Gender Differences in Predictors of Prison Violence: Assessing the Predictive Validity of a Risk Classification System

Miles D. Harer
Neal P. Langan

Can the same risk classification instrument be used for both female and male prisoners? The authors answer this question using data for federal prisoners by comparing female and male prison violence rates and by comparing the predictive validity of a risk classification instrument used to predict female and male violence. The authors find women commit less violence and less serious violence than men. However, despite these gender differences, they find the same classification instrument predicts violent behavior equally well for women and men. Taken together, these results lead the authors to argue for correctional policies requiring separate classification systems for women and men.

In recent years, a number of criminologists have called for empirical research addressing their suspicions that prisoner risk classification systems originally designed for men are less accurate in predicting female violent misconduct (Brennan, 1998; Burke & Adams, 1991; Farr, 2000). These authors note research showing that female rates for most violent crimes are substantially lower than rates for men and, moreover, that evidence suggests the circumstances in which women are violent often differ from the circumstances in which men are violent. For example, Steffensmeier and Allen (1998) reported that the female arrest rate for homicide in 1995, as computed with data reported by the FBI, was 1.7 per 100,000 women, whereas the male rate was 16.6 per 100,000 men—nearly 10 times the female rate.[1] In addition, data pertaining to the circumstances in which women and men kill show that women are more likely to kill a family member or boyfriend, whereas men are more likely to kill an acquaintance or stranger (Greenfeld & Snell, 1999). It is instructive to note that when women's contact with family members and

MILES D. HARER: U.S. Sentencing Commission. **NEAL P. LANGAN**: Office of Research and Evaluation, Federal Bureau of Prisons.

The views in this article are those of the authors and do not necessarily reflect opinion or policy of the U.S. Sentencing Commission or the Federal Bureau of Prisons. Please direct correspondence to Miles Harer, Senior Research Analyst, U.S. Sentencing Commission, Thurgood Marshall Judiciary Building, One Columbus Circle, NE, Suite 2-500, Washington, DC 20002-8002; phone: (202) 502-4579; fax: (202) 502-4699; e-mail: mharer@ussc.gov.

CRIME & DELINQUENCY, Vol. 47 No. 4, October 2001 513-536

boyfriends is severely curtailed while in prison, their homicide rate drops to zero, as we observe below, whereas men's homicide rate does not. Also, despite an extensive search of federal prison records and discussions with current and retired federal prison staff who work or have worked in female prisons, we are unable to find any record of a female inmate ever having committed a homicide while in custody. Observations such as these lead writers on female classification to decry the common practice of using prisoner risk classification systems designed for men with women. Because evidence suggests that women are less violent than men and that the circumstances in which women are violent differ, a male classification system may not accurately gauge female risk for violence and therefore, may result in the overclassification of female prisoners.

To our knowledge, no validation of a female classification system in an all female prison population has been published. This deficiency is probably due to the relatively small number of female prisoners and to the very low female violence rate. Both of these characteristics make it more difficult to validate a risk classification instrument for women than an instrument for men.

In this study, we use data for 24,765 women and 177,767 men newly admitted to federal prisons in 1991 through 1998 to assess the predictive validity of an eight-item risk classification instrument predicting violence-related misconduct in the year following prison admission. The sample size for both women and men is far larger than found in any other violence predictive validity study of which we are aware. By comparing results for women and men, we address the question of whether the same instrument should be used to classify female and male inmates. We begin with a brief overview of the classification process.

Prison Inmate Risk Classification Systems

Corrections departments throughout the United States employ inmate risk classification as an indispensable tool for meeting their missions to protect the public and maintain safe and humane prisons in which inmates can seek self-improvement—all in a cost-effective way. The classification system categorizes inmates' risk for violence and escape, allowing the assignment of inmates to appropriately secure institutions.[2] These systems usually contain the following three components, each measuring a different aspect of risk: (a) actuarial or predictive, (b) cost, and (c) professional judgment. The actuarial component indexes risk for serious misconduct (usually violent misconduct) and is formulated from inmate background information to maximize the ability to predict serious misconduct over time, usually 1 year in advance. The cost component restricts movement below a fixed security level floor for

inmates with certain offense or background characteristics, indicating one or more of the following: a greater risk or ability to escape; organizational affiliations such as prison gangs, which indicate a greater potential to disrupt prison operations; or offense behavior (e.g., violence, espionage, terrorism, crimes against children) that demonstrates a potential for causing grave harm to the public or government. The professional judgment component supplements the predictive and cost components with institution staff's firsthand, professional evaluation of the individual's risk for serious misconduct, including escape.[3] The process of determining the appropriate institution for an inmate combines information from all three of these components.

Corrections departments divide inmate classification systems into initial classification and reclassification. Staff conduct initial classification after sentencing, but prior to the offender's admission to prison. Initial classification is based on information from court documents regarding the offender's criminal history, the behavior surrounding his or her incarcerating offense, and other relevant factors.[4] Prison staff conduct reclassification 6 months to a year after admission. Reclassification often uses information gained by observing inmates' adjustment to prison life and their efforts, through program participation, to prepare for a successful return to the community. Because reclassification occurs after inmates have been imprisoned and staff have had the opportunity to observe and interact with them, the professional judgment component plays a larger role in the reclassification process than during initial classification.[5]

For security reasons, corrections managers are appropriately concerned about inmate risk for escape and violent behavior in prison. Therefore, these two concerns are most often chosen as the criteria for assessing risk classification instruments. But in any well-run correctional facility inmates seldom escape, whereas violent or attempted violent acts—although not as common as the popular media might suggest—occur with greater frequency. Although researchers can use statistical models to validate the classification instrument's ability to predict violence, other methods must be used to assess escape risk. To assess escape risk, researchers may survey staff in daily contact with inmates regarding their assessments of the background characteristics and situational experiences (e.g., a death in the family; divorce; family, financial, or other problems) that raise or lower escape risk. Analysts then tally staff responses to identify the most common risk factors to develop both an escape risk instrument and operational practices to monitor inmates at greater risk of attempting to escape (Brennan, 1987; Harer, 1999). This article deals primarily with developing risk instruments for predicting prison violence during the 1st year in prison. We will discuss the development of escape risk and reclassification instruments in separate articles.

DATA AND METHOD

We rely on three data files for the analysis presented in this study. The first file contains demographic and violent misconduct measures for federal prison populations in 1991 through 1998. With these data, we compute violent misconduct rates and examine differences in those rates across gender. The second file contains demographic, criminal history, and current offense information for newly admitted inmates in 1991 through 1998, providing records for 31,303 women and 238,052 men. We created the third data file by matching records for the newly admitted inmates in 1991 through 1998 with records from the United States Sentencing Commission (USSC) for all offenders sentenced to federal prisons in these same years. Successful matches were found for 79% of the women (24,765) and 75% of the men (177,767).[6] The USSC data provide measures for the number and recency of prior incarcerations, forming the criminal history category variable defined more fully below, and for educational attainment, forming our education at admission variable also defined below, which are unavailable in the prison admission data file. All other variables, including the criterion measures, are from the federal prison data file.

We rely on the matched Federal Bureau of Prisons (BOP) and USSC data to compare the predictive validity of the classification instrument when used for women and men. To check for differences in conclusions drawn from results we would have obtained had we achieved a 100% match between the BOP and USSC data files, we conducted the analysis on the larger prematched BOP data set and also on the smaller matched BOP and USSC data set using those variables available in both. Conclusions drawn did not differ between results for the full and matched sets.

We use the following statistical methods. To assess gender differences in the quantity and quality of violent misconduct, we examine gender-specific violence rates. To assess the independent contribution of each predictor to the classification instrument's ability to predict violence-related misconduct during the 1st year in prison, we use Cox proportional hazard models. We use hazard models because of right censoring that occurs either because the inmate does not commit violence-related misconduct during her or his 1st year in prison or because the inmate is released from prison before the end of that year. We use a *Z* test for the equality of hazard model coefficients for women and men (Brame, Paternoster, Mazerolle, & Piquero, 1998; Clogg, Petkova, & Haritou, 1995). Finally, we use the area under the receiver operating characteristic curve (ROC) to gauge and compare the predictive power of female and male risk classification instruments (Quinsey, Harris, Rice, & Cormier, 1998; Rice & Harris, 1995; Swets, Dawes, & Monahan, 2000). The

ROC is insensitive to the base rate of the criterion variable and therefore provides a reliable estimate when base rates are low, which they are for violence-related misconduct among both female and male prisoners. The ROC also allows us to compare the predictive power of the classification instrument when used to predict female and male violence-related misconduct, given the significantly different female and male violence rates.

The violence measure is guilty findings for six BOP misconduct codes. The BOP maintains misconduct definitions and codes for use in charging and adjudicating inmate misconduct. These codes form four groupings, designated as 100-, 200-, 300-, and 400-level misconducts, and are designed to rank misconduct from 100, the most serious, to 400, the least serious. Within each 100 through 400 group, individual misconduct categories are generally ranked from most to least serious. For example, Code 100 is killing or attempting to kill any person, and Code 101 is serious assault (aggravated assault). A full listing of misconduct codes along with policy covering charging, adjudicating, and sanctioning prison misconduct in the Federal BOP can be found on the bureau's Web page at www.bop.gov/pdf/5270_07.pdf. The violent misconduct categories examined here are

- Code 100: killing or attempting to kill any person,
- Code 101: assaulting any person (serious),
- Code 104: possession of a weapon,
- Code 201: fighting,
- Code 203: threatening bodily harm, and
- Code 224: assaulting any person (less serious).

In an earlier study, the first author of the present study conducted a factor analysis of these violence-related categories along with several other nonviolent misconduct categories using data for male inmates (Karacki & Harer, 1997). Results showed that five of these six types of violence fit into one factor. Killing or attempts to kill did not fit any of the factors identified, but that may have been due to the very small number of homicides in the data. The clustering of these five violence-related misconducts into one factor indicates that a male inmate who commits any one of these types of violence is at greater risk of committing any of the others and suggests a latent variable capturing potential for violence. As we report below when examining gender-specific violence, it is extremely rare for women to commit any of the 100-level violent misconducts. Therefore, in comparing female and male prison violence, we find it necessary to break 100- and 200-level violence out as two separate categories. We call 100-level violence "serious violence-related misconduct" and 200-level violence "less serious violence-related misconduct."

Our choice of predictor variables is guided by past empirical and theoretical research on the individual-level predictors of criminal and, especially, violent criminal behavior. We use, with some modifications, the items actually used to classify federal inmates. We supplement these with items for age, prior incarcerations, and educational attainment—items that are not currently used by the bureau in classifying inmates. Prior research demonstrates that all of the measures used here predict criminal behavior, including violence, although somewhat differently across different populations observed in different environments (Andrews & Bonta, 1998; Kane & Saylor, 1983; Quinsey et al., 1998).

Predictor items are defined in Table 1. All predictors are scored such that higher scores represent higher risk. Rationales for each are the following:

1. Type of detainer measures decisions by local authorities to prosecute the offender in addition to his or her federal conviction and, as such, measures the seriousness of the offender's behavior and the threat the offender poses to the community.
2. Severity of current offense measures whether the current offense involved violent behavior as well as any injury inflicted on victims. Prior violence has been shown to predict future violence. Some caveats are in order here. Evidence shows that most serious female violent offending is directed at an abusive spouse or boyfriend and may indicate an effort at self-defense rather than a sustained latent potential for violent behavior (Richie, 1996). In addition, women involved in robbery, which would receive a high score on this item, are often accomplices to men who are the prime instigators (Steffensmeier, 1983; Steffensmeier & Allen, 1996). Therefore, to the degree women receive high scores on this item for homicide, manslaughter, assault, or robbery, the item may be a less robust predictor for women than for men.
3. History of escapes demonstrates a willingness to flee custody or avoid prosecution, indicating both a failure to accept responsibility and a willingness to take actions in the future to resist legal authority and, therefore, to violate prison rules.
4. History of violence, as with the severity of current offense item, has been found in past research to predict future violence.
5. Precommitment status measures the court's decision whether to allow the offender to voluntarily surrender to prison authorities to serve her or his sentence. This measure encapsulates several dimensions of the offender's risk for future crime and misconduct, such as the offender's conduct before the court, the material in the presentence report, and the prosecuting attorney's portrayal of the offender's risk for future crime and misconduct.
6. Age has been found to be a strong predictor of criminal behavior in prison (Harer & Steffensmeier, 1996).
7. Criminal history category is a prior record measure that comes from the USSC. Although it is similar to Item 4, history of violence, the criminal history category measures the quantity and recency of prior incarcerations for violent and nonviolent offenses alike and weights this value by the seriousness of these prior incarcerations as indicated by their lengths. In contrast, history of vio-

lence measures the recency of prior convictions solely for violent behavior, weighted by the seriousness of that behavior as indicated by whether that behavior was likely to have caused serious bodily harm or death. Criminal history category has been found to be a powerful predictor of recidivism risk (Harer, 1994) and plausibly serves to index risk for prison misconduct.

8. Education at admission, research finds, predicts prison misconduct and recidivism (Harer, 1994; Proctor, 1994). In addition, educational attainment is potentially a dynamic predictor, defined by Andrews and Bonta (1998) as an attribute both predicting future misconduct and potentially changeable in a positive way through appropriate prison programs. Beyond adding predictive power, using a dynamic predictor as part of a classification instrument means that data will be collected for all inmates regarding a potentially treatable need. Those data, in combination with additional data regarding inmate prison program participation, program characteristics (e.g., staff attitudes; program design, content, and duration), and measures of individual change in the dynamic predictor attributable to program participation (e.g., educational attainment or, even better, change in knowledge of course content), allow evaluation research linking change in the dynamic predictor attributable to program participation to risk for future violent prison misconduct and violent recidivism. Such a data-gathering and evaluation research protocol holds promise for identifying effective correctional programs and effective program design and, perhaps, providing strong inferential evidence for or against specific criminological theories.

For a classification instrument to include a predictor, it is sufficient, along with ethical and legal considerations, that research finds the measure significantly adds to the instrument's predictive power. However, justifying a predictor as dynamic additionally requires both theory and evaluation research findings supporting links between program participation, positive change in the dynamic predictor resulting from program participation, and reduced risk for future violence. Both theory and at least some evaluation research findings support educational attainment as a dynamic predictor. Several criminological theories argue for a link between educational attainment and risk for violent behavior. Differential association (Sutherland & Cressey, 1978) suggests that contact with the prosocial school environment and removal for a brief time from the prison culture may decrease contact with definitions favorable to violent misconduct as appropriate means for dealing with interpersonal disputes. Andrews and Bonta (1998) pointed to differential association and its emphasis on learned criminal behavior as one criminological theory supporting several dynamic predictors identified by them. If criminal behavior is learned, Andrews and Bonta argued, then it can be unlearned, or replaced with prosocial cognition through appropriate programs. Hirschi's (1969) concept of "commitment" and Toby's (1957) concept of "stakes in conformity" both linked educational attainment to risk of criminal behavior, including violence. Durkheim's (1986) notion of moral education implied

TABLE 1: Description of Items Used in the Classification Instrument

Variable	*Coding*
Type of detainer	Pending state charges: none = 0, low = 1, moderate = 3, high = 5, greatest = 7
Severity of current offense	Lowest = 0, low = 1, moderate = 3, high = 5, greatest = 7
History of escapes	None = 0, minor > 10 years ago = 1, minor 5-10 years ago = 2, minor < 5 years ago or serious anytime in past = 3
History of violence	None = 0, serious > 15 years ago = 2, minor > 10 years ago = 3, serious 10-15 years ago = 4, minor < 5 years ago = 5, serious 5-10 years ago = 6, serious < 5 years ago = 7
Precommitment status	Allowed by the court to voluntarily surrender to prison authorities after sentencing = –3, other = 0
Age at admission (years)	24 or less = 3, 25-35 = 2, 36-54 = 0, 55+ = –1
Criminal history category	United States Sentencing Commission Criminal History Category: I = 0, II = 1, III = 2, IV = 3, V = 4, VI = 5
Education at admission	General equivalency diploma or high school graduate = 0, other = 2

NOTE: All predictors are scored such that higher scores represent higher risk. Definitions of item score categorizations as low, moderate, greatest, and so forth are available online at www.bop.gov/pdf/5100_07.pdf. The scoring of type of detainer and severity of current offense shown here differs from that described in the Bureau of Prisons classification manual. Here, all drug offenders with no violent behavior in their current offense are scored with a maximum of 3 points on each of these items.

that beyond the substantive educational content provided by schooling, education also instills an ability for critical thinking, providing decision-making skills regarding the consequences of one's actions and opening options for productive social relationships. In addition, research on federal prisoners finds that inmates who complete educational programs have lower recidivism rates than those who do not (Harer, 1995). This research is of note in that it goes to great lengths to rule out self-selection bias as an explanation for why prison education program participation is significantly related to lower recidivism. Andrews and colleagues (1990) have used meta-analysis of evaluation studies to empirically link offender program participation, often education program participation, to reduced recidivism risk.

An examination of zero-order correlations among the predictors suggests no potential collinearity problems. The largest zero-order correlation among items for women is .28 between escape history and criminal history category. For men, the largest zero-order correlation is .45 between the criminal history category and history of violence.

One item not included as a predictor but included in an earlier version of the Federal BOP's initial classification system is length of incarceration. Earlier analyses with the federal prison inmate population found that length of incarceration adds nothing to the classification instrument's predictive ability once the variables listed above are controlled. Therefore, we exclude this variable from the current analysis.

RESULTS

Before we compare the classification instrument's predictive validity for women and men, we assess the similarity of our criterion variable, prison violence, for women and men. Table 2 shows mean annual rates of guilty findings for violence-related misconduct per 100 inmates by gender for 1991 through 1998. Also shown in the last column of Table 2 are female rates as a percentage of the male rates. Overall, the information presented in this table shows that women commit less violence-related misconduct than men, especially with regard to serious violence-related misconduct.

At the bottom of the last column in Table 2, we see that the average female rate for violence-related misconduct is 54.4% of the average male rate. Moreover, we see in the middle of the last column that the mean female rate for serious violence (100-level violence) is only 8.14% of the mean male rate. The only violent misconduct with near rate parity between the sexes is for the relatively nonserious offense of fighting, where the mean female rate is 91.7% of the mean male rate. In addition, the note at the bottom of Table 2 indicates that only 2.77% of the overall female rate is due to more serious 100-level violence, whereas a much larger 18.5% of the overall male rate is due to more serious 100-level violence.

We also observe, for the 1991 through 1998 period, that a larger percentage of women than percentage of men charged with the violence-related misconducts listed in Table 2 have those charges handled informally, rather than being formally adjudicated. This suggests that either staff are more willing, perhaps because of the relative rarity of female violence, to charge females for violent misconduct than males or, perhaps amounting to the same thing, that the violent acts for which women are charged are of a less serious nature than those for which men are charged.

Recently, the BOP began collecting additional information for four offenses: Code 100, killing or attempts; Code 101, serious assaults; Code 203, threatening bodily harm; and Code 224, less serious assaults. This new information records the type of weapon used and the degree of injury inflicted. Using data for 1998, the 1st full year in which this additional infor-

TABLE 2: Mean Annual Violence-Related Misconduct Incident Rates per 100 Inmates by Gender for the Federal Prison Population Across Years 1991 Through 1998

Violence Category	*Female Rate*	*Male Rate*	*Female Rate as Percentage of Male Rate*
100: killing or attempting	0.000	0.044	0.0
101: assault more serious	0.072	0.551	13.1
104: weapon possession	0.073	1.175	6.21
100-level total	0.144	1.770	8.14
201: fighting	3.074	3.351	91.7
203: threatening bodily harm	0.693	1.790	38.7
224: assault less serious	1.293	2.658	48.6
200-level total	5.060	7.798	64.9
Combined total[a]	5.204	9.568	54.4

a. The percentage of violence rate that is serious (i.e., 100 level): women = 2.77%, men = 18.5%.

mation was collected, we observe that as measured by both type of weapon used and injury inflicted, women's misconduct is less serious than men's. Women's violence is less likely than men's to involve the use of a sharp or pointed weapon (1.8% of violent women compared to 5.0% of violent men). Similarly, all of women's violent misconduct results in, at most, only minor injury. In contrast, 6.3% of men's violent misconduct results in moderate or major injury (including two deaths in 1998). In sum, women commit violence at substantially lower rates than men, and the nature of the violence women commit is less serious as measured by the female rate of serious (100-level) violence-related misconduct, by the types of weapons they use, and by the injury they inflict.

Table 3 displays the means and standard deviations for the variables used in the analysis. Whereas Table 2 presented incident rates of violence-related misconduct (i.e., based on the total number of violent acts), Table 3 presents mean prevalence of violence-related misconduct (i.e., based on the number of individuals with one or more violent acts). We show prevalence in Table 3 because it reflects more closely the dependent variable in the hazard model than do incident rates. The total classification score is produced by summing the eight items of the classification instrument. We see that for all eight predictor items and the total score, women have smaller means and therefore appear to be at lower risk for violence than men. The first note at the bottom of Table 3 indicates that the prevalence rate for violence-related misconduct for women during their 1st year in prison is 2.61 per 100 and for men it is 4.56 per 100. Therefore, the female rate is 62% of the male rate. However, the more

TABLE 3: Descriptive Statistics for Variables Used in the Analysis

	*Female (*n = *24,765)*		*Male (*n = *177,767)*	
Variable	M	SD	M	SD
Violence-related misconduct(prevalence)[a]	0.021	0.143	0.036	0.187
Type of detainer	0.391	0.966	0.732	1.429
Severity of current offense	2.337	1.432	2.921	1.674
History of escapes	0.088	0.482	0.170	0.655
History of violence	0.307	1.227	1.101	2.184
Precommitment status	–1.460	1.500	–0.874	1.363
Age at admission	1.285	1.224	1.400	1.251
Criminal history category	0.572	1.139	1.227	1.601
Education at admission	0.733	0.964	0.904	0.995
Total score[b]	4.445	3.994	7.669	5.635

a. The violence-related misconduct prevalence rate during the 1st year in prison, adjusted for days at risk, is 2.61 per 100 for women, with a rate for more serious violence-related misconduct (Level 100) of 0.08 per 100, and for less serious violence-related misconduct (Level 200) of 2.53 per 100. For men, the overall violence-related misconduct prevalence rate is 4.56 per 100, with a rate for more serious violence-related misconduct of 0.71 per 100, and for less serious violence-related misconduct of 3.50 per 100.
b. The total score is the sum of the eight predictors.

serious violence-related misconduct rate (Code 100) for women is 0.08 per 100 and for men it is 0.71 per 100, indicating the female serious violence rate is only 11% of the male serious violence rate. These patterns of violence prevalence rates by gender mimic closely the gender-specific patterns of violent incident rates for the annual stock inmate populations that were shown in Table 2.

Table 4 shows results for proportional hazard models for women and men. For women, significant effects at the .05 level are observed for all items except history of escapes. For men, all items are significant at a .05 level. We must observe here that despite the high degree of similarity in significance of items in both the female and male equations, the female equation is primarily predicting less serious violence, but the male equation is predicting both less serious and more serious violence. Seriousness of the violent behavior would seem to be predicted by gender. Despite the less serious nature of female violence, the latent potential for violent behavior is conditioned by the same, or very similar, background characteristics for both women and men.

The education item is significant for both women and men, indicating that those who did not graduate high school or obtain a general equivalency diploma were more likely to engage in violence, controlling for seven additional risk measures. The potential for education to be used as a dynamic pre-

TABLE 4: Proportional Hazard Model Results for Classification Items Predicting Female and Male Violence-Related Misconduct During the 1st Year in Prison and Tests for Difference Between Coefficients for Women and Men

Variable	*Female Parameter Estimate (n = 24,765)*	*Male Parameter Estimate (n = 177,767)*	*Difference in Coefficients*	Z
Type of detainer	0.102*	0.046*	0.055	1.64
SE	.033	.007		
HR	1.107	1.047		
Severity of current offense	0.069*	0.084*	–0.015	–0.53
SE	.028	.007		
HR	1.071	1.088		
History of escapes	0.048	0.050*	–0.001	–0.02
SE	.063	.014		
HR	1.050	1.051		
History of violence	0.136*	0.085*	0.052	2.26*
SE	.022	.005		
HR	1.146	1.088		
Precommitment status	0.286*	0.213*	0.073	1.77*
SE	.039	.014		
HR	1.331	1.237		
Age at admission	0.451*	0.414*	0.024	0.70
SE	.044	.013		
HR	1.570	1.513		
Criminal history category	0.188*	0.164*	0.037	0.80
SE	.033	.008		
HR	1.207	1.179		
Education at admission	0.150*	0.085*	0.065	1.37
SE	.046	.013		
HR	1.162	1.089		
Likelihood ratio	430.600*	4436.102*		

NOTE: HR = hazard ratio.
*Significant at .05 level or less.

dictor, as defined earlier, has a number of implications. First, if the inmate advances her or his educational attainment by participating in prison education programs, her or his likelihood of engaging in violence-related misconduct may be reduced. Second, including education in a reclassification instrument provides inmates an incentive to participate in such programs. However, additional data regarding education program participation and change in educational attainment as well as evaluation research linking that change to risk for violent misconduct are needed to more definitively identify educational attainment as a dynamic predictor as opposed to simply a predictor.

Table 4 also shows *Z* scores used to test the equality of the female and male proportional hazard model coefficients. Significant coefficient differences at the .05 level are observed for the history of violence and precommitment status items. Both the history of violence and the precommitment status item coefficients for women are somewhat larger than those for men. Results for the precommitment status item's effect are of note in that they suggest that sentencing judges are making correct decisions. The greater effect for women, net of the other items, is especially notable in that 49% of the women in our data received –3 points for voluntary surrender, whereas only 29% of the men received –3 points. This indicates that despite any potential proclivity of judges to grant voluntary surrender to women, many of whom have responsibility for children, precommitment status has a larger effect on prison violence for women than for men.

Despite the hypothesis described earlier, that a serious, violent, incarcerating offense, as measured by Offense Severity, may not predict as well for women as for men, we observe no difference between the female and male coefficients for that item, as indicated by the nonsignificant *Z* score. We emphasize that overall, results for the hazard models are quite similar for women and men. All eight predictors are significant for men, and all but one (history of escapes) are significant for women.

Areas under the ROCs for female and male classification scores predicting violence-related misconduct are 0.739 and 0.721, respectively, indicating considerable and nearly equal predictive power for both women and men. These ROCs are as large or larger than many reported in the literature assessing the predictive validity of various violence prediction instruments (Andrews & Bonta, 1998; Quinsey et al., 1998).[7] Most important, however, these findings would dispute any contention that predictive instruments cannot be developed for female prisoners.

Comparing the magnitudes of the coefficients for women and men, six of the eight predictors are the same. It is instructive to note that in separate analyses, we limited our study groups to 1 or 2 years of admission cohorts. Results for predictors in the male equations were essentially stable across these subsets, but results for predictors in the female equations differed from those for men and for other female admission cohort groupings. As the number of female admission cohorts added to the data set grew, the results for women got closer and closer to the results for men until, as results reported indicate, there was little difference in the results for women and men. We believe this illustrates the need for very large samples to model violence-related misconduct for both women and men. Because state and federal prison admissions and prison populations are more than 88% men, finding large samples of men is seldom difficult (Camp & Camp, 1999). The situa-

tion is different for women, who not only make up less than 12% of prison admissions and prison populations but also have lower violence rates than men. Models estimated from 5,000, or even 10,000, women did not yield stable results. Only when the full sample of more than 24,000 women was used did results for women stabilize. This is an important point because researchers seeking to replicate this analysis will need to use a very large sample of female inmates (assuming the rate of violence-related misconduct is also low in their sample) or be misled into finding substantive gender differences in the predictors of violent misconduct, when such differences may not exist.

One last important finding from our analyses of smaller samples of newly admitted women and men is that even with smaller samples, the predictive power of male and female classification scores, as measured by the ROC, was very similar.

Further exploring gender differences in predictors of prison violence, Table 5 provides results for three proportional hazard models using data pooling together the male and female samples for an *N* of 202,532. A dummy variable measuring gender (male), coded 1 if male and 0 if female, is added to the predictors from Table 4. Means and standard deviations for items in these combined data, which are weighted averages of those shown in Table 3, are available from the authors. Model 1 regresses violence-related misconduct, which includes measures of both less and more serious violence, on the predictors. Model 2 regresses only less serious (200-level) violence-related misconduct on the predictors. And, Model 3 regresses only serious (100-level) violence-related misconduct on the predictors. Results for Model 1 show all predictors except male to be statistically significant. That is, once the classification items are controlled, gender has no effect, which is what we conclude from the results in Table 4. In Model 2, predicting less serious violence, all predictors are statistically significant. However, the gender measure (male) has a relatively small, statistically significant, negative effect. Using the hazard ratio for the male coefficient in Model 2, we compute that being male decreases by 13.9% $((0.861 - 1) \times 100)$ the hazard of committing a less serious violence-related misconduct compared to being female, when the eight classification items are controlled. In Model 3, we see that all predictors are statistically significant, but now the gender measure male has a positive sign. Using the hazard ratio for the male coefficient in Model 3, we compute that being male increases by a whopping 254.4% $((3.544 - 1) \times 100)$ the hazard of committing a serious violence-related misconduct. Based on these results, we conclude that when predicting both less and more serious violence, classification predictors work equally well for men and women. However, men are substantially more likely to commit serious violence than women. As we argue below, these findings suggest that although it may be appropriate to use

TABLE 5: Proportional Hazard Model Results for Combined Female and Male Observations for Classification Items and Gender Predicting All Violence-Related Misconduct, Less Serious (200-level) Violence and Serious (100-level) Violence, During the 1st Year in Prison (*N* = 202,532)

Variable	*Model 1: Violence-Related Parameter Estimate*	*Model 2: Less Serious Violence Parameter Estimate*	*Model 3: Serious Violence Parameter Estimate*
Type of detainer	0.048*	0.036*	0.082*
SE	.007	.008	.014
HR	1.049	1.037	1.085
Severity of current offense	0.083*	0.060*	0.201*
SE	.007	.007	.014
HR	1.086	1.061	1.222
History of escapes	0.051*	0.046*	0.063*
SE	.014	.016	.030
HR	1.052	1.047	1.065
History of violence	0.086*	0.080*	0.111*
SE	.005	.005	.011
HR	1.090	1.083	1.118
Precommitment status	0.224*	0.207*	0.425*
SE	.014	.014	.048
HR	1.251	1.230	1.529
Age at admission	0.417*	0.424*	0.393*
SE	.012	.013	.030
HR	1.517	1.529	1.482
Criminal history category	0.165*	0.155*	0.234*
SE	.008	.009	.018
HR	1.179	1.168	1.264
Education at admission	0.090*	0.092*	0.086*
SE	.012	.013	.029
HR	1.094	1.097	1.089
Male	–0.051	–0.150*	1.265*
SE	.048	.049	.239
HR	0.950	0.861	3.544
Likelihood ratio	4965.441*	3783.946*	1778.235*

NOTE: HR = hazard ratio.
*Significant at .05 level or less.

the same instrument to classify women and men, the seriousness of violence at each classification score must be considered separately for women and men when cutting scores to assign security or custody levels.

Figures 1 and 2 present, for women and men, the annual rates of serious (100-level) and less serious (200-level) violence-related misconduct by clas-

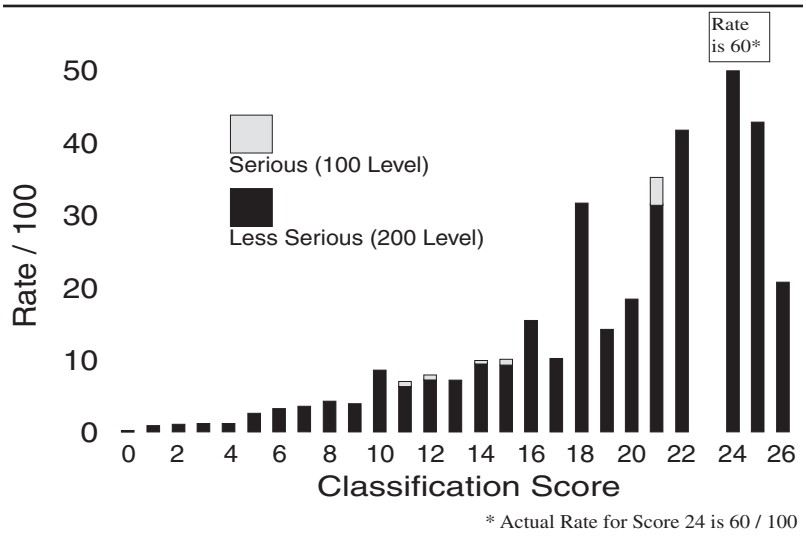

Figure 1: Female Annual 100- and 200-Level 1st Year Violence-Related Misconduct Incident Rates per 100 Inmates by Classification Scores (1991-1998 federal prison admissions)

sification scores for new admissions to the bureau, 1991-1998. The classification scores in Figures 1 and 2 are obtained by summing the eight items of the classification instrument and setting any negative values to zero. If we focus on patterns of rates by classification scores, we see an upward trend of rates for both women and men, with rates becoming somewhat choppy for the highest classification scores. The effect is more pronounced for women than for men. We offer different explanations for the choppiness in each group.

For women, the rate choppiness at higher classification scores is most likely due to the small number of female inmates with high classification scores. For example, the rate for women with a score of 24 is exorbitant (60 per 100). However, this rate is based on only 5 women newly admitted to federal prison in 1991 through 1998 with a classification score of 24. For men, the explanation for choppiness in the annual rates of violence is somewhat different. Having too small a number of male inmates to get an accurate estimate of the annual rate of violence is only a problem for the very highest classification scores. Instead, we attribute most of the choppiness at the high end of classification scores for men to the effect of high-security institution operations in suppressing violent misconduct, as observed for inmates in the California prison system (Berk & de Leeuw, 1999). Preliminary results from our own analysis, using a hierarchical linear model with federal prisoners across

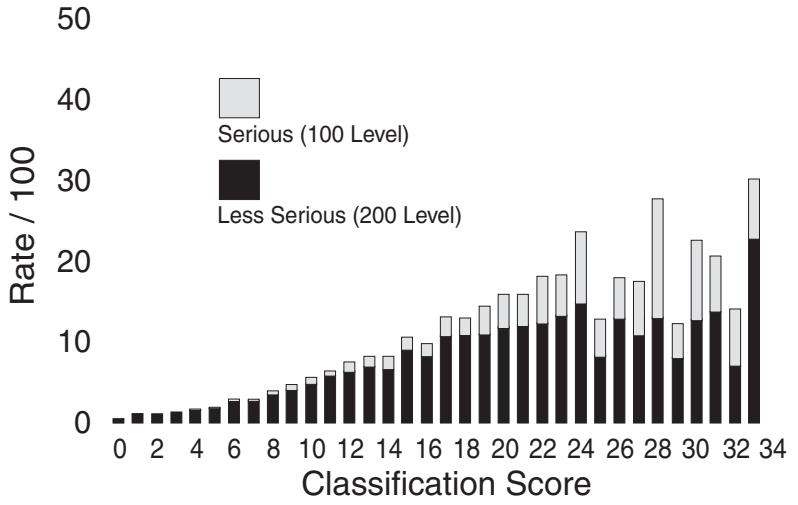

Figure 2: Male Annual 100- and 200-Level 1st Year Violence-Related Misconduct Incident Rates per 100 Inmates by Classification Scores (1991-1998 federal prison admissions)

federal prisons of various security levels, replicated Berk and de Leeuw's (1999) findings for the California prison system. These findings regarding environmental effects underscore the need in the future to control for theoretically important environmental factors when assessing the predictive validity of inmate classification instruments.

DISCUSSION

Our main finding is that the same risk classification instrument is equally predictive of female and male violence-related misconduct. However, this research also finds that women are much less likely to commit more serious kinds of violent misconduct than are men. This suggests that the seriousness of violence and, perhaps, the structural conditions or environments that give rise to its expression may be conditioned by gender-specific factors.

A second important finding is that educational attainment at prison admission adds to our classification instrument's predictive power. We also find that coefficients for educational attainment are the same in the proportional hazard model results for women and for men. This finding supports the viability of using dynamic measures as risk predictors and points to needed

research identifying additional dynamic risk measures and testing their contribution to the predictive power. Additional dynamic risk measures that might be considered are substance abuse; work skills and habits; relationship skills; peer associations; and, perhaps, attitudes, values, and beliefs. Moreover, some potential dynamic risk factors may be gender specific (Chesney-Lind, 1997; Covington, 1998; Forcier, 1995; Fowler, 1993; Lewis, 1999; Morash, Bynum, & Koons, 1998; Owen, 1998; Steffensmeier & Allen, 1996). The challenge to both researchers and departments of corrections is to formulate measures and obtain data allowing analyses of these questions, answers to which could promote needed programs.

What do our findings say regarding the question, "Should we have separate male and female risk classification systems?" Although we find that the same risk classification instrument works equally well to predict violence among women and men, we also find that the nature of that violence is very different. That difference requires that when grouping interval-level classification scores to form discrete security or custody levels (e.g., minimum, low, medium, high), one should account for gender differences in rates of more serious and less serious violence.

Table 6 shows one possible way to cut classification scores produced by our classification instrument for women admitted to federal prison in 1991 through 1998. With the proposed cutting scheme, nearly 97% of the newly admitted women would be classified as minimum security, approximately 2% as low, and less than 1% as medium or high. However, because none of the women in any of the score categories commit an appreciable amount of serious violence, these groupings might be used more for determining custody practices such as freedom of movement in the institution or for granting furloughs to, or placement in, the community rather than for assigning women to appropriately secure prisons. For comparison purposes, we also provide a possible set of cuts for male classification scores in Table 7. Note the much higher rates of more serious 100-level violence among men, especially at the higher classification scores.

We note that the predictive measures we use in our analysis are limited. We cannot rule out the possibility that additional measures, capturing the potentially different pathways of women and men into crime and into prison, may operate differently to predict prison violence for women and men. For example, there is evidence that men's substance abuse is motivated more by hedonism, whereas women's substance abuse is motivated more by a desire to alleviate physical or emotional pain (Blume, 1990; Mondanaro, 1989). Substance abuse may therefore predict violence-related misconduct differently for women and men. We do not now have a substance abuse measure

TABLE 6: Female Annual Violence-Related Misconduct Incident Rates per 100 Inmates During 1st Year in Prison by Overall Classification Score

Inmate Security Level	*Score*	*Serious Violence (100 level)*	*Less Serious Violence (200 level)*	*Violence Related*	*Number Admitted*	*Cumulative Percentage Admitted*
Minimum	0	0.027	0.354	0.382	5,588	22.56
	1	0.000	1.014	1.014	1,266	27.68
	2	0.056	1.178	1.234	2,239	36.72
	3	0.000	1.281	1.281	2,532	46.94
	4	0.000	1.366	1.366	1,621	53.49
	5	0.075	2.635	2.710	3,195	66.39
	6	0.157	3.220	3.377	1,649	73.05
	7	0.067	3.607	3.674	1,821	80.40
	8	0.163	4.257	4.421	1,482	86.38
	9	0.000	4.039	4.039	887	89.97
	10	0.181	8.524	8.706	659	92.63
	11	0.791	6.327	7.117	456	94.47
	12	0.613	7.362	7.975	382	96.01
	13	0.000	7.350	7.350	229	96.94
Low	14	0.593	9.491	10.084	207	97.77
	15	0.842	9.263	10.105	136	98.32
	16	0.000	15.526	15.526	99	98.72
	17	0.000	10.317	10.319	76	99.03
Medium or high	18	0.000	31.781	31.781	69	99.31
	19	0.000	14.250	14.250	57	99.54
	20	0.000	18.431	18.431	43	99.71
	21	3.906	31.251	35.157	27	99.82
	22	0.000	41.705	41.705	16	99.88
	23	0.000	0.000	0.000	11	99.93
	24	0.000	60.000	60.000	5	99.95
	25	0.000	42.857	42.857	7	99.98
	26	0.000	20.824	20.824	5	100.00
	27	0.000	0.000	0.000	1	100.00

NOTE: Because not all inmates served a full year in prison, we obtained denominators for rates by dividing total inmate days served within each classification score by 365 to obtain total years served.

available to include in our analysis, but we hope to have such a measure in the near future. This example illustrates why the maintenance of separate female and male classification systems, requiring separate validation and allowing for consideration of gender-specific predictors in the future, is advisable. The small numbers of female inmates in all prison systems and their low base

TABLE 7: Male Annual Violence-Related Misconduct Incident Rates per 100 Inmates During 1st Year in Prison by Overall Classification Score

Inmate Security Level	*Score*	*Serious Violence (100 level)*	*Less Serious Violence (200 level)*	*Violence Related*	*Number Admitted*	*Cumulative Percentage Admitted*
Minimum	0	0.064	0.588	0.651	18,918	10.64
	1	0.000	1.229	1.229	4,833	13.36
	2	0.124	1.119	1.243	9,522	18.72
	3	0.108	1.395	1.503	12,142	25.55
	4	0.224	1.601	1.825	8,151	30.13
	5	0.186	1.870	2.056	18,108	40.32
	6	0.313	2.720	3.033	11,546	46.81
	7	0.315	2.725	3.040	14,909	55.20
Low	8	0.599	3.501	4.100	13,934	63.04
	9	0.785	4.034	4.819	9,370	68.31
	10	0.924	4.834	5.758	9,338	73.56
Medium	11	0.729	5.819	6.548	7,492	77.78
	12	1.278	6.304	7.582	6,392	81.37
	13	1.320	7.002	8.323	5,512	84.47
	14	1.318	6.658	7.976	4,659	87.09
	15	1.742	8.965	10.707	4,254	89.49
	16	1.617	8.231	9.849	3,739	91.59
High	17	2.427	10.702	13.129	3,423	93.52
	18	2.305	10.742	13.047	2,700	95.04
	19	3.524	10.927	14.451	2,370	96.37
	20	4.239	11.721	15.960	1,693	97.32
	21	4.036	11.950	15.986	1,315	98.06
	22	5.822	12.304	18.126	946	98.59
	23	5.164	13.144	18.307	679	98.98
	24	8.895	14.757	23.652	510	99.26
	25	4.779	8.153	12.932	368	99.47
	26	5.179	12.776	17.955	298	99.64
	27	6.840	10.748	17.588	210	99.75
	28	14.762	12.917	27.679	169	99.85
	29	4.417	7.950	12.367	117	99.92
	30	9.908	12.739	22.647	72	99.96
	31	6.893	13.786	20.679	45	99.98
	32	7.066	7.066	14.131	15	99.99
	33	7.550	22.649	30.198	14	100.00
	34	0.000	0.000	0.000	4	100.00

NOTE: Because not all inmates served a full year in prison, we obtained denominators for rates by dividing total inmate days served within each classification score by 365 to obtain total years served.

rates of violence place researchers in a quandary when looking for large enough data sets to accurately assess the predictive validity of female risk classification items, a quandary that may only be overcome by the ability, someday, to combine data across many prison systems and across many years.[8]

The possibilities that prison environments may affect prison violence over and above individual inmate characteristics, that environmental conditions may interact with specific inmate characteristics to increase or decrease prison violence, and that these environmental effects may vary by gender are possibilities that must be explored both for their policy implications and as controls when assessing individual-level classification instruments.

Some persons may infer that because female prisoners have very low violence rates, no female risk classification is needed. However, we have shown that violence does occur among women and that it can be predicted with substantial accuracy. Such knowledge allows prison authorities to grant lower risk inmates greater freedom, perhaps even the freedom to go into or return to the community. Without such knowledge, many prison managers, erring on the side of caution, may subject too many female inmates to restrictive custody. Therefore, the use of a predictively valid classification system has important implications for female corrections, allowing the identification of the vast majority of female inmates as minimal risk and justifying their placement in their home communities where programs for education, substance abuse, psychological treatment, employment, and contact with children could, perhaps, be more readily accommodated.

Our findings imply the following two key policy implications. First, in terms of predictive accuracy, a predictively valid male risk classification instrument is likely to predict equally well for female prisoners. Second, because our findings also show the seriousness of violence is much lower among women, gender-specific application of the classification instrument is required. Separate application allows classification staff to examine rates for more serious and less serious violent misconduct at each classification score for women and men when grouping scores into inmate security or custody categories. Doing this is likely to result, in as much as women admitted to federal prisons are any guide, in the vast majority of women classified as minimal risk.

Finally, we reiterate that because the number of potential gender-specific predictors used here were limited, much additional research is needed. Corrections researchers, guided by theory and research regarding gender differences in violence both in the community and in prison, should explore further the potential for gender-specific predictors of violence. Doing so may

improve the ability to identify female and male minimum- and high-risk prisoners, further ensuring that neither women nor men are underclassified or overclassified.

NOTES

1. Steffensmeier and Allen (1996, 1998) reported similar gender-specific homicide rates for other years as well.

2. This article does not address questions of whether institution environments interact with inmate characteristics to increase or decrease misconduct (Kane, 1986). In a future study, we hope to consider institution environment effects, but for now our analysis is limited to the relationship of individual inmate characteristics to violent behavior. That said, we note that the inmate classification system plays a major role in determining the nature of prison environments. By allowing the separation of more violent from less violent inmates (i.e., high risk from low risk), the prison environment is to a large degree predetermined by the classification system, in inmate population composition, architecture, custody, and programs.

3. In addition to inmate security needs, correctional systems also assess inmates for programmatic needs. These additional needs include medical, psychiatric, substance abuse treatment, educational, community contact, work, and others. Although prison systems classify inmates for these various needs, they seldom include these need measures in risk classification. We argue for such inclusion when the need measure can be shown to add to the predictive power of the risk instrument.

4. Some state corrections systems maintain what are called reception centers, where incoming inmates are evaluated for their programmatic needs. The inmate's records are reviewed; he or she is interviewed regarding education, work, and substance abuse history; and tests may be given to assess psychological problems and deficiencies in basic reading, writing, and mathematical skills. In the federal prison system, incoming inmates are designated directly to prisons where, it is presumed, they will stay for at least 18 months or until release. At the facilities where inmates are first designated, an assessment of programmatic needs is conducted similar to that in state reception centers.

5. In addition to classification for institution placement, most prison systems maintain a custody classification system that determines inmate housing and movement within each institution.

6. We define a successful match as one where we found the same values for FBI number, offense, sentencing, and demographic information on both the Bureau of Prisons's and United States Sentencing Commission records, with allowances for missing values and coding errors.

7. We have conducted a preliminary analysis of the predictive power of a reclassification instrument with the same data used here. In addition to the initial classification measures used here, the reclassification instrument includes measures of the frequency and recency of past misconduct, seriousness of past misconduct, and past program participation. We find these additional variables contribute substantially to the predictive power of the model, as indicated by the receiver operating characteristic curve.

8. If the risk criterion is expanded to include nonviolent misconduct, then a smaller number of female inmates will be needed to assess the predictive validity of the risk classification instrument. However, if the criterion is expanded, then analysts should both profile female rates for the misconduct categories chosen and provide arguments for why it is important to validate a risk classification instrument for those types of misconduct.

REFERENCES

Andrews, D. A., & Bonta, J. (1998). *The psychology of criminal conduct*. Cincinnati, OH: Anderson.

Andrews, D. A., Zinger, I., Hoge, R. D., Bonta, J., Gendreau, P., & Cullen, F. T. (1990). Does correctional treatment work? A clinically relevant and psychologically informed meta-analysis. *Criminology*, *28*, 369-404.

Berk, R. A., & de Leeuw, J. (1999). An evaluation of California's inmate classification system using a generalized regression discontinuity design. *Journal of the American Statistical Association*, *94*, 1045-1052.

Blume, S. B. (1990). Chemical dependency in women: Important issues. *American Journal of Drug and Alcohol Abuse*, *16*, 297-307.

Brame, R., Paternoster, R., Mazerolle, P., & Piquero, A. (1998). Testing for the equality of maximum-likelihood regression coefficients between two independent equations. *Journal of Quantitative Criminology*, *14*, 245-261.

Brennan, T. (1987). Classification for control in jails and prisons. In D. M. Gottfredson & M. Tonry (Eds.), *Prediction and classification: Criminal justice decision making* (pp. 323-366). Chicago: University of Chicago Press.

Brennan, T. (1998). Institutional classification of females: Problems and some proposals for reform. In R. T. Zaplin (Ed.), *Female offenders: Critical perspectives and effective interventions* (pp. 179-204). Gaithersburg, MD: Aspen.

Burke, P., & Adams, L. (1991). *Classification for women offenders in state correctional facilities: A handbook for practitioners*. Washington, DC: National Institute of Corrections.

Camp, C. G., & Camp, G. M. (1999). *The corrections yearbook: Adult corrections*. Middletown, CT: Criminal Justice Institute.

Chesney-Lind, M. (1997). *Girls, delinquency, and juvenile justice*. Belmont, CA: Wadsworth.

Clogg, C. C., Petkova, E., & Haritou, A. (1995). Statistical methods for comparing regression coefficients between models. *American Journal of Sociology*, *100*, 1261-1293.

Covington, S. S. (1998). The relational theory of women's psychological development: Implications for the criminal justice system. In R. T. Zaplin (Ed.), *Female offenders: Critical perspectives and effective interventions* (pp. 113-131). Gaithersburg, MD: Aspen.

Durkheim, E. (1986). *Moral education: A study in the theory and application of the sociology of education*. New York: Free Press.

Farr, K. A. (2000). Classification for female inmates: Moving forward. *Crime & Delinquency*, *46*, 3-17.

Forcier, M. W. (1995). *Massachusetts Department of Corrections female offender objective classification technical assistance project*. Washington, DC: National Institute of Corrections.

Fowler, L. T. (1993). *What classification for women? Classification: A tool for managing today's offenders*. Laurel, MD: American Correctional Association.

Greenfeld, L. A., & Snell, T. L. (1999). *Women offenders*. Washington, DC: Bureau of Justice Statistics.

Harer, M. D. (1994). *Recidivism of federal prison releasees in 1987: A preliminary report*. Washington, DC: Federal Bureau of Prisons.

Harer, M. D. (1995). *Prison education program participation and recidivism: A test of the normalization hypothesis*. Washington, DC: Federal Bureau of Prisons.

Harer, M. D. (1999). *Money, organization, and leadership: Escape risk of high level drug offenders in federal prisons*. Washington, DC: Federal Bureau of Prisons.

Harer, M. D., & Steffensmeier, D. J. (1996). Race and prison violence. *Criminology*, *34*(3), 323-351.

Hirschi, T. (1969). *Causes of delinquency.* Berkeley: University of California Press.

Kane, T. R. (1986). The validity of prison classification: An introduction to practical considerations and research issues. *Crime & Delinquency*, *32*, 367-390.

Kane, T. R., & Saylor, W. G. (1983). *Security designation: A validation study.* Washington, DC: Federal Bureau of Prisons.

Karacki, L., & Harer, M. D. (1997). *Is there a new offender?* Washington, DC: Federal Bureau of Prisons.

Lewis, L. (1999). *Dimensions of crime among female prisoners: A multi-theoretical analysis*. Unpublished master's thesis, Portland State University, Portland, OR.

Mondanaro, J. (1989). *Chemically dependent women: Assessment and treatment*. Lexington, MA: Lexington Books.

Morash, M., Bynum, T. S., & Koons, B. A. (1998). *Women offenders: Programming needs and promising approaches*. Washington, DC: National Institute of Justice.

Owen, B. (1998). *In the mix: Struggle and survival in a women's prison*. Albany: State University of New York Press.

Proctor, J. L. (1994). Evaluating a modified version of the federal prison system's inmate classification modes: An assessment of objectivity and predictive validity. *Criminal Justice and Behavior*, *21*(2), 256-272.

Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC: American Psychological Association.

Rice, M. E., & Harris, G. T. (1995). Violent recidivism: Assessing predictive validity. *Journal of Consulting and Clinical Psychology*, *63*(5), 737-748.

Richie, B. E. (1996). *Compelled to crime: The gender entrapment of battered Black women*. New York: Routledge.

Steffensmeier, D. (1983). Sex-segregation in the underworld: Building a sociological explanation of sex differences in crime. *Social Forces*, *61*, 1010-1032.

Steffensmeier, D., & Allen, E. (1998). The nature of female offending: Patterns and explanation. In R. T. Zaplin (Ed.), *Female offenders: Critical perspectives and effective interventions* (pp. 5-29). Gaithersburg, MD: Aspen.

Steffensmeier, D. J., & Allen, E. (1996). Gender and crime: Toward a gendered theory of female offending. *Annual Review of Sociology*, *22*, 459-487.

Sutherland, E. H., & Cressey, D. R. (1978). *Criminology* (10th ed.). New York: Lippincott.

Swets, J. A., Dawes, R. M., & Monahan, J. (2000, October). Better decisions through science. *Scientific American*, *283*(4), 82-87.

Toby, J. (1957). Social disorganization and stake in conformity: Complementary factors in the predatory behavior of hoodlums. *Journal of Criminal Law, Criminology, and Police Science*, *48*, 12-17.