WOMEN'S RISK FACTORS AND THEIR CONTRIBUTIONS TO EXISTING RISK/NEEDS ASSESSMENT

The Current Status of a Gender-Responsive Supplement

PATRICIA VAN VOORHIS
University of Cincinnati

EMILY M. WRIGHT
University of South Carolina

EMILY SALISBURY
Portland State University

ASHLEY BAUMAN
University of Cincinnati

A growing body of scholarship faults existing risk/needs assessment models for neglecting the risk factors most relevant to women offenders. In response, a series of gender-responsive assessment models were tested for their contributions to widely used gender-neutral risk needs assessments. In six of eight samples studied, subsets of the gender-responsive scales achieved statistically significant contributions to gender-neutral models. Promising results were found for the following: (a) parental stress, family support, self-efficacy, educational assets, housing safety, anger/hostility, and current mental health factors in probation samples; (b) child abuse, anger/hostility, relationship dysfunction, family support, and current mental health factors among prisoners; and (c) adult victimization, anger/hostility, educational assets, and family support among released inmates. The predictive validity of gender-neutral assessments was strong in seven of eight samples studied. However, findings for both gender-neutral and gender-responsive domains suggested different treatment priorities for women from those currently put forward in correctional theory and policy.

Keywords: women offenders; correctional classification; risk factors; needs; gender-responsive; criminogenic needs

At a time when the field of corrections had access to a plethora of commercial and public domain classification systems, authorities were alerted to rapidly expanding populations of women offenders (Bureau of Justice Statistics, 2007) who were being assessed by systems originally designed for men (Blanchette & Brown, 2006; Hardyman & Van

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Voorhis, 2004; Van Voorhis & Presser, 2001). Some of these systems were valid for women, and some were not. Of particular concern were prison custody classification systems, comprising primarily offense-related risk factors and used to assign inmates to maximum, medium, and minimum security facilities. A national survey of state correctional classification directors (Van Voorhis & Presser, 2001) and a number of scholars (Bloom, Owen, & Covington, 2003; Chesney-Lind, 1997; Morash, Bynum, & Koons, 1998) faulted these prison classification systems for (a) overclassifying women and (b) ignoring the risk factors and needs most relevant to women offenders. Additionally, the prison custody classification systems were applied with little concern for their validity for women. In fact, at the time of the nationwide survey, 36 states had not validated their custody classification systems on samples of female offenders (Van Voorhis & Presser, 2001).

Of less concern were the more contemporary risk/needs assessments that continued to tap offense attributes but also included dynamic, "criminogenic needs" found to be predictive of future offense-related outcomes (Andrews, Bonta, & Hoge, 1990). These assessments are based on treatment principles that have become known as the *Canadian Model*. Among the risk factors examined by these "gender-neutral" assessments (e.g., the Level of Service Inventory–Revised, Andrews & Bonta, 1995, and the Northpointe COMPAS, Brennan, Dieterich, & Ehret, 2009; Brennan, Dieterich, & Oliver, 2006) are criminal history, as well as problems related to education, employment, finances, living arrangements, quality of family life, leisure time activities, antisocial friends, substance abuse, mental health, and criminal thinking. Although designed for community corrections, these dynamic, risk/needs assessments have also been shown to predict institutional misconduct (e.g., see Bonta, 1989; Bonta & Motiuk, 1987, 1990, 1992; Kroner & Mills, 2001; Motiuk, Motiuk, & Bonta, 1992; Shields & Simourd, 1991). In fact, their relevance to institutional settings is enhanced by the advent of recent prison reentry and transition initiatives that encourage the assessment of dynamic risk factors while offenders are incarcerated in order to prepare inmates for release (see Burke, 2008).

A number of studies have found these dynamic risk assessments valid for women (see Andrews, Dowden, & Rettinger, 2001; Blanchette & Brown, 2006; Coulson, Ilacqua, Nutbrown, Giulekas, & Cudjoe, 1996; Dowden & Andrews, 1999; Holsinger, Lowenkamp, & Latessa, 2003; Simourd & Andrews, 1994; Smith, Cullen, & Latessa, 2009). Others studies have produced conflicting results (see Blanchette, 2005; Law, Sullivan, & Goggin, in press; Olson, Alderden, & Lurigio, 2003; Reisig, Holtfreter, & Morash, 2006; Salisbury, Van Voorhis, & Spiropoulis, 2009).

While the above list of risk and need factors may seem comprehensive, gender-responsive scholars note the absence of assessment scales pertaining to relationships, depression, parental issues, self-esteem, self-efficacy, trauma, and victimization (Blanchette, 2004; Blanchette & Brown, 2006; Bloom et al., 2003; Brennan, 1998; Brennan & Austin, 1997; Farr, 2000; Hardyman & Van Voorhis, 2004; Reisig et al., 2006; Van Voorhis & Presser, 2001). Most troubling is the fact that gender-neutral risk/needs assessments serve as a guide to program recommendations through the widely accepted and empirically supported *needs principle* (see Andrews & Bonta, 2007; Andrews, Bonta, & Hoge, 1990; Gendreau, 1996). As such, the omission of gender-responsive factors from current assessments may risk inattention to essential programming for women (Hannah-Moffat, 2009).

In putting forward these arguments, authors voice concern for the fact that even the most recent gender-neutral assessments were created for men and applied to women with limited attention to relevance and only later concern for validity. Additionally, the foundational and even the more recent validity studies have not tested the factors that are put forward in the

gender-responsive literature (Blanchette & Brown, 2006; Reisig et al., 2006; Taylor & Blanchette, 2009). Thus, regardless of whether current assessments are valid, it is not clear that they would be the assessments we would have if we had started with women instead of men. Scholars suggest that the gender-responsive factors (above) either (a) are not typically seen among men, (b) are typically seen among men but occur at a greater frequency among women, or (c) occur in equal frequency among men and women but affect women in uniquely personal and social ways that should be reflected in current correctional assessments (e.g., Chesney-Lind & Shelden, 2004; Farr, 2000; Funk, 1999; Gavazzi, Yarcheck, & Chesney-Lind, 2006; Holsinger, 2000; Holtfreter & Morash, 2003; Reisig et al., 2006; Salisbury & Van Voorhis, 2009).

In response, the National Institute of Corrections, in cooperation with the University of Cincinnati, recently conducted a multisite research project to develop gender-responsive assessments for women. Early results empirically supported the use of the additional gender-responsive risk factors (Salisbury et al., 2009; Van Voorhis, Salisbury, Bauman, Holsinger, & Wright, 2008; Wright, Salisbury, & Van Voorhis, 2007). Across four research projects and three correctional settings (probation, parole, and prison), risk assessments incorporating factors shared by men and women (gender-neutral) and those noted in the gender-responsive literature were found to be predictive/valid for women offenders (see also www.uc.edu/womenoffenders).

Although the gender-responsive risk/needs assessments may certainly be supported on the basis of relevance and validity alone, the issue of incremental validity is highly relevant to emerging conflicts (Hannah-Moffat, 2009; Morash, 2009; Smith et al., 2009; Taylor & Blanchette, 2009) between the Canadian model and the pathways or gender-responsive models. We examine whether and to what extent the additional gender-responsive factors contribute to existing gender-neutral assessments in the prediction of new offenses and prison misconducts. On a practical level, this inquiry is also intended to examine the need to supplement existing assessments with an assessment that taps only the gender-responsive risk factors and to develop supplementary assessments for doing so.

At the outset of our research, there was much to support the wisdom of including the gender-responsive needs in new versions of risk/needs assessments. We turn to that literature below.

GENDER-RESPONSIVE NEEDS

The expanding gender-responsive literature suggests that female offenders are very different from male offenders, as evidenced by their unique paths into criminal behavior, the offenses in which they engage, and their decreased threat of violence across criminal justice settings (Belknap, 2007; Bloom et al., 2003; Chesney-Lind & Shelden, 2004; Covington, 2000; Daly, 1992, 1994; Owen, 1998; Reisig et al., 2006; Richie, 1996; Steffensmeier & Allan, 1996). This literature generally underscores the importance of (a) histories of victimization and abuse, (b) relationship problems, (c) mental illness, (d) drug abuse, (e) self-concept, (f) poverty, and (g) parental issues.

VICTIMIZATION AND ABUSE

Child abuse is proposed to be a critical starting point for the development of delinquency (Chesney-Lind & Shelden, 2004) and may continue to influence the likelihood of criminal

conduct among women throughout their lives (McClellan, Farabee, & Crouch, 1997; Salisbury & Van Voorhis, 2009; Widom, 1989). Adult victimization is also suggested by the feminist literature to play a critical role in women's continuing criminal behavior (Bloom et al., 2003; Covington, 1998; Pollock, 1999, 2002; Richie, 1996).

Empirical support for these assertions, however, is equivocal. Although support continues to grow for the link between child abuse and juvenile delinquency among girls (Hubbard & Pratt, 2002; Siegel & Williams, 2003; Widom, 1989), the connection between child and adult abuse and criminal activity among adult female offenders has not been as clear. Some studies have reported no relationship between victimization and recidivism (Bonta, Pang, & Wallace-Capretta, 1995; Loucks, 1995; Lowenkamp, Holsinger, & Latessa, 2001; Rettinger, 1998); others have found abused women less likely to offend (Blanchette, 1996; Bonta et al., 1995); and still others (Makarios, 2007; Siegel & Williams, 2003; Widom, 1989) have reported that abuse increases the likelihood of future offending among women. Mixed findings are likely to be due to measurement issues, particularly underreporting (Browne, Miller, & Maguin, 1999), and distinctions between types of correctional populations (Law et al., in press).

RELATIONSHIP PROBLEMS

Prevailing models of psychotherapy for women recognize that women's identity, self-worth, and sense of empowerment are defined by the quality of relationships they have with others (Gilligan, 1982; Kaplan, 1984; Miller, 1976; Miller & Stiver, 1997). Correctional scholars have also noted that many women offenders engage in relationships that facilitate their criminal behavior (Koons, Burrow, Morash, & Bynum, 1997; Richie, 1996; Robertson & Murachver, 2007). They also may be involved in abusive relationships or may turn to substance abuse to cope with relationship issues (Langan & Pelissier, 2001; Pollock, 1999; Salisbury & Van Voorhis, 2009). Others have suggested that women may actually avoid criminal behavior to prevent harm to their relationships (Blanchette & Brown, 2006). However, this may apply only to women in relationships with prosocial partners, because the same relational attachment process may explain a woman's increased criminal behavior if she is involved in relationships with antisocial individuals. Unfortunately, few studies have addressed this topic.

MENTAL HEALTH

The mental health needs of female offenders appear to differ substantially from those of male offenders. Depression, anxiety, and self-injurious behavior are more prevalent among female offenders than among male offenders (Belknap & Holsinger, 2006; Bloom et al., 2003; Kessler, 1998; McClellan et al., 1997; Peters, Strozier, Murrin, & Kearns, 1997), as are phobic diagnoses (Blume, 1997) and co-occurring diagnoses such as depression and substance abuse (Bloom et al., 2003; Blume, 1997; Holtfreter & Morash, 2003; Owen & Bloom, 1995). Blume (1997) noted that rates of such diagnoses for women were nearly 4 times the rates for men. Furthermore, stress, depression, fearfulness, and suicidal thoughts/attempts have been shown to be strong predictors of women's recidivism (Benda, 2005; Blanchette & Motiuk, 1995; Brown & Motiuk, 2005), but not of men's (Benda, 2005).

In two primary ways, current risk/needs instruments may be inadequately measuring mental health. Results then show modest predictive validity and prompt authors (or designers)

of assessment instruments to omit mental health from risk scales. First, offenders may suffer from mental illnesses that have not been officially diagnosed and therefore are underreported. Therefore, scales focusing only on historical records of mental health diagnoses would underreport the extent of the problem. Behavioral measures of mental health, such as suicide attempts, may be better predictors of recidivism (Benda, 2005; Blanchette & Motiuk, 1995; Brown & Motiuk, 2005; Veysey, 1997). Second, it may be that some forms of mental illness are linked to recidivism while others are not; current assessments that combine all mental disorders into one category may therefore mask the effects of specific illnesses (see Law et al., in press; Salisbury & Van Voorhis, 2009). Thus, current approaches run the risk of suppressing the importance of women's mental health issues in correctional settings.

SUBSTANCE ABUSE

Substance abuse is related to male and female offending (McClellan et al., 1997) and is assessed in most risk/needs assessment instruments. However, some have suggested that substance abuse has unique effects on women, given its high co-occurrence with other problems, such as mental illness and histories of victimization (Bureau of Justice Statistics, 1999; Covington & Bloom, 2007; McClellan et al., 1997; Veysey, 1997). In addition, mandatory drug sentences may have affected women's incarceration rates more than men's (Austin, Bruce, Carroll, McCall, & Richards, 2001; Bush-Baskette, 1999; Mauer, Potler, & Wolf, 1999).

Though problematic for both male and female offenders, women's substance abuse likely fits one of the categories mentioned above; that is, it (a) is typically seen among male offenders but in greater frequencies among female offenders (e.g., McClellan et al., 1997; Neff & Waite, 2007) and/or (b) affects women and men differently. Certainly, the first argument has received support: In 2004, more female state prisoners (60.2%) than male state prisoners (53.0%) met the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) criteria for drug dependence or abuse (Bureau of Justice Statistics, 2006). The co-occurrence of substance abuse with other gender-responsive needs supports the second argument and suggests that we cannot fully address women's addictions without considering issues of mental health and trauma (Bloom, Owen, & Covington, 2004; Covington, 2002).

SELF-EFFICACY

Self-efficacy, or self-confidence, is highly relevant to the notion of empowerment and valued by gender-responsive and feminist scholars as a protective factor for women. Women's ability to control their lives and achieve their goals has been cited by correctional treatment staff, researchers, and women offenders themselves as relevant to desistance from crime (Carp & Schade, 1992; Case & Fasenfest, 2004; Chandler & Kassebaum, 1994; Koons et al., 1997; Morash et al., 1998; Prendergast, Wellisch, & Falkin, 1995; Rumgay, 2004; Schram & Morash, 2002; Task Force on Federally Sentenced Women, 1990). However, some writings on criminal theory and risk prediction considered low self-efficacy to be an indicator of "personal distress," which had only a minimal impact on recidivism (Andrews & Bonta, 2007). In fact, few studies have examined the relationship between self-efficacy and recidivism among women offenders.

POVERTY

Many female offenders lead lives plagued by poverty (Belknap, 2007; Bureau of Justice Statistics, 1999; Chesney-Lind & Rodriguez, 1983; Daly, 1992; Owen, 1998; Richie, 1996). In fact, only 40% of women in state prisons report full-time employment prior to their arrest, and two thirds report their highest hourly wage to be no higher than $6.50 (Bureau of Justice Statistics, 1999). In large part, women's poverty is attributable to limited educational and vocational skills, as well as drug/alcohol dependence, child care responsibilities, and illegal opportunities offering more lucrative returns.

Financial concerns are considered by Andrews and Bonta (2007) to be a minor risk factor; as such, a financial scale is not included as a risk factor on the newest version of the Level of Service/Case Management Inventory (LS/CMI; Andrews, Bonta, & Wormith, 2004). Poverty and financial concerns, however, may affect male and female offenders differently. In support, Holtfreter, Reisig, and Morash (2004) recently noted that poverty increased the odds of women's rearrest by a factor of 4.6 and the odds of supervision violation by 12.7 after minority status, age, education, and the LSI-R risk score were controlled for. Furthermore, among women who were initially living below the poverty level, public assistance (e.g., education, health care, housing, and vocational training) reduced the odds of recidivism by 83%.

PARENTAL ISSUES

Research examining stress among parents has indeed shown a connection between parental stress and crime (Ferraro & Moe, 2003; Ross, Khashu, & Wamsley, 2004), particularly among those female offenders who were single parents (Bonta et al., 1995). Given that nearly 71% of women under correctional supervision have at least one child under the age of 18 (Bureau of Justice Statistics, 1999), and that visitations and child custody are difficult to maintain while incarcerated (Bloom & Chesney-Lind, 2000; Bloom et al., 2003), parental stress may be a particularly salient issue among this population. National offender data show that state incarcerated mothers (50.1%) are far more likely than incarcerated fathers (27.4%) to be unemployed prior to their incarceration, with more mothers (65.3%) than fathers (57.5%) having used drugs in the month prior to their offense (Bureau of Justice Statistics, 2000). Additionally, stress associated with limited contact was related to higher levels of mental illness among incarcerated women with children (Houck & Loper, 2002; Tuerk & Loper, 2006). Finally, substantially more women (30.9%) than men (3.9%) were single parents living with their children prior to their incarceration (Bureau of Justice Statistics, 2000), suggesting that they were receiving little support from the father or other family members. These figures demonstrate that mothers in the criminal justice system face multiple problems in addition to and co-occurring with their parental responsibilities.

To underscore the importance of parental stress as both a risk factor and a treatment target, research on women's parenting programs generally shows impressive effects on offense-related outcomes (see for reviews, Piquero, Farrington, Welsh, Tremblay, & Jennings, 2009; Women's Prison Association, 2009). The programs are varied. Those most relevant to our notion of parental stress include prison nursery programs (Carlson, 2001; State of New York Department of Correctional Services, 2002), education on child development and child management skills (Carlson, 2001; Harm, Thompson, & Chambers, 1998; Showers, 1993), community-based visiting nurses programs to mothers of infants

(Olds et al., 2004), and parent–child reunification (Block & Potthast, 1998; McKeown, 1993; Snyder-Joy & Carlo, 1998).

GENDER-NEUTRAL RISK FACTORS

Attention to the needs discussed above would represent a clear departure from current correctional priorities falling under the rubric of the Canadian Model, evidence-based practice, "What Works," and various other policy referents (e.g., see Andrews & Bonta, 2007; Cullen & Gendreau, 2000; MacKenzie, 2006; Sherman et al., 1997). For example, building on evidence amassed from a number of large, impressive meta-analyses of factors associated with offender recidivism (e.g., Andrews et al., 1990; Dowden & Andrews, 1999; Gendreau, Little, & Goggin, 1996; Simourd & Andrews, 1994), agencies steeped in these traditions are encouraged to target scarce program resources to a limited but potent set of risk factors, including the "Big 4" (criminal history, criminal thinking, personality attributes, and criminal peers) or the "Central 8" (the Big 4 plus family/marital, education/employment, substance abuse, and leisure/recreation). Moreover, fields such as forensic psychology and other models of correctional interventions are faulted for undue attention to mental illness, self-esteem, and poverty (Andrews & Bonta, 2007). These priorities are quite removed from the gender-responsive risk factors discussed above. The meta-analytic research giving support to such priorities, however, is based largely on studies of male offenders and generally has not sufficiently examined the role of gender-responsive needs. In fact, most of these meta-analyses predate most of the studies cited in the review of the gender-responsive literature, above.

Underlying the tests of gender-responsive needs is the task of building new assessment tools that will identify and then link women to meaningful correctional programs and services. At the same time, the construction of new risk/needs scales may question current treatment priorities for women; the redefinition of others may show that factors such as mental health, self-efficacy, and others are far from minor risk factors.

THIS STUDY

This study reports on the findings leading to an assessment tool recommended to supplement widely used gender-neutral tools such as the Level of Service Inventory-Revised (Andrews & Bonta, 1995), the Northpointe COMPAS (Brennan et al., 2006), or similar approaches. Such gender-neutral instruments typically incorporate dynamic risk/needs scales measuring criminal history, antisocial attitudes, antisocial friends, family/marital issues, home environments, substance abuse, mental health, education, employment, and financial well-being. At the outset of the National Institute of Corrections–University of Cincinnati study, it was assumed that jurisdictions currently invested in such instruments would find it more cost-effective to supplement them with a gender-responsive "trailer" rather than change to an entirely new classification model.

This study examines the incremental validity of the supplement. That is, does the supplement make a statistically significant contribution to gender-neutral assessments already in use?

To make maximum use of the opportunity afforded to construct such a tool, two models were tested across different correctional settings: probation, prerelease, and prison. The first consisted of a paper-and-pencil survey administered to female participants. This survey produced scales measuring (a) self-esteem, (b) self-efficacy, (c) victimization as an adult, (d) child abuse, (e) parental stress, and (f) relationship dysfunction. This model is referred to as Supplement 1 and was tested in three sites: Maui (probation), Minnesota (probation and prison), and Colorado (prison and prerelease).

The second model emerged during the development of a stand-alone, dynamic, women's risk/needs assessment (in collaboration with the Missouri Women's Issues Committee). Originally, we thought it sufficient to account for the gender-responsive considerations relating to items found in Supplement 1, above. However, in the course of designing the stand-alone instrument, we learned that additional variables often found in gender-neutral assessments could be restructured in a beneficial, more gender-responsive, manner. As such, needs that are not unique to women (e.g., housing or accommodations, mental illness, financial circumstances, and family support) were contextualized in gender-responsive terms for the Missouri assessment. Supplement 2 also taps additional strengths, or protective factors, such as support from others and educational assets. Accounting for strengths better mapped the assessment process onto strategies emerging in the area of positive psychology (Seligman, 2002; Sorbello, Eccleston, Ward, & Jones, 2002; Van Wormer, 2001), which is finding many advocates among gender-responsive scholars (Blanchette & Brown, 2006; Bloom et al., 2003; Morash et al., 1998; Prendergast et al., 1995; Schram & Morash, 2002; Van Wormer, 2001).

Thus, Supplement 2 contained all the Supplement 1 measures but also tested scales measuring (a) current symptoms of depression, (b) current symptoms of psychosis, (c) mental health history, (d) family (of origin) support, (e) family (of origin) conflict, (f) relationship support, (g) housing safety, (h) anger/hostility, and (i) educational strengths.

METHOD

PARTICIPANTS

Development of gender-responsive assessments began in 1999 with a pilot study in the Colorado Department of Corrections and continued later with three larger projects in Maui, Minnesota, and Missouri that began in 2004. Across all four projects, the following types of settings were examined: (a) three prison samples (in Colorado, Minnesota, and Missouri), (b) three probation samples (in Maui, Minnesota, and Missouri), and (c) two prerelease samples (in Colorado and Missouri). Table 1 shows the demographic characteristics and criminal histories of the women in each sample. Women within types of correctional settings (prison, probation, and parole) were comparable across samples on such demographic characteristics as age, marital status, parental status, and education. However, Minnesota and Missouri populations showed substantially higher proportions of white offenders than did either Maui or Colorado. Other variations appear to have been attributable to differences in sentencing practices. Minnesota inmates and probationers evidenced somewhat more extensive criminal histories than did women sentenced to probation or prison in the other states. Proportionately more female inmates in Minnesota were incarcerated for violent offenses (20.3%) than were in either Colorado or Missouri. Additionally, a larger

TABLE 1: Preconviction Demographic and Criminal Histories of NIC Women Offender Samples

	Prison Samples			*Probation Samples*			*Prerelease Samples*	
Background Characteristic	*Colorado (N = 156)*	*Missouri (N = 272)*	*Minnesota (N = 198)*	*Missouri (N = 313)*	*Minnesota (N = 233)*	*Maui (N = 158)*	*Colorado (N = 134)*	*Missouri (N = 162)*
Average age (years)	34.6	33.8	33.7	31.9	34.0	34.3	34.6	35.3
% White	53.2	79.6	70.2	67.8	72.5	29.9	50.7	70.3
% Married	na	27.2	18.2	23.6	21.0	21.7	na	27.3
% Children < 18	71.6	74.6	63.1	65.5	61.8	73.1	71.3	69.1
% High school diploma or GED	59.4	65.8	59.1	64.5	78.5	71.5	51.5	55.6
% Employed full-time	45.5	65.8	24.4	39.7	30.0	39.9	47.7	56.8
% Violent offense	9.7	10.3	20.3	7.3	9.6	6.5	5.9	8.7
% Prior felony	48.7	55.6	59.1	19.3	19.9	29.1	49.3	54.1
% Prior prison	17.8	23.9	74.4	3.8	67.7	29.3	17.2	33.5

Note. GED = general [high school] equivalency diploma; na = not available.

percentage of the Maui probationers had prior felony convictions than did probationers in either Missouri or Minnesota. Higher proportions of women with prior prison terms were observed in Maui and Minnesota; these higher proportions are attributable to prior jail terms' being included in the measure.

With the exception of the Minnesota probation sample (60%), response rates for all samples surpassed 80% of the women asked to participate in the study. In one of the Minnesota counties, banked cases (women who were not required to meet with probation officers) were difficult to interview. However, an attrition analysis for that county indicated that the sampled probationers were nevertheless representative of women on probation in that county (see Wright, Van Voorhis, Bauman, & Salisbury, 2008). Five of the samples consisted of intake cohorts. The Maui probation sample included all female probationers in order to secure the needed sample within the existing time constraints. The Colorado prerelease sample (a pilot study) tracked women in the prison intake cohort who had been released by 3 years following the commencement of the pilot study. In contrast, the Missouri prerelease cohort was interviewed 2 months prior to their scheduled release from prison.

MEASURES

Outcome measures. Outcome measures are shown in Table 2. Although additional outcome measures were available for all of the projects (see www.uc.edu/womenoffenders), we selected for this summary the measures that captured the longest follow-up window (24 months when possible) and the ones that proved to be most valid. A preference in recidivism research is shown for follow-up windows of at least 2 years. This was possible only for the Missouri and Maui community samples. Other sites were constrained by (a) the dictates of shorter project time frames (Colorado prison sample; Minnesota probation sample) and the relatively short prison terms served by women in most states (Missouri and Minnesota

TABLE 2: Institutional Misconduct and Recidivism Outcome Measures by Sample Type

	Prison			*Probation*			*Prerelease*	
Background Characteristic	Colorado (N = 156)	Minnesota (N = 198)	Missouri (N = 272)	Maui (N = 158)	Minnesota (N = 233)	Missouri (N = 313)	Colorado (N = 134)	Missouri (N = 150)
% 6-Month serious misconducts	17.30	–	–	–	–	–	–	–
× number serious misconducts	.26	–	–	–	–	–	–	–
% 12-Month serious misconducts	–	39.90	51.80	–	–	–	–	–
× number serious misconducts	–	1.07	1.39	–	–	–	–	–
% 12-Month new arrests	–	–	–	–	23.60	–	–	–
× number arrests	–	–	–	–	.39	–	–	–
% 24-Month new arrests	–	–	–	22.20	–	–	–	–
× number arrests	–	–	–	.44	–	–	–	–
% 12-Month technical violations	–	–	–	–	–	–	–	53.3
× number technical violations	–	–	–	–	–	–	–	2.5
% 24-Month returns to prison	–	–	–	–	–	17.1	–	42.7
% New arrests (average 17 months)	–	–	–	–	–	–	20.90	–
× number arrests (average 17 months)	–	–	–	–	–	–	.30	–
% Technical violations (average 17 months)	–	–	–	–	–	–	35.10	–
× number technical violations (average 17 months)	–	–	–	–	–	–	.40	–

Note. – = not applicable. Measure was not used.

prison samples). Follow-up time frames for the released Colorado inmates (85.9% of the intake cohort) averaged 17 months.[1]

The outcome measures for prisoners tapped serious institutional misconducts (e.g., assaults, escapes, contraband, threats, fighting, smuggling, and sexual behavior) committed 6 or 12 months after intake. We excluded minor infractions (e.g., violations of rules and insubordination), known to introduce a good deal of "noise" into the measurement of prison adjustments, because they reflect differential organizational and citation practices (Hewitt, Poole, & Regoli, 1984; Van Voorhis, 1994).

Site variations dictated the use of different community outcome variables. In Missouri, for example, it was not possible to resolve inconsistencies across various sources of arrest data, so it was necessary to opt for 24-month incarceration measures for both the prerelease and the probation cohorts. Both prerelease cohorts included measures of technical violations because jurisdictions differed in their conventions for dealing with postprison violations (technical violations or arrests).

Measures of gender-responsive needs. As noted earlier, two types of gender-responsive measures were constructed. The first consisted of scales obtained through a paper-and-pencil survey and referred to as Supplement 1: (a) self-efficacy (17 items; Sherer et al., 1982), (b) self-esteem (10 items; Rosenberg, 1979), (c) parental stress (12 items), (d) relationship dysfunction, (e) child abuse (19 items), and (f) adult physical abuse (15 items).

The parental stress scale was informed by a scale developed by Avison and Turner (1986). The relationship dysfunction scale tapped qualities similar to those noted by Spann, Fischer, and Crawford (1991; Spann-Fischer Codependency Scale), Roehling and Gaumond

(1996; Codependent Questionnaire), and Crowley and Dill (1992; Silencing the Self Scale) and depicted a loss of personal power frequently noted as *codependency* in the substance abuse literature (see Beattie, 1987; Bepko & Krestan, 1985; Fischer, Spann, & Crawford, 1991; Woititz, 1983).

Both survey abuse scales asked women whether they had ever been subjected to specific abusive acts—acts such as slapping, humiliation, hitting, threats, and many others. Items contained in both the child abuse and adult victimization scales were informed by Belknap, Fisher, and Cullen (1999); Campbell, Campbell, King, Parker, and Ryan (1994); Coleman (1997); Holsinger, Belknap, and Sutherland (1999); Murphy and Hoover (1999); Rodenberg and Fantuzzo (1993); and Shepard and Campbell (1992). The behavioral indicators contained in the abuse scale were designed to reduce instances of underreporting, a common occurrence in the measurement of abuse/victimization (Browne et al., 1999).

The second gender-responsive model, Supplement 2, included the survey scales contained in Supplement I, but added interview scales measuring (a) family support (4 items), (b) unsafe housing (4 items), (c) anxiety/depression (6 items), (d) psychosis (2 items), (e) educational assets (4 items), (f) relationship support (10 items), (g) relationship conflict (4 items), and interview measures of (h) anger/hostility (7 items), (i) child abuse (2 items), and (j) adult physical abuse (2 items). Items for these scales were formulated by members of the Missouri Women's Issues Committee of the Missouri Department of Corrections and University of Cincinnati researchers.

Items comprising Supplement 1 anger and Supplement 2 were factor analyzed using principal components extraction and varimax rotation. Once the scales were defined, confirmatory analysis was conducted to examine the final factor structures. As a general rule, items that loaded above 0.50 among each domain were retained and subsequently added to create a summed scale. All scales evidenced eigenvalues of 1.00 or higher. In terms of item composition, these scales were identical across samples. Missing values were replaced with mean or median values; doing so did not attenuate original correlations. Data attrition was problematic for the survey child abuse and adult physical abuse scales that were administered at the end of a long assessment process. Unfortunately, missing values on these scales ranged from 15% to 36% across samples and surpassed 20% in four of the sites.[2]

Alphas for the survey scales in Supplement 1 ranged from .83 to .90. With the exception of the housing safety scale (alpha = .52-.61), and the anger/hostility scale (alpha = .56 to .74), alphas for the gender-responsive scales in Supplement 2 ranged from .60 to .83. A full presentation of psychometric properties is shown at www.uc.edu/womenoffenders.

Measures of gender-neutral needs. The gender-responsive scales were designed to be used in conjunction with a gender-neutral risk/needs assessment. In Minnesota, Colorado, and Maui, the Level of Service Inventory-Revised (Andrews & Bonta, 1995) was used for this purpose. The LSI-R (Andrews & Bonta, 1995) is an empirically validated, 54-item risk/needs assessment that has been successfully used in Canada, the United States, and the United Kingdom as well as among juvenile, adult, male, and female offenders of various ethnic backgrounds. Ten subscales comprise the LSI-R. These subscales reflect women's prior criminal history (10 items), education/employment (10 items), financial situation (2 items), family/marital relationships (4 items), accommodation (3 items), use of leisure time (2 items), companions (5 items), alcohol/drug use (9 items), emotional/mental health (5 items), and attitudes/orientation (4 items).

Women in Missouri were assessed with the stand-alone gender-responsive items designed by the Missouri Women's Issues Committee and University of Cincinnati researchers. The following scales were constructed: (a) criminal history (6 items), (b) criminal thinking (7 items), (c) antisocial friends (7 items), (d) educational challenges (4 items), (e) mental health history (6 items), (f) substance abuse history (10 items), (g) current substance abuse (6 items), (h) employment/financial issues (7 items), and (i) family conflict (4 items). Scales were created through the factor analytic procedures described above. Alphas for these scales ranged from .61 to .92 for all but one prerelease scale, current substance abuse (alpha = .40). Lower results may be attributable to the prerelease status of these participants, which may have suppressed some of the behaviors noted on the scale. For more details, see www.uc.edu/womenoffenders.

ANALYSIS

Statistical analyses tested the predictive validity of each scale and of cumulative summaries of scales found to be predictive of outcome. We first examined patterns produced by a series of bivariate correlations (Pearson's *r*) between individual scales and outcome variables for each type of site.

In constructing cumulative scales, we subtracted strengths from the sum of the risk scores and collapsed some needs scales to reflect likely ethical and political concerns for giving too much weight to mental health, parenting, self-confidence, and abuse scales.[3] With the exception of criminal history, scales with 10 or more items were collapsed to ranges that were consistent with other need scales. In doing so, we arrived at cut points by analysis of receiver operating characteristics, which also served to retain originally observed significant correlations between the full scales and the outcome measures. Additionally, correlation matrices were examined for evidence of redundant scales, which resulted in the removal of measures of (a) self-esteem, which was highly correlated with self-efficacy, and (b) educational needs, which correlated highly with educational assets. The matrix also supported omission of the interview relationship support *and* the relationship conflict scales. Positive correlations between these two scales indicated that women scoring high on relationship abuse/conflict were also likely to score high on relationship support. The finding is actually consistent with scholarly accounts of women offenders' relationships with significant others (Covington, 1998).

Next, we computed the incremental contribution of the cumulative gender-responsive scales to the established gender-neutral scales. Two types of models were tested separately for probation, prison, and prerelease settings. The first model represented the sum of all gender-responsive scales found to be predictive of outcome for *all* samples within a type of setting (e.g., all probation agencies). When we added this total gender-responsive score to the total scores for the gender-neutral models, we achieved a conservative estimate of the minimum effects to be expected of adding gender-responsive variables to gender-neutral assessments. Incremental validities consisted of partial correlations for the total scale (gender-neutral plus gender-responsive items noted to be predictive in all sites), controlling for the gender-neutral scale. The second model involved creating sample-specific, gender-responsive models. In this case, all gender-responsive scales noted to be significant for a given sample formed a cumulative scale, which was then

added to a gender-neutral scale.[4] Again, incremental validity was tested by examining the partial correlation of the full assessment after partialing out the effects of the gender-neutral assessment.

This two-tiered approach was chosen because of sample variations caused by the deliberate testing of alternative models and likely by differential fidelity to the quality of the assessments. In the end, the results may be interpreted as suggesting that the likely impact of gender-responsive assessment lies somewhere between the conservative estimate afforded by the scales common to each site and the more generous estimate afforded by including additional gender-responsive variables, even if they were unique to the sample.

An additional assessment of predictive validity is afforded through analysis of receiver operating characteristics and the accompanying *area under the curve* (AUC) statistic (see Quinsey, Harris, Rice, & Cormier, 1998; Swets, Dawes, & Monahan, 2000), an expression of the ratio of "prediction hits" or true positives to false positives that was unaffected by base rates and selection ratios. Use of the AUC statistic is becoming common to prediction research and is especially important for samples with low base rates. AUCs above .70 are considered acceptable for prediction research, and values of .50 are considered to be no better than chance.

RESULTS

BIVARIATE FINDINGS

Bivariate correlations between gender-neutral and gender-responsive risk/need scales are shown in Tables 3 through 5 for probation, prison, and prerelease sites, respectively. An overview of the three tables shows a somewhat different pattern of findings for each type of site. As such, we discuss the findings for each separately.

Probation. Bivariate correlations between risk/need factors and recidivism are shown in Table 3. Not surprisingly, most gender-neutral factors were significantly correlated with rearrests (Maui and Missouri) or incarcerations (Missouri) in at least one of the samples. However, the strongest bivariate correlations were seen between the outcome measures and criminal history, substance abuse, financial problems, education and employment, and housing. Limited findings for the Missouri attitudes and criminal history scale suggest a need to improve these measures in future research.

It is apparent, on the basis of bivariate analyses, that reconceptualizing such common gender-neutral risk factors as mental health, family issues, and housing brings them into clearer focus as risk factors for women. This notion was tested in the Supplement 2 model. For example, measuring living conditions with a focus on safety and homelessness produced a strong correlation with outcome in Missouri ($r = .23$; $p \leq .01$). Record data, available on homelessness in Maui (shown in italics in Table 3) supported the Missouri findings ($r = .21$; $p \leq .01$; $r = .19$; $p \leq .01$). Similarly, history of mental illness was not a correlate of recidivism in Maui and Missouri, but it was when measured in Missouri according to current symptoms of depression ($r = .18$; $p \leq .01$) or psychosis ($r = .16$; $p \leq .01$).

TABLE 3: Bivariate Correlations (Pearson's r, one-tailed) Between Risk/Needs Scales, Strengths and Recidivism, Probation Samples

	Supplement 1				*Supplement 2*
	Maui[a] *(*N = *198)*		*Minnesota*[b] *(*N = *198)*		*Missouri*[c] *(*N = *272)*
Risk Factor	*Y/N*	*N*	*Y/N*	*N*	*Y/N*
Gender-neutral risk/need factors					
Criminal history	.32***	.30***	.23***	.16***	.03
Antisocial attitudes	.18***	.11**	.22***	.16***	.00
Family/marital	.13*	.15**	.21***	.17***	x̄
Education/employment	.26***	.24***	.18***	.16***	x̄
Financial	.25***	.20***	.19***	.12**	x̄
Accommodations	.07	.14**	.22***	.25***	x̄
Leisure/recreation	.08	.13*	.09*	.04	x̄
Antisocial associates	.19***	.19***	.23***	.16***	.16***
Mental health history	.10	.02	.20***	.14**	.06
Substance abuse history	.33***	.16**	.16***	.10*	.18***
Substance abuse current	x̄	x̄	x̄	x̄	.21***
Financial/employment	x̄	x̄	x̄	x̄	.23***
Education	x̄	x̄	x̄	x̄	.19***
Family conflict	x̄	x̄	x̄	x̄	.10*
Gender-responsive risk/need factors					
Unsafe housing	*.21***	*.19***	*x̄*	*x̄*	*.23****
Anxiety/depression (symptoms)	x̄	x̄	x̄	x̄	.18***
Psychosis (symptoms)	x̄	x̄	x̄	x̄	.16***
Anger/hostility	x̄	x̄	x̄	x̄	.15***
Parental stress	.20**	.09	.24***	.22***	.18***
Relationship dysfunction	–.01	–.01	.26***	.28***	.02
Child abuse (interview)	x̄	x̄	x̄	x̄	.07
Child abuse (survey)	.10	.02	.12**	.07	.01
Adult physical abuse (interview)	x̄	x̄	x̄	x̄	.05
Adult physical abuse (survey)	.06	.02	.24***	.22***	–.01
Strengths					
Self-esteem	–.22***	–.11*	–.14**	–.10*	–.08*
Self-efficacy	–.16**	–.06	–.22***	–.14**	–.12**
Family support	–.18***	–.06	x̄	x̄	–.11**
Educational assets	x̄	x̄	x̄	x̄	–.19***

Note. x̄ = Scale was not tested.
a. Recidivism measure consists of rearrests at 2 years.
b. Recidivism measure consists of rearrests at 1 year.
c. Recidivism measure consists of incarcerations at 2 years.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

Gender-responsive variables significantly associated with outcome included (a) parental stress in all of the samples; (b) self-esteem and self-efficacy in all of the samples; (c) family support, in the two samples where tested; and (d) educational assets, in the one sample where tested. Child abuse did not appear to be a risk factor in any of the samples, although it was observed, in another analysis of the Missouri data, to work through depression and substance abuse to show an indirect effect on recidivism (Salisbury, 2007). The effects of relationship dysfunction and adult victimization were seen only for the Minnesota study.

Prison. Table 4 portrays a story that fairly clearly and consistently implicates mental health, substance abuse, and childhood trauma in women's prison adjustment. The importance of mental health is seen when measured as the history of mental health issues in Missouri ($r = .13$; $p \leq .05$; $r = .19$; $p \leq .01$) and Minnesota ($r = .13$; $p \leq .05$; $r = .19$; $p \leq .01$) but is even clearer when current symptoms of depression ($r = .13$; $p \leq .05$; $r = .23$; $p \leq .01$) and psychosis were assessed ($r = .17$; $p \leq .01$; $r = .26$; $p \leq .01$).

Significant findings for relationship dysfunction, family support, and family conflict appeared to support the idea of expanded measurement of women's relationships beyond the composite measure typically afforded by gender-neutral instruments. In prison settings, however, self-esteem and self-efficacy were not consistently associated with prison misconducts. In fact, in the Colorado sample, inmates with high self-efficacy were slightly more likely to incur citations for misconducts than were those with low self-efficacy ($r = .12$; $p \leq .10$; $r = .14$; $p \leq .05$).

The significant effects of expected gender-neutral items, such as criminal history, antisocial attitudes, and family issues, are seen for both the Minnesota and Missouri samples. However, more limited findings for the LSI-R were seen among Colorado inmates and may indicate problems with the quality of the LSI-R interviews or the long time lapse between the interview and the follow-up deadlines.

Prerelease. Table 5 shows the effects of gender-neutral and gender-responsive risk/need factors on recidivism. Even though needs were assessed prior to rather than after release, some patterns are similar to those for the probation sample. Among the gender-neutral risk/need factors, findings were noteworthy for substance abuse and economic, educational, and financial variables.

Mental health issues appeared to be significantly related to recidivism when current and specific forms of mental health problems were considered, especially symptoms of psychosis ($r = .22$; $p \leq .01$; $r = .14$; $p \leq .05$) but not when measured as a composite index. Two additional Supplement 2 scales, anger/hostility ($r = .15$; $p \leq .01$; $r = .15$; $p \leq .01$) and family support ($r = -.14$; $p \leq .05$; $r = -.15$; $p \leq .05$) were related to returns to prison among the Missouri participants. Few other gender-responsive variables were significantly related to outcome. However, in both the Colorado ($r = .17$; $p \leq .05$; $r = .16$; $p \leq .05$) and Missouri samples ($r = .13$; $p \leq .10$; $r = .18$; $p \leq .05$), women who reported being victims of abuse during their adult years were significantly more likely to recidivate than those who did not.

PREDICTIVE VALIDITY AND INCREMENTAL PREDICTIVE VALIDITY OF CUMULATIVE SCALES

Do these risk/need factors yield valid cumulative scales, and do the gender-responsive risk/need factors contribute to the prediction of correctional outcomes over that already offered by gender-neutral assessments? Tables 6 through 8 examine these issues through a series of models that illustrate conservative and optimal estimations of gender-responsive risk/needs scales. Model 1 represents cumulative scales formed through the addition of the separate gender-neutral scales. In Maui, Colorado, and Minnesota, this was the LSI-R. In Missouri, it is the accumulated gender-neutral scales prepared by the Missouri Work Group. Model 2 sums gender-responsive scales that are significantly related to outcome in all sites. Model 3 sums Model 1 and Model 2 and presents the predictive validity for the full

TABLE 4: Bivariate Correlations (Pearson's *r*, one-tailed) Between Risk Scales and Prison Misconduct, Prison Samples

	Supplement 1				*Supplement 2*	
	Colorado[a] *(N = 156)*		*Minnesota*[b] *(N = 198)*		*Missouri*[b] *(N = 272)*	
Risk Factor	*Y/N*[a]	*N*[b]	*Y/N*[a]	*N*[b]	*Y/N*[a]	*N*[b]
Gender-neutral risk factors						
Criminal history	.06	.09	.23***	.15**	.17***	.12***
Antisocial attitudes	.04	.09	.20***	.22***	.15***	.14***
Family/marital	.08	.03	.17***	.19***	x	x
Education/employment	.11*	.12*	.16**	.27***	x	x
Financial	–.11*	–.02	.13**	.11*	x	x
Accommodations	.03	.07	.19***	.19***	x	x
Leisure/recreation	.07	.06	.13**	.12*	x	x
Antisocial associates	.06	.09	.08	.13**	–.02	–.02
Mental health history	–.07	.00	.13**	.22***	.13**	.19***
Substance abuse history	.14**	.16**	.13**	.22***	.09*	.07
Substance abuse current	x	x	x	x	–.06	–.07
Financial/employment	x	x	x	x	.05	.08*
Education	x	x	x	x	.02	.03
Family conflict	x	x	x	x	.10*	.17***
Gender-responsive risk/need factors						
Unsafe housing	x	x	x	x	.02	–.02
Anxiety/depression (symptoms)	x	x	x	x	.13**	.23***
Psychosis (symptoms)	x	x	x	x	.17***	.26***
Anger/hostility	x	x	x	x	.06	.13**
Parental stress	x	x	.03	.01	–.01	.04
Relationship dysfunction	.27***	.26***	.13**	.10*	.09*	.06
Child abuse (interview)	x	x	x	x	.11**	.24***
Child abuse (survey)	.19**	.22**	.18***	.16**	.16***	.20***
Adult physical abuse (interview)	x	x	x	x	.07	.11**
Adult physical abuse (survey)	.04	.06	.15**	.05	.04	.04
Strengths						
Self-esteem	.05	.07	–.10*	–.13**	–.05	–.05
Self-efficacy	.12*	.14**	–.07	–.08	–.06	–.05
Family support	x	x	x	x	–.11**	–.20***
Educational assets	x	x	x	x	.01	.04

Note. x = Scale was not tested.
a. Outcome measure consists of misconducts at 6 months.
b. Outcome measure consists of misconducts at 1 year.
c. Whether at least one new offense-related outcome occurred.
d. Number of new offense-related outcomes.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

scale and the incremental validity for the full Model 3 scale, controlling for the Model 1, gender-neutral variables. Model 4 takes a sample-specific view by summing gender-responsive risk/need factors that are specific to each site. Model 5 sums the gender-neutral (Model 1) and the Model 4 scales for a site-specific optimal scale and tests the predictive validity of the full scale and the incremental validity of the Model 5 scale partialing out the effects of the Model 1 scale.

Probation. Table 6 shows that for Model 1, the LSI-R, was strongly associated with new arrests at 2-year and 1-year follow-up points, respectively, for Maui ($r = .36$; $p \leq .01$;

TABLE 5: Bivariate Correlations (Pearson's *r*, one-tailed) Between Risk/Need Scales, Strengths and Recidivism, Prerelease Samples

	Supplement 1				*Supplement 2*			
	Colorado (N = 134)				Missouri (N = 272)			
	Technical Violations		*Rearrest*		*Technical Violations 12 months*		*Incarceration*	
Risk Factor	*Y/N*[a]	*N*[b]	*Y/N*[a]	*N*[b]	*Y/N*[a]	*N*[b]	*12 month*	*24 month*
Gender-neutral risk/need factors								
Criminal history	.13*	.15**	.04	.01	.05	.23**	.12*	.16**
Antisocial attitudes	.06	.09	−.03	−.04	−.05	−.01	−.04	−.11*
Family/marital	−.07	−.07	−.07	−.08	x	x	x	x
Education/employment	.12*	.18**	.14**	.12*	x	x	x	x
Financial	.19**	.19**	−.06	−.06	x	x	x	x
Accommodations	.19**	.21***	−.06	−.06	x	x	x	x
Leisure/recreation	.12*	.12*	−.19**	−.14*	x	x	x	x
Antisocial associates	.13*	.14*	.01	.00	.02	−.01	.07	.13**
Mental health history	−.20***	−.20***	.11*	.07	.07	.09	.08	.03
Substance abuse history	.22***	.21***	.07	.11*	.09	.21***	.16**	.20***
Substance abuse current	x	x	x	x	−.01	−.06	.00	−.01
Financial/employment	x	x	x	x	.10	.06	.15**	.10
Education	x	x	x	x	.20***	.15*	.13*	.11*
Family conflict	x	x	x	x	−.07	−.19**	.07	−.03
Gender-responsive risk/need factors								
Unsafe housing	x	x	x	x	−.04	.00	−.02	−.02
Anxiety/depress.	x	x	x	x	−.03	.01	.11*	.02
Psychosis	x	x	x	x	−.01	.10	.22***	.14**
Anger/hostility	x	x	x	x	.08	.03	.15***	.15**
Parental stress	.02	.05	.02	−.02	.03	−.08	.00	.05
Relationship dysfunction	.04	.06	.06	.06	−.00	−.06	−.09	.00
Child abuse (int.)	x	x	x	x	−.01	−.04	.06	.04
Child abuse (sur.)	.10	.13*	.12	.11	.00	−.01	.08	.07
Adult physical abuse (int.)	x	x	x	x	.14**	.13*	.13*	.18**
Adult physical abuse (sur.)	.02	.00	.15**	.14**	.03	.00	.02	.12*
Strengths								
Self-esteem	−.04	−.05	.00	.00	.13**	.14**	.07	.07
Self-efficacy	−.11	−.12*	−.03	−.04	.06	.03	−.04	.03
Family support	x	x	x	x	−.11*	−.02	−.14**	−.15**
Educational assets	x	x	x	x	−.26***	−.18**	−.13**	−.20***

Note. Int=interview; sur = survey; x = Scale was not tested.
a. Whether at least one new offense-related outcome occurred.
b. Number of new offense-related outcomes.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

$r = .30$; $p \leq .01$) and Minnesota ($r = .31$; $p \leq .01$; $r = .24$; $p \leq .01$). AUC figures were .72 for Maui and .71 for Minnesota. Results were not as favorable for the gender-neutral variables obtained in Missouri ($r = 26$; $p \leq .01$; AUC = .69). Recall, however, that criminal history and criminal thinking scales were not predictive. Additionally, variation on the outcome variable (17.1%) was lower than that for other sites and may have attenuated the results.

Two gender-responsive variables (parental stress and self-efficacy) were significantly related to outcome measures in all three of the samples. When added to the gender-neutral

TABLE 6: Bivariate Correlations (Pearson's *r*, one-tailed) and Areas Under the Curve (AUCs) Between Models and Recidivism, Probation Samples

	Supplement 1						*Supplement 2*	
	Maui[a] *(*N = *158)*			*Minnesota*[b] *(*N = *198)*			*Missouri*[c] *(*N = *304)*	
Classification Model	*Y/N*[a]	*AUC*	*N*[b]	*Y/N*[a]	*AUC*	*N*[b]	*Y/N*[a]	*AUC*
Model 1: gender-neutral[d]	.36***	.72	.30***	.31***	.71	.24***	.26***	.69
Model 2: common GR predictors[e]	.15**		.10*	.30***		.28***	.17***	
Model 3: Model 1 + Model 2	.36***	.72	.30***	.33***	.72	.25***	.27***	.71
Partial correlation	.06		.02	.22***		.22***	.10***	
Model 4: best GR predictors[f,g,h]	.29***		.15**	.34***		.31***	.29***	
Model 5: Model 4 + Model 1	.38***	.74	.30***	.35***	.74	.27***	.32***	.74
Partial correlation	.15*		.02	.25***		.24***	.21***	

Note. GR = Gender responsive

a. Recidivism variables measure arrests at 2 years following assessments.

b. Recidivism variables measure arrests at 1 year following assessments.

c. Recidivism variable measures incarceration at 2 years following assessments.

d. The LSI-R was the gender-neutral assessment used in Maui and Minnesota. The gender-neutral assessment for Missouri was developed for use in the present project.

e. Measures of parental stress and self-efficacy were observed to be risk factors (or common to) all three sites.

f. The optimal gender-responsive predictors for Maui were parental stress, self-efficacy, homelessness, mental health history, and family support.

g. The optimal gender-responsive predictors for Minnesota were parental stress, self-efficacy, relationship dysfunction, and adult physical abuse.

h. The optimal gender-responsive predictors for Missouri were parental stress, self-efficacy, unsafe housing, anxiety/depression, current psychosis, anger/hostility, family support, and educational assets.

i. Whether at least one new offense-related outcome occurred.

j. Number of new offense-related outcomes.

*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

scales (Model 3) the sum of these two scales achieved a strong partial correlation with new arrests in Minnesota ($r = .22$, $p \leq .01$; $r = .22$, $p \leq .01$; AUC = .72) and a more modest contribution to the Missouri gender-neutral scale ($r = .10$; $p \leq .01$; AUC = .71). Partial correlations for the addition of self-efficacy and parental stress to the LSI-R were not significant for the Maui sample.

Findings for the "best fit" scales in Missouri utilized a broader selection of risk/need factors afforded by the Supplement 2 models. The overall correlations for the total instrument improved considerably with the addition of scales pertaining to unsafe housing, anxiety/depression psychosis, and anger/hostility and the subtraction of strengths pertaining to educational assets, family support, and self-efficacy. The overall correlation for the final scale was .32 ($p \leq .01$; AUC = .74). Even with fewer variables, results were also strong for Minnesota ($r = .35$, $p \leq .01$; $r = .27$, $p \leq .01$; AUC = .74). For both the Minnesota and the Missouri samples, the gender-responsive variables made a strong and significant contribution to the gender-neutral models, regardless of whether a model common to all sites or one fit to each site was used.

Less impressive findings for the Maui project may implicate either the assessment conditions for the gender-responsive survey (a survey administered in a group setting) or may in fact find the instrument less valid among this somewhat atypical population. However, we did have access to data that approximated Supplement 2 measures of family support,

TABLE 7: Bivariate Correlations (Pearson's *r*, one-tailed) and Areas Under the Curve (AUCs) Between Models and Prison Misconducts, Prison Samples

	Supplement 1						*Supplement 2*		
	Colorado[a] (N = *156)*			*Minnesota*[b] (N = *198)*			*Missouri*[b] (N = *272)*		
Classification Model	*Y/N*[a]	*AUC*	*N*[b]	*Y/N*[a]	*AUC*	*N*[b]	*Y/N*[a]	*AUC*	*N*[b]
Static (common custody inst.)	ns		ns	.23***	.63	.15**	.17***	.59	.12***
Model 1: gender-neutral[c]	.12**	.58	.16**	.31***	.68	.39***	.25***	.64	.29***
Model 2: common GR predictors[d]	.30***		.32***	.23***		.22***	.20***		.24***
Model 3: Model 1 + Model 2	.16**	.62	.21***	.33***	.70	.40***	.27***	.66	.32***
Partial correlation	.30***		.31***	.17***		.14***	.14**		.17***
Model 4: best GR predictors[efg]				.24***		.19***	.20***		.32
Model 5: Model 4 + Model 1				.33***	.70	.40***	.28***	.66	.37***
Partial correlations				.17***		.09*	.13***		.24***

Note. GR = Gender responsive.
a. Misconduct variables measure serious misconducts at 6 months following assessments.
b. Misconduct variables measure serious misconducts at 12 months following assessments.
c. The LSI-R was the gender-neutral assessment used in Colorado and Minnesota. The gender-neutral assessment for Missouri was developed for use in the present project.
d. Measures of relationship dysfunction and child abuse were observed to be risk factors (or common to) all three sites.
e. No additional risk factors contributed above the common model (Model 3) for Colorado.
f. The optimal gender-responsive predictors for Minnesota were self-efficacy, relationship dysfunction, and child abuse.
g. The optimal gender-responsive predictors for Missouri were anger/hostility, family support, and current symptoms of anxiety/depression and psychosis.
h. Whether at least one new offense-related outcome occurred.
i. Number of new offense-related outcomes.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

mental health history, and homelessness and found that the Model 4 factors offered a modest improvement to the LSI-R (Model 1) predictive validity.

Prison. Table 7 shows the total and incremental validity for prison risk/needs assessment. In this section we include a scale measuring offense history because that is what is currently in use in most states. Female and male inmates are typically sentenced to minimum, medium, or maximum custody on the basis of prior and current offense attributes and revocations, misconducts, or escapes occurring during the current or prior correctional terms (Hardyman, Austin, & Tulloch, 2002). As seen in Table 7, such scales were only modestly predictive of prison misconducts. Even in Minnesota, where the correlation between the static custody variable and prison misconducts was higher than for other sites ($r = .23$, $p \leq .01$), the AUC value was low (.63). Adding needs, even gender-neutral needs, improved predictive validity considerably, except in the case of Colorado, where the LSI-R was only weakly associated with prison misconducts. Just the opposite was found in Minnesota, where correlations between the LSI-R and prison misconducts were strong.

Child abuse and relationship dysfunction were significantly related to prison misconducts in all three samples. A summed scale of these two items was strongly correlated with prison misconducts in all three samples; correlations ranged from .20 ($p \leq .01$) to .32 ($p \leq .01$). Partial correlations, showing the incremental validity of adding these two variables to the gender-neutral assessments, were significant for all samples.

No improvements to Model 3 predictive validity were detected for the Colorado sample, because no additional gender-responsive risk factors other than child abuse and relationship dysfunction were found. The addition of self-efficacy to the Minnesota Model 4 scale also offered no additional incremental validity to that shown for Model 3.

However, with the benefit of a richer array of gender-responsive needs pertaining to anger/hostility, family support, and current symptoms of anxiety/depression and psychosis, the predictive validity for Model 5 represented a modest improvement over the predictive validity for Model 3.

Notwithstanding fairly strong correlations for the total instruments, AUC figures were only found to surpass .70 in the Minnesota sample. This may be attributable in part to the nature of the outcome variables. In most prisons, women's misconducts are for relatively minor behaviors, and follow-up time frames are short because of short prison terms.

Prerelease. Prediction scales for two prerelease samples are shown in Table 8. Findings for the Colorado pilot sample were weak for the LSI-R and insignificant for the addition of gender-responsive variables. In Missouri, with the benefit of a prerelease cohort, assessed 1 month prior to their release, and a larger array of gender-responsive risk/need factors, results for the final instrument were strong ($r = .31$, $p \leq .01$; $r = .34$, $p \leq .01$; AUC = .70). Moreover, the addition of measures of current symptoms of psychosis, anger/hostility, and adult victimization and strengths pertaining to educational assets and family support offered statistically significant contributions to the overall scales.

DISCUSSION

Correctional rehabilitation policies are currently dominated by what has become known as the Canadian Model, which has consisted of a series of treatment principles that encourage services prioritized to high-risk offenders and targeted primarily to the Big 4 or Central 8 offender needs shown to be most highly correlated with future offending (Andrews & Bonta, 2007). The most popular dynamic risk/needs assessments follow from this model and give high priority to the assessment and treatment of criminal thinking, antisocial associates, and impulsive personality traits. An opposing paradigm questions the relevance of the Canadian Model to women, finding it to be lacking in appropriate attention to women's different pathways to crime, thereby underestimating the importance of mental health, poverty, trauma, and dysfunctional relationship patterns (Belknap, 2007; Bloom et al., 2003; Chesney-Lind, 1997; Daly, 1992, 1994; Reisig et al., 2006; Salisbury &Van Voorhis, 2009).

From the perspective of the opposing paradigms (Morash, 2009), it has been difficult to establish the importance of women's unique risk factors on either a theoretical or a policy level. For a time, a number of feminist scholars faulted the whole notion of risk and risk assessment (Hannah-Moffat, 2004; Smart, 1982). In turn, proponents of the Canadian Model faulted feminist scholars for having "no respect for evidence" (Andrews & Bonta, 1998), because what has come to be termed the Canadian Model (or best practices, or the principles of effective intervention) is supported by large samples, hundreds of studies, meta-analyses, replicated studies, and replicated meta-analyses. Although the evidence was daunting, it can hardly be missed that even in its enormity and even when women were studied, none of the risk factors embodied in the pathways perspectives were incorporated into the research.

TABLE 8: Bivariate Correlations (Pearson's *r*, one-tailed) and Areas Under the Curve (AUCs) Between Models and Recidivism, Prerelease Samples

	Supplement 1						*Supplement 2*						
	Colorado[a] *(*N = *134)*						*Missouri*[b] *(*N = *272)*						
	Technical Violations			*Rearrests*			*Technical Violations 12 months*			*Incarceration*			
Classification Model	*Y/N*	*AUC*	*N*	*Y/N*	*AUC*	*N*	*Y/N*	*AUC*	*N*	*12 month*	*AUC*	*24 month*	*AUC*
Model 1: gender-neutral[c]	.18**	.60	.21***	.07	.55	.06	.15**	.58	.26***	.26***	.66	.28***	.66
Model 2: common GR predictor[d]	.02		.00	.15**		.14**	.14**		.13*	.13		.18**	
Model 3: Model 1 + Model 2	.18**	.60	.20**	.09	.57	.08	.16**	.59	.27***	.26***	.67	.29***	.67
Partial correlation	.01		.01	.14*		.11*	.13*		.10	.09		.14**	
Model 4: best GR predictors[e,f]	.11*		.09	.10		.09	.26***		.17**	.28***		.31***	
Model 5: Model 4 + Model 1	.19**	.60	.21***	.09	.56	.08	.22***	.62	.28***	.31***	.70	.34***	.70
Partial correlation	.09		.07	.09		.08	.25***		.12*	.22***		.25***	

Note. GR = Gender responsive.
a. Recidivism variables measure technical violations and arrests, average of 17 months following release.
b. Recidivism variables measure technical violations at 1 year following assessments and returns to prison 2 years following assessments.
c. The LSI-R was the gender-neutral assessment used in Colorado. The gender-neutral assessment for Missouri was developed for use in the present project.
d. The measure of adult victimization was the only risk factor to be predictive in both Colorado and Missouri.
e. The optimal gender-responsive predictors for Colorado were self-efficacy and adult victimization.
f. The optimal gender-responsive predictors for Missouri were current symptoms of psychosis, anger/hostility, adult victimization, educational assets, and family support.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

In what we hope will question this inertia, this study presents two compelling patterns. First, we can agree with proponents of the LSI-R and other dynamic risk/needs assessments—they are predictive for women offenders. In most of our samples and settings, gender-neutral variables and their compilation into a total risk scale powerfully predict offense-related outcomes for women. Even so, the addition of gender-responsive factors appears to create even more powerful prediction models. Moreover, the incremental validity of the added variables is, in most cases, statistically significant. Second, the importance of specific risk factors, relative to each other, recommends different treatment priorities from those advocated through focused attention to the Big 4 or Central 8 for women offenders. Specifically, there is little in these findings to suggest that attitudes and associates should be the main treatment target for women offenders to the exclusion of other needs. In fact, criminal thinking characterized a very low proportion of these participants, and findings generally supported a different set of treatment priorities. Among women in community correctional settings, for example, substance abuse, economic, educational, parental and mental health needs appear to be the needs most associated with future offending. Additionally, trauma, dysfunctional relationships, and mental health concerns are key to prison adjustment and ought to be viewed as essential to the maintenance of safe prisons.

Some will fault the recommendations of a new set of risk factors for the fact that we do not have the benefit of years of controlled studies to show that targeting these factors reduces recidivism. However, this too may be changing, albeit at a very slow pace. It is

especially noteworthy, for example, that more recent research is lending support to broader counseling and case management models (Lipsey, 2009) and women's programs targeted to self-efficacy (Gehring, Van Voorhis & Bell, 2010); child care (Olds et al., 2004); parenting (Piquero et al., 2009; Showers, 1993); substance abuse (Hall, Prendergast, Wellisch, Patten, & Cao, 2004; Hein, Cohen, Litt, Miele, & Capstick, 2004); and trauma (Najavitz, Gallup, & Weiss, 2006; Najavitz, Weiss, Shaw, & Muenz, 1998).

The findings reported in this article also lend support to the notion of gender-responsive assessment and classification. In six of the eight samples studied, subsets of gender-responsive variables offered unique and statistically significant contributions to gender-neutral assessment instruments. The studies have resulted in the creation of separate supplementary assessments for probation, institutions, and prerelease that essentially follow from the research in Missouri on Supplement 2 (see www.uc.edu/womenoffenders). Even so, much additional research is needed to further establish these and other women's assessments. Indeed, it is well known that it takes years to fully develop and validate a risk assessment tool "from the ground up" (Taylor & Blanchette, 2009). In the case of the National Institute of Corrections–University of Cincinnati models, for example, we recognize a need to further refine some scales that did not achieve ideal psychometric precision. Research on larger samples is also needed to determine ideal scale weights and cutoff scores. Even though our findings appeared in replicated samples, full development will require ongoing validation research. Finally, the assessments have not been tested in parole settings with postrelease women offenders.

We also would have hoped for a uniform tool rather than separate assessments for probation, prison, and prerelease. This may be possible after additional research; however, it may also be the case that environments may be pulling for risk factors to operate in some settings rather than others (see Morash et al., 1998). Moreover, it may be instructive that child abuse and mental health were more relevant to prison adjustment than to community adjustment and that financial, educational, parental, and safety issues were key to community and not prison adjustment. In fact, it may be more constructive to use these lessons than to fault the research for not producing a single assessment tool.

Finally, there are policy implications to grapple with beyond simply suggesting that women's risk can be better managed by gender-responsive programs targeted to a new series of risk factors. Agencies will need to fit correctional policy to an altered risk model. We tested several conceptualizations of risk, varying from a traditional perspective focusing on offense-related, background factors to one in which seriously troubled women were characterized as high risk; we found that the troubled, marginalized woman was at highest risk for future involvement. Unfortunately, many of the scales that contributed to a score of high risk carry a high degree of political cachet. As such, sensitive agency planning is required if these scales are to be used to increase custody levels or community supervision levels. With classification of high risk or maximum or close custody come reduced freedoms, more intensive supervision, and more punitive conditions of confinement. Corrections personnel may not feel comfortable imposing such conditions on women who are classified into higher risk categories by virtue of hardships associated with mental illness, physical and sexual victimization, economic disadvantage, or dysfunctional relationships with loved ones—even if these *are* the very women who tend to do most poorly under correctional supervision. Of course, these concerns would seem most relevant to prison classification approaches.

The more ideal approach would find policy makers and practitioners reconceptualizing their notions of high risk. If high-risk women are actually women with multiple serious needs, shifting policy implications regarding "high-risk" women from a punishment model to the rehabilitation model makes good sense. In cases where higher custody facilities or wings of facilities afford intensive programming and gender-responsive support of reentry, or high community risk guides women to more intensive case management, interventions, and wrap-around community support, the concerns for punishing or further marginalizing troubled women are greatly reduced. In these deliberations, policy makers would also do well to recognize that high-risk women are not the same as high-risk men in terms of their recidivism or the danger they pose to communities and institutions. Recidivism rates and rates of serious prison misconducts tend to be lower for high-risk women than for high-risk men (Hardyman & Van Voorhis, 2004). These differences have strong implications for architecture, custody environments, supervision strategies, and other correctional policies (see Van Voorhis, Bauman, Wright, & Salisbury, 2009; Wright, Van Voorhis, Salisbury, & Bauman, 2009).

NOTES

1. The design for the Colorado prerelease sample was the most limited of the four studies. It was a pilot study supporting the later research and amassed data that, while limited, nevertheless is illustrative for several areas of findings consistent with the Missouri prerelease cohort.

2. This was caused by an unclear survey format and has since been corrected. In addition, scale construction analyses have resulted in a much shorter assessment process, and staff are now trained to check for incomplete surveys.

3. Scales had different ranges. By virtue of the number of items, scales for self-efficacy, mental health, and abuse had higher scores than did other scales. As such they would have a greater influence on the final score than would scales with shorter ranges (number of items). Especially with respect to prison assignments, it is not likely that officials will wish to see custody decisions predominantly driven by overly high weights given to mental health and child abuse. Therefore, these scales were further collapsed to 2- to 4-point scales. As such they influence but do not solely determine final classifications.

4. It is not at all uncommon to customize risk assessment instruments to specific sites. This approach is used by the Northpointe COMPAS and by most applications of institutional custody classification models, in which state agencies undergo a pilot study of approximately 2 years and tailor variable choices to organization and sample considerations.

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Patricia Van Voorhis, PhD, is a professor of criminal justice at the University of Cincinnati. She was the principal investigator for the National Institute of Corrections–University of Cincinnati Women's Classification Project and has written extensively on women offenders and correctional treatment and classification. She is the former director of the University of Cincinnati's Corrections Institute.

Emily M. Wright, PhD, received her doctorate in criminal justice from the University of Cincinnati. She is an assistant professor in the Department of Criminology and Criminal Justice at the University of South Carolina. Her research interests include women offenders, correctional treatment and classification, and domestic violence.

Emily Salisbury, PhD, received her doctorate in criminal justice from the University of Cincinnati. She is an assistant professor in the Division of Criminology and Criminal Justice at the Portland State University in Portland, Oregon. Her research interests include female offender pathways, correctional treatment, and risk needs assessments with female and male offender populations.

Ashley Bauman, MS, is the executive manager of Women Offender Classification Projects for the University of Cincinnati's Corrections Institute. She has written a number of articles on effective programs for women offenders and implementation of classification models for women offenders.