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The Impact of Co-Occurring Disorders on Serious Misconduct Among Female State Prisoners

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Abstract: The current study examined the additive and interactive effects of co-occurring disorders (CODs) on predicting severity of misconduct compared with singular disorders of mental illness and substance use disorders among a sample of female state inmates. Prior research has generally not distinguished the singular disorder of mental illness from co-occurring mental illness and substance use disorders (CODs) in institutional misconduct research weakening the conclusions that can be drawn regarding mental illness and CODs. Moreover, misconduct literature is often limited to male or pooled male and female samples despite the higher prevalence rates of mental illness and CODs among the female offender population. Findings from the current study indicate that compared with women who have singular disorders of substance abuse or mental health, women diagnosed with CODs are more likely to be involved in both minor and serious misconduct. If women with CODs engage in more overall misconduct, they are more likely to receive sanctions that not only could increase their incarceration time, but could prove deleterious to their conditions and create even greater behavioral challenges. Our findings highlight the importance of addressing the risks and needs of women with CODs in relation to assessment, programming and appropriate correctional responses to violations of inmate codes of conduct.

Keywords: Misconduct, Co-occurring Disorders, Prisoners, Mental Illness, Women

1. Introduction

More than 700,000 mentally ill persons are incarcerated in United States (U.S.) prisons and nearly a half million more are in local jails [1]. Although estimates vary, the percentage of mentally ill (MI) persons incarcerated in the U.S. is thought to have tripled in the past three decades [2]. Accordingly, Torrey [3] refers to prisons and jails as *America's new mental hospitals*.

Prisons and jails are ill equipped to properly address the demands of the growing MI population [4]. The primary mission of correctional institutions is to "keep them in, keep them safe, keep them in line, keep them healthy, and keep them busy – and do it with fairness, without undue suffering, and as efficiently as possible" (p. 25) [5]. However, the needs of the mentally ill are vast and immediate, often challenging the institution's ability to manage and treat this population while maintaining security and order [6]. Indeed, jail administrators report inmates with severe mental illness are more disruptive than gang members [7]. Violent and disruptive behaviors pose safety and security risks for the institution [8], as well as punitive consequences for the inmate (e.g. restricted housing, loss of privileges, denial of early release) [9].

Comorbid mental health and substance use disorders (CODs) are particularly salient among the offender population with 54% of female and 41% of male state prisoners meeting the Diagnostic and Statistical Manual of Mental Disorders 5th Ed. (DSM-V) [10] criteria for a COD [1]. In addition, CODs are often underestimated in the criminal justice system (CJS) due to the overlapping nature of the symptomatology [11] and limited dual diagnosis screening tools in correctional settings [12, 13]. However, the importance of distinguishing singular disorders from CODs in institutional adjustment research is often overlooked. Research has concluded that the interaction of two or more disorders exacerbates the symptomatic character of the individual disorders, reduces treatment engagement and completion, and is associated with criminal recidivism (see [14] for a more thorough discussion). For example, in their

study of 307 mentally ill adult offenders, Castillo and Fiftal-Alarid [15] found alcohol to be the most robust contributing factor in predicting re-arrest for violent offenses among offenders with MH disorders.

Complicating this problem, offenders with CODs are more likely to demonstrate deficiencies in psychosocial skills and have significant cognitive impairments including "deficits related to concentration and attention, verbal memory, and planning abilities or "executive functions" (p. 28) [14] suggesting greater difficulty in complying with institutional rules of conduct. Indeed, of the few studies distinguishing singular disorders from CODs on institutional misconduct, findings have suggested a stronger effect among offenders with CODs than the singular disorder of MI [16-19]. Furthermore, integrated treatment protocols designed to respond to persons with CODs are few in the CJ system [20] with even fewer programs for women offenders [21].

Studies examining MI on institutional adjustment do not typically differentiate the singular disorder of MI from CODs due to shortcomings in diagnostic data [22, 23]. Illustrating this limitation, a systematic review of misconduct studies published between 1980 and 2013, Steiner, Butler, and Ellison [24] found 11 of the 98 studies controlled for MI; no studies controlled for CODs. This weakens the conclusions that can be drawn regarding mental illness and CODs [23].

In this analysis, we examine the predictive value of disorder types on seriousness of misconduct by creating mutually exclusive disorder categories to more fully examine the independent effects of MI, substance use disorders (SUDs), and CODs on seriousness of misconduct controlling for other predictors of misconduct commonly reported in the literature. Despite the high prevalence of CODs in the offender population, there is a dearth of empirical literature examining COD for its predictive value on violent or disruptive behaviors in prison [16-19, 25, 26]. To our knowledge, only one study has differentiated singular disorders from CODs to examine their independent effect on predicting severity of misconduct [17] indicating the significant need for additional research on this important topic.

Studies examining CODs on institutional misconduct have yielded mixed results. For example, Wood and Buttaro [19] found State prisoners with CODs were more likely to be both victims of assault and charged with assaultive behavior compared with non-COD prisoners; Wood [18] noted similar findings among jail inmates. However, when examining the likelihood of being assaulted and to assault among Federal prisoners, Wood [26] found COD was predictive of being assaulted but did not predict engaging in assaultive behavior. Although these findings contribute to our knowledge of CODs and misconduct, all three studies have limited themselves to using one measure of misconduct, assault.

Examining the relationship between psychiatric symptoms and violent/disruptive behaviors among a sample of inmates participating in prison-based substance abuse treatment, Friedman et al. [25] found the co-occurrence of certain psychiatric symptoms/disorders (i.e. thought insertion/control ideation and antisocial personality disorder) increased the risk of violent and disruptive behaviors. In the only study that we are aware to examine severity of misconduct charges by disorder group, Houser et al. [17] found inmates with CODs or singular MI disorders were more likely to be charged with both minor and serious misconduct (compared with no disorder inmates); however, the effect was stronger among those with CODs based on the Odds Ratio. The current study will attempt to further contribute to this literature by using a different sample of inmates and controlling for variables shown to be significantly related to misconduct based on empirical research (i.e. criminogenic risk score, custody level, intelligence score/reading level, and treatment exposure) that were not reported in the study by Houser et al. [17].

1.1. Women Behind Bars

There has been a substantial increase in the number of women behind bars – 17.2% - between 2000 and 2010 [27]. Women entering the CJS present with greater criminogenic risks and needs than men including higher rates of MH, SUD, and CODs [1]. Women are also more likely to experience physiological and psychological disabilities associated with their disorders [28], be diagnosed with three or more comorbid disorders [29], and report traumatic victimization [30]. Institutional structure and protocols (e.g., isolation, strip searches, restraints) may exacerbate their clinical conditions making adjustment more difficult [31, 32]. Despite the increasing presence of women in the CJS and their vast treatment needs, Steiner et al. [24] found only 20 of 98 misconduct studies (1980-2013) included female inmates. Among the small handful of studies examining COD on misconduct, three included men and women in their sample [19, 25, 26], one was a male only sample [18], with only two examining the role of COD on female misconduct [16, 17, 21] suggests the dearth of literature examining COD among female offenders is most likely because they enter the CJS for crimes related to their substance use and only after entering the system is their co-occurring mental health disorder diagnosed.

1.2. Current Study

Using a sample of female prisoners, we examined the additive effect of CODs on the probability of engaging in serious inmate misconduct (e.g. assault, escape, threats of violence). As noted in the literature review, these differences are predicted due to the greater likelihood of COD misdiagnosis, inadequate assessment, and/or the failure to match individual needs with appropriate treatment. Thus, we hypothesize that COD offenders will exhibit more serious misconduct compared with the SA only and MI only disorder groups as well as the no disorder group, even when controlling for other individual differences.

2. Methods

2.1. Sample

Administrative data records were provided by the

Pennsylvania Department of Corrections (PADOC). Data were provided for all female state prison inmates incarcerated between January 1, 2007 and July 30, 2009 (N=2,279) who were either currently serving or had served time at one of the two women's correctional facilities (State Correctional Institution (SCI) Cambridge Springs and SCI Muncy), or the co-educational boot camp, Quehanna. Because women are initially placed in a diagnostic institution for assessment and classification prior to placement in their permanent institution, we excluded women from the sample who were incarcerated for a period of less than four months reducing our sample to 2,164 cases. Two other major criteria for inclusion included evidence of a SUD or a MI. Texas Christian University Drug Screen II (TCUDS) scores were missing for 398 cases, the major indicator of a SUD, further reducing the sample to 1,766. Imputing missing data for the TCUDS II was not appropriate since this variable was one of the two major selection criteria required for inclusion in the sample.

2.2. Variables

2.2.1 Dependent Variable

Misconduct data were obtained from official disciplinary records with definitions of "serious (e.g. assault, rape, escape)" or "minor (e.g. disobeying an order, destroying property, lying to an employee)" based on the guidelines stipulated by the PADOC. All rule violations are written up as a misconduct report with a copy provided to the inmate [33]. Misconduct charges are written by "either the charging staff member or contract provider who has a personal knowledge of the rule violation" (p. 1) [34]. Inmates are provided handbooks outlining the rules of conduct and institutional regulations at the time of admission [33]. For purposes of the current study, if an inmate had multiple charges for a single incident, classification was determined by the most serious charge. Misconduct was coded into one of three categories: none (0); minor (1), or serious (2).

2.2.2. Independent Variable

Using the PADOC guidelines, subjects were classified into four mutually exclusive and exhaustive diagnostic categories: (0) no disorders (no MI *or* SUD); (1) CODs (any MI *and SUD*); (2) MI *but no SUD*; and (3) SUD *but no MI.* Mental health diagnostic classification involves several components: Personality Assessment Inventory (PAI) [35], psychological history, and interviews with staff psychologists. The PAI provides important information for mental health practitioners via 22 sub-scales (e.g. anxiety, depression, and schizophrenia) and has good psychometric properties [35] Should the inmate meet DSM-V [10] criteria for a MH disorder, they are placed on the Mental Health Roster.

Substance abuse and dependence were screened using the TCUDS II. The TCUDS II is widely used by criminal justice agencies and has been validated with inmate populations [36]. The TCUDS II is a standardized 15-item screening instrument developed to identify heavy drug/alcohol use or dependence in the past 12 months (or the12 months prior to incarceration). Questions are tied to specific DSM-V criteria, and total scores can range from 0 to 9, with a score of 3 or higher indicative of substance dependence [37].

2.2.3. Covariates

Statistical control variables included inmate characteristics that have been shown to be correlated with institutional misconduct. These included age, race, education, intelligence quotient (IQ) score, reading level, marital status, criminal history, length of incarceration, criminogenic risk, and time in treatment. Age at the time of admission was measured as a continuous variable. Race/ethnicity was coded into four mutually exclusive categories: 0 = White, 1 = Other; 2 = African-American, and 3 = Hispanic. The "other" race category was originally defined by the PADOC comprising. 7% of the total sample. Because Native Americans and Asians comprised less than. 5% of the total population, we included these in the "other" category as well. Education was coded as a continuous variable reflecting the number of years of education completed. IQ scores were based on the Beta-III, a measure of performance IQ and coded as a continuous variable. Reading levels were based on scores from the Wide Range Achievement Test – Revised (WRAT-R). The WRAT-R has 3 components -. reading, writing, and arithmetic. The PADOC limits their use of the WRAT-R to reading skills with scores converted to grade levels. This variable was coded as a continuous variable from illiterate to first year of college. Marital status was reflected as a dichotomous variable (0 = no; 1 = yes). Criminal history was measured by two variables: Criminal History subscale score of the Level of Service Inventory – Revised (LSI-R) (one of ten domains in the LSI-R) and index (current) violent offense measured as a dichotomous variable (0 = no, 1 = yes). The LSI-R is a 54 item actuarial classification instrument designed to assess criminogenic risk and need [38] and has been examined for its predictive validity on diverse samples of offenders [39].

Primary custodial institution was coded as a categorical variable among the three institutions in the state that house female prisoners (0 = SCI Muncy (reference category); 1 = SCI Cambridge Springs; and 2 = Quehanna Boot Camp). SCI Muncy is a medium/maximum security prison, SCI Cambridge Springs is a minimum security facility; and Quehanna is a minimum security co-educational boot camp. Length of incarceration is reflected as a continuous variable in months.

Because time in treatment may reduce time at risk and improve behavior, we controlled for an inmate's exposure to treatment (# of months in treatment). Empirical findings suggest favorable treatment outcomes are contingent on length of treatment and generally suggest a period of no less than 90 days [40]. Therefore, we coded treatment exposure as a categorical variable reflecting three month intervals (0 = no time in treatment; 1 = 1 to 90 days; 2 = 91 to 180 days; and 3 = 181 days or more). Due to restrictions of the Health Insurance Portability and Accountability Act (HIPPA), we were unable to obtain more specific treatment program

information. Inmates may have participated in multiple programs not limited to SUD or MI treatment (e.g. violence prevention, parenting, thinking for change). This limits the conclusions that can be drawn regarding the effects of specific types of treatment, since different types of programs may vary greatly in their focus, methods, and intensity.

2.3. Analyses

An initial bivariate analysis examined the relationship between disorder type and institutional misconduct. We then estimated multinomial logistic regression equations for a three-category ordinal dependent variable (0 = no misconduct, 1 = minor misconduct, and 2= serious misconduct). This strategy allowed us to: (1) assess the probability of serious misconduct vs. no misconduct; and (2) examine the predictors of serious misconduct. We conducted the regression equation over two models: The first model included all of the predictors *excluding* the three independent disorder subgroups, and the second model included all of the predictors with the addition of the disorder variable to assess for possible improvements in model fit and explained variance.

3. Results

3.1. Univariate Analysis

An initial univariate analysis of the final sample revealed some missing data -no single variable accounted for a large proportion of missing cases. Comparisons of the total eligible sample (maximum n = 1,766) with the final sample using listwise deletion (n = 1,470) were undertaken using one-sample t tests. The results revealed few differences between the original and the final sample, although 4 of 17 mean comparisons were statistically significant. Due to the large sample size and the number of comparisons, some differences were expected [41]; however, some caution should be taken in generalizing the results to all female offenders in the state of Pennsylvania. Although mean substitution offers a way to estimate missing values, mean replacement can distort results and is generally considered less optimal than listwise deletion [42].

Table 1 provides the distribution of the independent and predictor variables for the total sample and by disorder subgroups. A majority of the women (64.3%) met the DSM-V criteria for a COD compared with 19.1% SUD only, 8% MI only; and 10.8% with no known disorders. The majority of women were White (61.4%), the average age at admission was 36 years old and the average education level was 11 years with an 8th grade reading level. The average IQ score was 94.9 placing most women of average intelligence. Only 14% of women were married at the time of admission. The average length of incarceration was 15 months with 25% of the women serving time for a violent offense. The average criminal history subscale score of the LSI-R was 4.8 suggesting average criminogenic risk (scores range from 0 – 10). The majority of women were housed at SCI Muncy (51%) (medium/maximum security prison). Excluding the no disorder group, we found women with a MI only were the least likely to receive treatment (31.8%) compared with the other disorder groups Interestingly, among inmates receiving treatment, women with a MI only were the least likely to receive 180 or more days of treatment.

Table 1. *Descriptive Statistics by Diagnostic Classification Subgroups (N=1470).*

Race	**Co-occurring Disorder (N=945)**	**Mental Health Disorder Only (N=85)**	**Substance Use Disorder Only (N=281)**	**No Disorder (N-159)**	**Total Sample (N=1,470)**			
	%	**%**	**%**	**%**	**M**	**SD**	**%**	**N**
White	65.8	57.6	56.9	44.7			61.4	902
African-American	26.8	27.1	35.9	43.4			30.3	446
Hispanic	6.6	11.8	6.0	10.7			7.2	106
Other	0.8	3.5	1.1	1.3			1.1	16
Age (M)	37.2	37.4	35.8	36.3	36.8	9.71		
Education (M)	11.1	11.7	11.3	11.8	11.2	1.71		
IQ Level (M)	93.8	94.1	98.0	96.2	94.9	14.2		
WRAT Scores (M)	84.3	85.4	86.2	83.4	84.6	33.3		
Married (%)	13.0	21.2	12.8	20.8			14.3	210
Incarceration Length (M)	15.9	18.1	15.6	15.8	15.9	6.92		
LSI-R Criminal Subscale Score	5.2	4.0	4.7	3.8	4.8	1.97		
Current Offense								
Violent (%)	23.2	45.9	25.3	27.7			25.4	373
Non-violent (%)	76.8	54.1	74.7	72.3			74.6	1097
Location (%)								
Muncy	52.0	60.0	48.0	46.5			51.1	751
Cambridge Springs	42.0	37.6	47.3	49.1			43.5	640
Quehanna	6.0	2.4	4.6	4.4			5.4	79
Treatment Exposure								
None (0)	22.3	31.8	27.8	38.4			25.6	377
1– 90 Days (1)	13.1	20.0	13.9	18.9			14.3	210
91-180 Days (2)	20.3	23.5	25.3	20.8			21.5	316
181 + Days (3)	44.2	24.7	33.1	22.0			38.6	567

Table 2. *Misconduct by Disorder Type.*

	Disorder Subgroups							
	No Disorder (N=159)		**Co-occurring Disorders (N=945)**		**Mental Health Disorders (N=85)**		**Substance Use Disorders (N=281)**	
	%	**N**	**%**	**N**	**%**	**N**	**%**	**N**
No Misconduct	83.0	132	67.1	634	65.9	56	73.3	206
Minor Misconduct	8.2	13	14.2	134	12.9	11	10.3	29
Serious Misconduct	8.8	14	18.7	177	21.2	18	16.4	46

X^2 (6 d. f., N = 1470) = 19.686 p < .01.

3.2. Bivariate Analysis

Results of the bivariate analysis (Table 2) showed that regardless of disorder classification, a majority of women (83%) were never charged with misconduct during their incarceration. Among women charged with a misconduct, those with a MI only or a COD were more likely to be charged with a serious misconduct than those with no known disorders or a SUD only (21.2% and 18.7% compared with 8.8 and 16.4% respectively, p ≤ .01). A similar pattern emerged with minor misconduct - 14.2% and 12.9% compared with 8.2% and 10.3% respectively.

Table 3. *Multinomial Regression Model of Seriousness of Misconduct on Control and Predictor Variables.*

Control Variable	**Model 1**					
	Minor Misconduct =1 (vs. No Misconduct = 0)			**Serious Misconduct = 2 (vs. No Misconduct = 0)**		
	B	**SE**	**Odds Ratio**	**B**	**SE**	**Odds Ratio**
Intercept	-1.551	.901		.607	.913	
Other (1)	.497	.830	1.644	*1.362**	.630	3.903
African-American (2)	*.475**	.192	1.608	*.567***	.189	1.763
Hispanic (3)	-.003	.350	.997	-.008	.342	.992
Age	*-.022**	.009	.979	*-.073****	.010	.929
Marital Status Married = 1	-.534	.276	.586	-.162	.264	.851
IQ	.001	.008	1.001	-.014	.008	.986
WRAT Score	.001	.003	1.001	-.004	.003	.996
Grade Completion	-.118*	.054	.888	-.087	.054	.966
Incarceration Length	*.069****	.013	1.071	*.136****	.013	1.146
Violent Offense (0=no; 1=yes)	.219	.195	1.245	.227	.123	.190
Criminal Score	*.160****	.045	1.174	*.279****	.046	1.322
Quehanna (1)	-.043	.373	.958	*-2.195***	.742	.111
Cambridge Springs (2)	-.071	.179	.932	*1.310****	.194	.270
1-90 Days (1)	-.101	.279	.904	*-.607**	.307	.545
91-180 Days (2)	.037	.244	1.038	-.185	.256	.831
181 Days (3)	-.266	.229	.766	-.478	.232	.620
Substance Use (1)						
Co-occurring (2)						
Mental Health (3)						
Model Fit Statistics						
Model fit-chi-square	400.987***					
(df)	32					
-2 log likelihood ratio	1.9999					
Nagelkerke R square	.297					

Table 3. *Continued.*

Control Variable	**Model 2**					
	Minor Misconduct = 1 (vs. No Misconduct = 0)			**Serious Misconduct = 2 (vs. No Misconduct = 0)**		
	B	**SE**	**Odds Ratio**	**B (SE)**	**SE**	**Odds Ratio**
Intercept	-2.314	.957		-.267	.969	
Other (1)	.560	.833	1.750	*1.466**	.637	4.333
African-American (2)	*.597***	.196	1.817	*.686****	.195	1.987
Hispanic (3)	.058	.352	1.060	.060	.346	1.062
Age	*-.025***	.009	.975	*-.077****	.010	.926
Marital Status Married = 1	-.502	.277	.605	-.120	.265	.887
IQ	.003	.008	1.003	-.012	.008	.988
WRAT Score	.000	.003	1.000	-.004	.003	.996
Grade Completion	-.103	.054	.902	-.071	.055	.932
Incarceration Length	*.070****	.013	1.072	*.136****	.013	1.146
Violent Offense (0=no; 1=yes)	1.131	.197	1.241	.129	.193	1.137
Criminal Score	*.138***	.046	1.148	*.257****	.046	1.294
Quehanna (1)	-.082	.374	.921	*-2.190***	.742	.112

Control Variable	Model 2					
	Minor Misconduct = 1 (vs. No Misconduct = 0)			Serious Misconduct = 2 (vs. No Misconduct = 0)		
	B	SE	Odds Ratio	B (SE)	SE	Odds Ratio
Cambridge Springs (2)	-.087	.180	.917	*-1.313***	.195	.269
1-90 Days (1)	-.146	.281	.864	*-.633**	.310	.531
91-180 Days (2)	.008	.245	1.008	-.200	.258	.819
181 Days (3)	-.360	.233	.698	*-.524**	.236	.592
Substance Use (1)	.285	.394	1.330	.709	.367	2.032
Co-occurring (2)	*.798**	.326	2.220	*.930***	.340	2.535
Mental Health (3)	.688	.457	1.989	.829	.453	2.290
Model Fit Statistics						
Model fit-chi-square	416.918***					
(df)	38					
-2 log likelihood ratio	1.983					
Nagelkerke R square	.307					

*p<.05, **p<.01, ***p<.001

Notes. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variable are given in italics

3.3. Multinomial Regression Analysis

Misconduct severity was examined over two models (Table 3). Model 1 included all of the predictors but excluded the disorder subgroups. Model 2 included all of the predictors with the addition of the disorder subgroups. Results were similar for both models; therefore, interpretation is based mainly on Model 2, since model 2 included the disorder subgroups that were the main focus of the study.

The results showed that women with the singular disorders of MI or SUD were neither more nor less likely to engage in minor or serious misconduct compared to women with no disorders. However, controlling for other predictors of misconduct, women with CODs were significantly more likely to engage in both minor *and* serious misconduct (OR = 2.2 and 2.5 respectively) compared to women with no disorders.

Most of the other predictors were not significantly related to misconduct severity. However, African-American inmates were 1.8 times more likely to be involved in a minor misconduct (versus no misconduct - the referent group) and 1.9 times more likely to be charged with a serious misconduct compared with White females. Hispanic inmates were neither more nor less likely to be charged with a serious or minor misconduct (relative to no misconduct) compared with White inmates. Consistent with the literature, we found age to be a significant predictor of misconduct with older inmates being charged less often with serious or minor misconduct (versus no misconduct) compared with younger inmates (OR = .926 and .975 respectively).

Other socio-demographic variables including marital status, IQ, and WRAT score were non-significant. Not surprisingly, longer periods of incarceration were associated with having a higher likelihood of both minor and serious misconduct charges. Having been convicted of at least one violent offense for the current incarceration neither increased nor decreased the likelihood of minor or serious misconduct. However, for each additional increase in the LSI-R criminal history score, inmates were 1.1 times more likely to be charged with a minor misconduct and 1.2 times more likely to be charged with a serious misconduct.

Women who were housed in the Quehanna facility were 89% less likely to be charged with a serious misconduct compared to women housed at SCI Muncy, which is not surprising given that Quehanna is a boot camp housing low risk offenders and those nearing the completion of their sentence; SCI Muncy is the medium/maximum security facility. Women housed at SCI Cambridge were also significantly less likely to be charged with a serious misconduct compared to women at SCI Muncy (OR = .269). In terms of treatment exposure, inmates who were exposed to between 1 and 90 days of treatment were 47% less likely to be charged with a serious misconduct.

4. Discussion

This paper examined the hypothesis that having a COD would result in more serious misconduct charges among female inmates, even when controlling for other prominent individual differences including criminal history. Results supported the main hypothesis. Net of all statistical controls, female inmates with CODs were significantly more likely to engage in both minor *and* serious misconduct (OR = 2.2 and 2.5 respectively) compared to women with no disorders supporting the findings of prior research (see [17]). +Women with the singular disorders of MI or SUD were no more or less likely to engage in minor or serious misconduct compared to women with no disorders.

Several control variables remained significant after disorder type was entered into multinomial regression equations (see Table 3, Model 2). African-American inmates were about twice as likely to be charged with both a minor misconduct (versus no misconduct, the reference group in these analyses) and a serious misconduct, compared to White females. Older inmates were charged less often with serious or minor misconduct (versus no misconduct) compared with younger inmates (OR = .926 and .975 respectively). The longer inmates were incarcerated, the more likely they were to be charged with either a minor or serious misconduct. In addition, similar to prior research, the LSI-R criminal history score was positively associated with both minor and serious misconduct. Current results thus support previous research

findings, although we emphasize that in the current study, these effects persist even *after* disorder type was entered into multinomial regression equations. While COD therefore has an independent and additive effect on misconduct, other disparities related to race, age, length of incarceration, and criminal history *remain* problematic and largely unaddressed in current prison misconduct policies and practices [43, 44].

Prison location also influenced misconduct. Net of all control variables, women who were housed in Quehanna were 89% less likely to be charged with a serious misconduct (versus no misconduct) compared to women housed at SCI Muncy (Table 2). Women housed at SCI Cambridge were also significantly less likely to be charged with a serious misconduct (versus no misconduct) compared to women residing at SCI Muncy (OR = .269). As noted earlier, Muncy is the only one of the three female facilities that houses maximum security inmates. In terms of treatment exposure, our findings are not as one might expect – with increased exposure there is a decline in serious misconduct. Instead, our findings suggest a reduced benefit of treatment over time - the women who were exposed to between 1 and 90 days of treatment (compared to no treatment) were 47% less likely to be charged with a serious misconduct; however, as exposure to treatment lengthened (90 – 180 days) treatment no longer had a significant impact on serious misconduct. With exposure of greater than 180 days, women were 41% less likely to be charged with a serious misconduct suggesting that while this extended treatment reduced serious misconduct, the effect was not as strong as the shorter exposure of between 1 – 90 days.

4.1. Implications

While findings support prior research demonstrating a relationship between MI and prison misconduct [17, 45], our study is only one of two studies of female offenders to date that has examined the independent and additive effects of CODs on misconduct severity. Our finding that women with CODs have the worst outcomes in prison has serious implications. Research has shown an increased likelihood of being charged with a serious misconduct is also likely to lead to more serious sanctions including being placed in segregation, loss of earned good time credits, limited access to treatment services, and denial or postponement of parole [46]. One previous study by Houser & Belenko [47] found that inmates with COD were over 4 times more likely than other inmates to receive a serious disciplinary sanction in response to their misconduct.

A likely explanation for the results demonstrating disparities in serious misconduct among female prisoners with COD is that appropriate screening, assessment, and placement in treatment for these inmates is rare in correctional settings [13]. Treatment and medication are an integral part of controlling symptomatic behaviors for persons with CODs, and left untreated (or improperly treated), many inmates may deteriorate and exhibit worsening behaviors over time [11]. As demonstrated, this group of inmates is much more likely to be charged with serious misconduct, suggesting not only inadequate screening, assessment, and/or treatment at the front end, but the potential for worsening impairment over time, fueling a vicious cycle of additional misconduct charges, more severe sanctions, and reduced access to treatment. It was notable in this study that inmates who received even a minimum threshold of treatment (1-90 days), as opposed to no treatment, were much less likely to be charged with serious misconduct. A further implication, therefore, is that while treatment matters, *appropriate* treatment that targets COD and other individual needs may matter even more. While an integrated treatment model is the most widely accepted modality for effectively treating CODs [11], correctional institutions often lack the ability to offer integrated treatment programs. Many treatment specialists argue that the failure to address both disorders is equivalent to offering no treatment or iatrogenic treatment [11], although the present study found no evidence for iatrogenic effects with longer durations of treatment

Results suggests a critical need for improved screening, assessment and care of COD and MI in correctional settings [13]. Correctional facilities should also train staff in understanding how to identify and differentiate inmate misbehavior from possible symptomatic manifestations of disorders [48]. For many MI offenders, patterns of rule breaking behaviors may be discernibly different from other inmates (e.g. self-segregation, self-injurious behavior, lack of hygiene) [49]. Few states offer more than four hours of correctional officer training on how to respond to MI prisoners [6]. If officers are able to identify and respond to patterns of disorder-related misbehavior, they could potentially be the "greatest assets in managing inmates with mental illness" (p. 433) [6].

4.2. Limitations

Caution should be exercised in generalizing these findings to a national population. This was a cross sectional sample of female inmates limited to one state correctional system. However, the benefits of conducting a study in a single state provides a sample subject to the standardization of operational procedures and key variables related to misconduct, as well as a sample of inmates sentenced under the same state criminal code. Due to restrictions regarding dissemination of confidential personal information under the HIPPA Act of 1996, we also lacked access to specific medical information including treatment type and medication usage, type and dosage. Studies suggest that the use of psychotropic drugs for behavioral and symptomatic control are much higher in female facilities [50] and are often prescribed without assessment for proper dosing or an understanding of the possible side effects unique to women [51].

Although this study controlled for the primary institution in which the inmate was housed, other contextual factors were not available. Other relevant institutional factors may include prison crowding [52], prison architecture [53], racial composition of inmates and staff supervisory levels [54].

5. Conclusion

The unique aspects of COD among female inmates charged with serious misconduct deserve much greater attention than has previously been the case. Results confirmed that female offenders with CODs were more likely to be involved in both minor and serious misconduct, and were more likely to receive serious sanctions compared to those with singular disorders and no disorder. Greater attention and resources should be devoted to the screening, assessment, and treatment of COD women offenders and to the training of correctional officers who come into contact with these often more difficult inmates. In the absence of such improvements, many inmates will remain undiagnosed and untreated, while others may continue to suffer from interventions that may address only one of their disorders which could worsen rather than improve their behavioral health and criminal justice outcomes both during and post-prison.

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