-IV-TR. These strengths notwithstanding, several limitations of the present study deserve mention. First, although the sample size was large, there was little ethnic diversity in the samples, which prevented diversity analyses, and ethnic differences in psychopathology among women have been previously noted (Coolidge, Segal, & Ellett, 2001). An interesting research question to pursue would be the impact of ethnicity on the manifestations of psychopathology among female inmates. A second limitation was the sole reliance on a self-report measure of psychopathology. Whereas the CCI has solid evidence of reliability and validity, further studies would benefit from the inclusion of structured or semi-structured assessment of psychopathology, although the time and expense of the latter types of assessment in large samples may be prohibitive.

Overall, the findings support previous research of high levels of psychological and neuropsychological problems in inmates, regardless of gender. The findings also reinforce the need for comprehensive mental health screening of offender populations, and the recognition that female inmates not only have high rates of psychopathological and neuropsychological problems but also have some unique issues requiring separate

attention. It is perhaps an understatement to note that there is a need for the comprehensive mental health screening of inmates. However, economic limitations as well as staffing constraints are a clear reality. Thus, a single comprehensive measure which evaluates both psychological and neuropsychological problems of the inmates helps to circumvent these limitations and constraints. Furthermore, addressing these needs appears especially imperative if the demographic trend continues of more women becoming incarcerated.

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