

A META-ANALYTIC REVIEW OF CORRECTIONAL INTERVENTIONS FOR WOMEN OFFENDERS

Gender-Neutral Versus Gender-Informed Approaches

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Using meta-analytic approaches, we examined whether interventions for women offenders are effective in reducing recidivism, as well as whether gender-informed and gender-neutral interventions differ in their effectiveness. Across 38 effect sizes reflecting 37 studies and nearly 22,000 women offenders, women who participated in correctional interventions had 22% to 35% greater odds of community success than non-participants. In other words, correctional interventions for women are at least as effective as the published rates for men. Across all 38 effect sizes, gender-informed and gender-neutral interventions were equally effective; however, when analyses were limited to 18 effect sizes associated with studies of higher methodological quality, gender-informed interventions were significantly more likely to be associated with reductions in recidivism. These findings support recent research indicating that women and girls are more likely to respond well to gender-informed approaches if their backgrounds and pathways to offending are associated with gendered issues.

Keywords: women offenders; correctional interventions; gender-informed; gender-responsive; gender-neutral

Research in the area of correctional programming has evolved well beyond the Martinson (1974) era of “Nothing Works.” There is good evidence from both primary studies and meta-analytic work that correctional programs reduce recidivism by, on average, 10% (Andrews, Zinger, et al., 1990; Lösel, 1995). Moreover, programs adhering to certain standards have demonstrated reductions in recidivism of up to about 30% (Lösel, 1995). In pioneering meta-analytic studies published a quarter century ago, Andrews and colleagues (Andrews, Bonta, & Hoge, 1990; Andrews, Zinger, et al., 1990) provided a compelling demonstration of the effectiveness of correctional programming. In particular, those programs adhering to now widely accepted principles of effective correctional intervention

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(risk, need, responsivity [RNR]) showed the most promising correctional results. In the years that followed, a very large number of studies supported the findings of Andrews and colleagues (e.g., Dowden & Andrews, 1999, 2000; Hanson, Bourgon, Helmus, & Hodgson, 2009; Lowenkamp, Latessa, & Smith, 2006), and the evidence that correctional interventions reduce recidivism is now incontestable. Although this work has been framed as “gender neutral,” almost all of the supporting research has either focused exclusively on male offenders or failed to disaggregate the results by gender.

GENDER DIFFERENCES IN OFFENDING

Women offenders represent a small minority in correctional systems worldwide. As such, when one refers to evidence-based practice in corrections, the evidence tends to be based on the research findings from the male majority. A number of authors have acknowledged that existing reintegration paradigms for offenders are founded on male models of change and fail to consider arguments that women and men desist differently (e.g., Belknap, 2007; Blanchette & Brown, 2006; Bloom, Owen, & Covington, 2005, 2006; Herrschaft, Veysey, Tubman-Carbone, & Christian, 2009). These authors challenge the tacit acceptance that mainstream gender-neutral correctional programs work well for women and they maintain that there is a need for gender-specific reintegration efforts to facilitate women’s reentry into their communities.

Women-centered perspectives have emerged, advocating that correctional interventions for women offenders require a different approach because women’s pathways to crime differ from those of men. Thus, gender-neutral approaches such as those espoused by Andrews and colleagues have been, at the extreme end, declared irrelevant for women either explicitly (e.g., Kendall, 2004) or implicitly (e.g., Bloom et al., 2005). More recently, tempered perspectives acknowledge research findings showing that the presence of most of the traditional risk factors identified in the “what works” literature is associated with poorer correctional outcomes for both men and women. At the same time, they recognize that some other factors, more prevalent among justice-involved women, such as parenting stress, a history of trauma, adverse social conditions, and mental health problems, can also affect response to treatment and correctional outcomes (Blanchette & Brown, 2006; Brennan, Breitenbach, Dieterich, Salisbury, & Van Voorhis, 2012; Rettinger & Andrews, 2010; Van Voorhis, 2012).

Daly’s (1992) influential early work on a small sample of criminal justice involved women isolated multiple pathways to crime; some which mirror those for men, and others that incorporate gendered factors, specifically relevant to girls and women. In brief, the “street woman” pathway describes women who fled abusive environments, became addicted to substances, and engaged in criminal behavior (e.g., theft, prostitution) to survive life on the street. The “drug connected” women use, manufacture, and/or distribute drugs in the context of a relationship (family or intimate). The “harmed and harming” women were subject to abusive and chaotic living conditions as children; they often have a juvenile court history. “Battered women” are also subject to abuse, albeit in the context of an intimate relationship. Finally, the “other” pathway described women who committed their crimes out of an economic motivation and had little evidence of serious early trauma or substance abuse in their histories.

Influenced by this work, later research found evidence that a number of gender-responsive factors contributed to a variety of routes to criminal behavior among women (Brennan

et al., 2012). Evidence for tragically high rates of early trauma among justice-involved women has been documented in many studies (e.g., Browne, Miller, & Maguin, 1999; Messina, Grella, Burdon, & Prendergast, 2007; Tam & Derkzen, 2014), suggesting it is a factor contributing to women's criminality (and supporting the pathways perspectives), although the causal role of trauma history in influencing recidivism outcomes for women is less well established (Blanchette & Brown, 2006). Research by Reisig, Holtfreter, and Morash (2006) suggests that traditional risk factors are differentially related to outcomes depending on whether women followed more gendered pathways to crime. This may help explain variability in findings for outcome research pertaining to women offenders. For a comprehensive recent review of the conceptual and empirical foundations for gender-informed risk factors and interventions, see Kerig and Schindler (2013).

GENDER-INFORMED INTERVENTIONS

It has been about a decade since the advent of a new generation of correctional programs and other interventions for women—those hailed as “gender-informed” (Blanchette & Brown, 2006) or “gender-responsive” (Bloom et al., 2005, 2006). Although some of these interventions incorporate traditional elements of evidence-based practice (e.g., cognitive-behavioral, skills-based methods), they also explicitly consider needs that are particularly salient to women, and are founded, at least in part, on theoretical models such as relational-cultural theory (J. B. Miller, 1986), feminist paradigms, and strengths-based approaches (Van Wormer, 2001). Recognizing the elevated rates of historical trauma among girls and women, gender-informed approaches are trauma-informed (Grella, 2008; Messina et al., 2007) and consider the gendered context (or “pathways”) of female offending (Daly, 1992; Salisbury & Van Voorhis, 2009; Simpson, Yahner, & Dugan, 2008).

Although intuitively appealing, narrative reviews and primary studies have offered only nebulous support for the gender-informed approaches. Supporters of gender-informed approaches counter that the interventions are new and the research is limited by methodological challenges such as small sample sizes and low base rates of reoffending for women, making it difficult to detect treatment effects (Blanchette & Brown, 2006). Furthermore, whereas some primary studies support a gender-neutral approach to correctional programs for females (e.g., Lovins, Lowenkamp, Latessa, & Smith, 2007), there are also research studies supporting a more focused gendered approach to programming for girls and women (Day, Zahn, & Tichavsky, 2014; Grella, 2008, 2013). In sum, the little research that does exist is conflicting and, collectively, difficult to interpret. Although there is preliminary evidence that mainstream gender-neutral interventions reduce recidivism for women, there is still little evidence to indicate whether gender-informed interventions produce similar, or even better, results. To date, there have been relatively few studies examining their effectiveness in reducing recidivism for women. Moreover, as also highlighted by Saxena, Messina, and Grella (2014), tests of empirical validity of gender-informed interventions are often lacking in methodological and statistical rigor.

Meta-analytic research is a method that improves on traditional methods of narrative review by systematically aggregating information and quantifying its impact. Combining data from several studies using meta-analysis can increase statistical power, provide insight into the nature of relationships between variables, and increase generalizability of results more rigorously than less quantitative review methods. The advantages of meta-analysis are

well documented (Garg, Hackman, & Tonelli, 2008) and arguably supersede those of primary studies.

To examine the effectiveness of interventions with small samples and lower base rates of reoffending (e.g., women offenders), meta-analysis has the distinct advantage of correcting for low statistical power, while allowing for the examination of moderating effects (e.g., characteristics of the sample, the venue where the treatment was provided, type of treatment) that point to which aspects of the interventions make them more effective. In addition, to increase confidence in meta-analytic findings, researchers may choose to include only studies that meet particular criteria. For example, only higher quality studies using matched comparison or randomized control groups could be analyzed to yield stronger conclusions regarding treatment effects of a particular intervention.

To date, there have been only two meta-analyses examining the impact of correctional programming on recidivism for women. The first, authored by Dowden and Andrews (1999) included treatment studies that met the following criteria: (a) the samples were composed predominantly (at least 51%) or entirely of female offenders; (b) the study included a follow-up period; (c) the study compared offenders who had received some form of intervention with a control group that did not receive the primary intervention; and (d) the study included a measure of recidivism (reconviction, rearrest, parole failure). The authors concluded that “what works” for men (i.e., attending to the principles of RNR) also reduces recidivism for women.

Although the study by Dowden and Andrews (1999) offered preliminary insight into the effectiveness of mainstream programs for women, the analyses included only 16 studies comprised of entirely female samples. Moreover, many of those studies focused on young/juvenile offenders, limiting the generalizability of the results to adult women. Finally, there were few, if any, gender-informed programs developed and implemented specifically for women at that time. This precluded a relative comparison of the effectiveness of gender-informed programs.

A more recent meta-analysis by Tripodi, Bledsoe, Kim, and Bender (2011) expanded on Dowden and Andrew’s study by including more recent studies (1988 through 2008) focusing solely on interventions in adult correctional facilities and limiting the review to studies published in peer reviewed journals (with one exception). Tripodi and colleagues focused on both recidivism outcomes and other outcomes (such as psychological well-being). Their meta-analysis of six studies with a recidivism outcome showed positive results, and the authors concluded that substance abuse programming has an appreciable effect on reducing recidivism for women. Specifically, compared with women who did not receive treatment, those who participated in substance abuse programs had 45% lower odds of reoffense after their release from prison.

Although these results are promising, they are based on only six studies, relegated to programs targeting substance abuse, and are limited to U.S. correctional settings. Collectively, these issues significantly limit the generalizability of these findings to other need areas or jurisdictions. More importantly, the question remains: Do gender-informed and gender-neutral interventions promote similar treatment effects?

CURRENT STUDY

The current study will contribute to the knowledge base regarding whether correctional interventions work for women offenders and in particular, whether gender-informed approaches are effective in reducing recidivism. It will expand on the aforementioned

meta-analyses by examining recidivism outcomes for adult women only and will use updated research (to 2013). Furthermore, it will provide an unprecedented comparative analysis of the effectiveness of gender-informed and gender-neutral interventions for women. As indicated earlier, the development and promulgation of gender-informed programs first began only about 10 to 15 years ago. Prior to that, all programs in corrections were conceived as gender-neutral and equally applicable to men and women. As such, the current meta-analysis used research studies published between 2000 and 2013 to coincide with the advent of gender-informed interventions and to ensure that the most up to date research studies were included. The following research questions were examined:

1. To what extent are interventions for women effective in reducing recidivism?
2. Is intervention gender-responsiveness associated with effectiveness?
3. Are other intervention characteristics associated with effectiveness?
4. Are results different when analyses are limited to only to higher quality studies?

METHOD

SELECTION OF STUDIES

In early 2014, the first author performed electronic and manual searches aiming to identify studies focusing on correctional programs or interventions for women offenders published from 2000 to 2013. To be considered, studies had to include adult women offenders, a minimum of one comparison group, and a measure of recidivism after intervention completion. Studies reporting on populations in immigration detention or secure mental health settings were excluded.

Searches of studies published from January 2000 to December 2013 were conducted in PsycINFO, Sociological Abstracts, Social Sciences Full Text, Criminal Justice Abstracts, Web of Science, and Dissertation and Theses—Full Text. Search terms defined gender (“women,” “woman,” “female”), population, (“offen*,” “crim*,” “priso*,” “incarcerat*,” “inmate,” “detain*”), and intervention (“program*,” “interven*,” “treat*,” “therap*,” “rehab*”). No explicit search term for outcome variables was included; instead, abstracts and articles were manually reviewed for relevance.

In addition, a variety of government and other websites were searched, including the websites of the Australian Institute of Criminology, National Criminal Justice Reference Service, U.S. National Institute of Corrections, Bureau of Prisons, U.K. Home Office, U.K. Ministry of Justice, Correctional Service of Canada, Public Safety Canada, The Urban Institute, The Pew Charitable Trusts, Center for Gender and Justice, and Elizabeth Fry Society. Where possible, searches were conducted using the terms described above. However, in some cases search engines were not available and manual reviews were conducted.

Studies obtained via these two search procedures were assessed for relevance and, for those studies retained, reference lists were examined for possible additional resources. Finally, 31 researchers and practitioners in the field were contacted and asked if they could provide any additional articles, studies, or unpublished results. Figure 1 presents a schematic of the studies obtained from each source.

In total, 118 studies were examined in further detail to determine their appropriateness for the meta-analysis. To be retained, studies had to include at least 10 participants per group and report sufficient information to calculate an appropriate effect size. When these

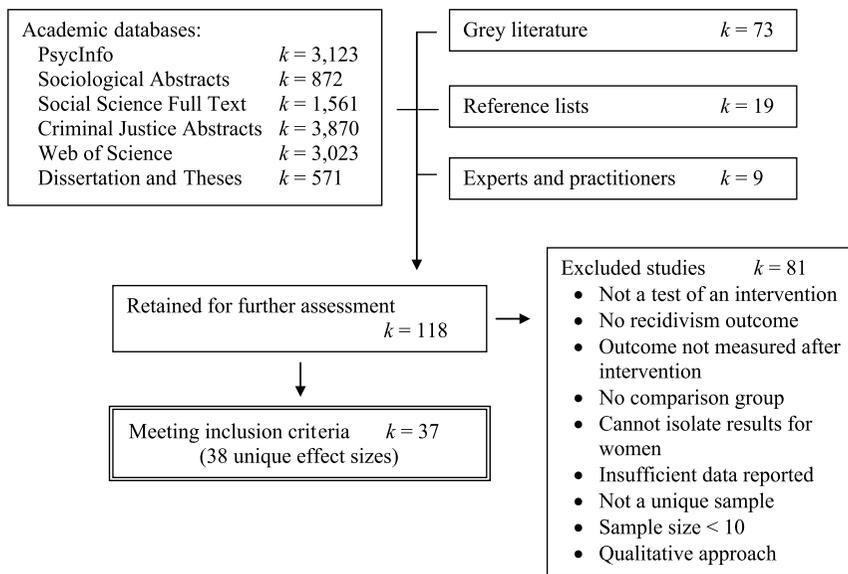


Figure 1: Study Identification Flowchart

data were missing, attempts were made to contact the study authors for the missing data, but this was generally not successful. When mixed-gender samples were used, studies were retained only when results were reported separately for women. Retaining only studies with low drop-out rates was considered, but this information was inconsistently reported and this requirement was therefore abandoned. Ultimately, 37 studies providing 38 unique effect sizes were retained.

DATA EXTRACTION AND CODING

Procedure

Data coding and extraction were conducted by two researchers with doctoral degrees in forensic psychology according to an explicit coding guide. As a first step, the coders independently assessed and then compared results for five studies. Where the coders' interpretations were inconsistent, these were discussed until consensus was reached and further clarity was added to the coding manual. All studies were then coded by one of the two individuals. To preserve independence, when multiple articles reported findings based on the same or overlapping samples, only a single study was retained (the one with the longest follow-up without significant loss of sample size).

Study Descriptors

Data included in the coding scheme fell into one of the three following areas: the intervention, the study design, or the study quality. First, certain descriptors of the intervention were coded including its focus (e.g., substance abuse, employment, parenting), location (institution, community, or both), delivery approach (women-only group, mixed group, or

individual delivery), and approach (cognitive-behavioral, therapeutic community, and whether the intervention was gender-informed were all coded).

The “gender-informed” variable was assessed on a three-point continuum, from “no evidence” to “some/partial evidence” to “clear evidence.” Interventions were coded as having “clear evidence” of being gender-informed if they either explicitly stated such and/or if the intervention description focused on a number of relevant concepts, including, but not limited to, gendered/unique pathways to offending, relational-cultural theory, feminist theories, trauma, and parenting. Interventions were coded as having “some/partial evidence,” if they made mention of a single one of these concepts, and/or suggested the intervention was altered/tailored to fit women’s needs.

Second, design-related variables included the nature of the comparison condition, sample size, recidivism measurement (conviction, charge/arrest, any return to custody, not defined), and recidivism follow-up period. In terms of study-related variables, year of publication/release, peer-review status, and country of publication were noted.

Study quality was also assessed using the Maryland Scientific Methods Scale (SMS; Sherman et al., 1998). This five-point scale provides a measure of quality based primarily on the extent to which the methodology minimizes threats to internal validity. Given that a comparison group was required for inclusion, all SMS ratings in the current meta-analysis were 3, 4, or 5. Studies rated 3 typically involved a non-matched comparison group, whereas studies rated 4 involved a matched comparison group or adequate statistical control for group differences, and those rated 5 involved a random assignment design. When comparing lower- and higher quality studies, those with a rating of 3 were compared with those with a rating of 4 or 5.

Inter-Rater Reliability

To examine inter-rater reliability, 10 studies were independently coded by both of the first two authors. Agreement for categorical variables was assessed by calculating kappa, and for continuous variables, by intraclass correlations coefficients. Kappa values all exceeded .75 and averaged .87 across 18 variables. Intraclass correlations were 1.0 on seven of the nine continuous variables and otherwise exceeded .90. Given these results demonstrated acceptable levels of agreement, all variables were retained in analyses.

AGGREGATION OF DATA

Given the dichotomous nature of both the group and outcome variables, findings were summarized using odds ratios (ORs; Fleiss, 1994). In keeping with convention, analyses were conducted on the natural log of the OR, which allows for a straightforward definition of its variance. When ORs were calculated directly from the cells of a 2×2 table, 0.5 was added to each cell to permit the analysis of tables containing empty cells. To increase the precision of estimates, each effect size was weighted by the inverse of its variance. After analyses were completed, results were returned to ORs (i.e., the exponent was taken of the natural logs of the ORs) and reported as such to facilitate understanding.

Both fixed-effect and random-effect models were computed (Hedges & Vevea, 1998). Fixed-effect models produce results reflective only of the studies included in the meta-analysis, whereas random-effects models aim to estimate effects within the full population of possible studies. This interpretative difference is due to the manner in which observed

variance is conceptualized in each case. Whereas fixed-effect models assume that any between-study variance is due to sampling error, random-effects models explicitly include a between-study error term representing variation across studies (Borenstein, Hedges, Higgins, & Rothstein, 2009). When between-study variation is minimal, the results of fixed-effect and random-effects models are similar. On the other hand, when assumptions are violated, the fixed-effect model produces liberal results and the random-effects model produces conservative estimates (Overton, 1998).

In each analysis, the presence of outliers was investigated using the Q statistic according to the guidelines outlined by Hanson and Bussière (1998) where outliers were identified, results were presented both with and without them. The Q statistic, which is distributed as a chi-square with $k-1$ degrees of freedom, was also used to assess the significance of variability between studies (Hedges & Olkin, 1985). The magnitude of this variability was examined using I^2 , which allows for comparisons across analyses (Higgins, Thompson, Deeks, & Altman, 2003). Finally, to examine the possible moderating effect of intervention-related and design-related variables, the significant variability in mean weighted effect sizes was examined using the Q_{between} statistic. Significant Q_{between} values indicate that moderator variables explain a significant portion of the variability observed.

RESULTS

EFFECT OF INTERVENTION PARTICIPATION ON RECIDIVISM

In total, 37 studies reporting 38 unique effect sizes were included in the analyses (see Table 1). Overall, in more than three quarters of the studies (29 of 38) the intervention group recidivated at a lower rate than the comparison group. Across all the studies, the recidivism rate of the offenders in the intervention group ranged from 0% to 75% (unweighted mean of 28%) whereas that for the comparison groups ranged from 10% to 80% (unweighted mean of 34%). Meta-analytic analyses confirmed lower rates of recidivism among those in the intervention groups (see Table 2), with statistically significant results for both the fixed-effect (weighted mean OR of 1.22) and random-effect models (weighted mean OR of 1.35). The variability among studies was statistically significant ($Q = 136.51, p < .001$) and the value obtained for I^2 showed that 73% of the observed variability was more than would be expected by chance. Applying Higgins and colleagues' (2003) thresholds, this is considered a high amount of variability and supports further examinations of the causes of the heterogeneity.

EFFECT OF INTERVENTION-LEVEL MODERATOR VARIABLES

Applying the Q_{between} statistic to fixed-effect models, a number of intervention-level variables were examined for their association with recidivism outcomes. As can be seen in Table 2, interventions focused primarily on substance use had significantly larger effect sizes than did those focused in other areas, as did interventions offered in the context of a therapeutic community. Notably, these findings are likely inter-related, as seven of the 10 interventions offered in a therapeutic community environment focused on substance use. The variability associated with whether the intervention was gender-informed was not statistically significant, though it approached this threshold, $Q_{\text{between}} = 5.91, df = 2, p = .52$. Programs that were fully gender-informed had non-significantly smaller effects than those that were partially or not gender-informed.

TABLE 1: Summary of Studies and Outcomes

Study ID	Study	Sample Size		SMS Rating	Intervention Focus	Gender-Informed ^a	Recidivism Outcome	Follow-Up Period
		Treatment	Control					
1	P. Miller (2010)	122	121	3	Substance use	No	Not stated	Variable
2	Johnson, Friedmann, Green, Harrington, and Taxman (2011)	39	38	5	Substance use	No	Any return	9 months
3	Zlotnick, Johnson, and Njavits (2009)	23	21	5	Multi-target	Yes	Any return	6 months
4	Waid (2012)	2,753	4,369	3	Substance use	No	New conviction	3 years
5	Stalans, Seng, and Lurigio (2008)	80	125	3	Trauma	Yes	Charge or arrest	1 year
6	Scott and Dennis (2012)	224	238	5	Substance use	No	Charge or arrest	3 months
7	Robbins, Martin, and Surratt (2009)	108	116	3	Multi-target	Partially	Charge or arrest	1.5 years
8	Matheson, Doherty, and Grant (2009)	318	242	3	Substance use	Yes	Any return	1 year
9	Sacks, McKendrick, and Hamilton (2012)	235	192	5	Substance use	Yes	Charge or arrest	1 year
10	Mosher and Phillips (2006)	322	322	4	Substance use	No	New conviction	Variable
11	Pelissier, Camp, Gaes, Saylor, and Rhodes (2003)	245	228	3	Substance use	Partially	Charge or arrest	3 years
12	Cann (2006) (Sample 1)	66	198	4	Cognitive skills	No	New conviction	1 year
13	Cann (2006) (Sample 2)	114	342	4	Cognitive skills	No	New conviction	1 year
14	Torre and Fine (2005)	274	2,031	3	Education	No	New conviction	3 years
15	Dowden and Blanchette (2002)	58	40	3	Substance use	No	Any return	3 years
16	Gehring, Van Voorhis, and Bell (2010)	190	190	4	Multi-target	Yes	New conviction	2.5 years
17	Roe-Sepowitz, Hickle, Perez-Loubert, and Egan (2011)	234	85	3	Prostitution	No	Charge or arrest	1 year
18	Farrell (2000)	41	38	5	Multi-target	No	Charge or arrest	1.5 years
19	Schram and Morash (2002)	50	41	3	Life skills	Partially	Any return	60 days
20	Messina, Calhoun, and Warda (2012)	85	65	5	Substance use	Yes	Charge or arrest	Not stated
21	Messina, Burdon, and Prendergast (2006)	171	145	4	Substance use	No	Any return	1 year
22	Messina, Grella, Cartier, and Torres (2010)	60	55	5	Substance use	Yes	Any return	Variable
23	Watson, Adkins, Cook, and Stageberg (2010)	164	173	4	Substance use	Yes	New conviction	1 year

(continued)

TABLE 1: (continued)

Study ID	Study	Intervention Focus	SMS Rating	Sample Size		Gender-Informed ^a	Recidivism Outcome	Follow-Up Period
				Treatment	Control			
24	Jolliffe, Heddarman, Palmer, and Hollin (2011)	Multi-target	4	660	660	Partially	New conviction	1 year
25	Kubiak, Kasiborski, and Schmittl (2010)	Parenting	3	48	36	Yes	New conviction	10 years
26	Millson, Robinson, and Van Dielen (2010)	Case management	5	174	174	Yes	Charge or arrest	1 year
27	Hall, Prendergast, Wellisch, Patten, and Cao (2004)	Substance use	3	101	79	Partially	New conviction	1 year
28	Armstrong, Burruss, and Henderson (2007)	Multi-target	3	608	951	Yes	Charge or arrest	Not stated
29	Liau et al. (2004)	Peer support	5	41	36	No	Not stated	6 months
30	Durrance and Ablitt (2001)	Multi-target	3	61	63	Yes	New conviction	1 month
31	MacSwain, Farrell MacDonald, and Cheverie (2015) ^b	Substance use	3	85	45	No	Any return	6 months
32	Lindquist, Lattimore, Barrick, and Visser (2009)	Multi-target	3	153	204	No	Not stated	15 months
33	Harrell, Roman, and Sack (2001)	Substance use	3	283	114	Yes	Any return	2 years
34	Guydish et al. (2011)	Multi-target	5	92	92	No	Charge or arrest	1 year
35	Seabrook (2007)	Cognitive skills	5	52	46	No	Any return	1 year
36	Gat (2000)	Parenting	3	374	405	Partially	New conviction	5 years
37	Gordon (2010)	Multi-target	3	92	575	No	Charge or arrest	Not stated
38	Tuning (2004)	Education	3	31	69	No	Charge or arrest	3 years

Note. SMS = Maryland Scientific Methods Scale (Sherman et al., 1998).

a. Studies are listed as being gender-informed if there was clear evidence of such in the coded document; as partially if there was some indication; and as not being gender-informed otherwise.

b. This study was obtained while still originally in draft format and therefore met the time-related inclusion criterion. The more recent published reference is provided to facilitate interested readers' access to the literature.

TABLE 2: Effect Sizes According to Intervention-Level Variables

Focus	Fixed-Effect		Random-Effect				Q	I ²	K	n	Studies
	OR	95% CI	OR	95% CI	OR	95% CI					
Overall	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All		
Approach	1.20	[1.11, 1.30]	1.30	[1.09, 1.52]	119.31***	69.83	37	21,409	As below (outlier removed)		
Program/intervention	1.25	[1.13, 1.38]	1.35	[1.09, 1.67]	105.01***	73.33	29	17,871	1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 27, 28, 29, 30, 31, 32, 35, 36, 38		
Other	1.17	[1.02, 1.36]	1.32	[0.95, 1.84]	31.12***	74.30	9	3,857	2, 6, 17, 24, 25, 26, 33, 34, 37		
Other (without outlier)	1.09	[0.94, 1.27]	1.13	[0.90, 1.40]	12.46	23.84	8	3,538	2, 6, 24, 25, 26, 33, 34, 37		
<i>Q</i> _{between}					1.84						
Substance use is primary focus	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All		
Yes	1.52	[1.34, 1.75]	1.55	[1.25, 1.92]	35.54***	57.80	16	11,674	1, 2, 4, 6, 8, 9, 10, 11, 15, 20, 21, 22, 23, 27, 31, 33		
No	1.05	[0.95, 1.17]	1.21	[0.95, 1.52]	82.56***	74.56	22	10,054	3, 5, 7, 12, 13, 14, 16, 17, 18, 19, 24, 25, 26, 28, 29, 30, 32, 34, 35, 36, 37, 38		
<i>Q</i> _{between}					18.41***						
Cognitive-behavioral	1.32	[1.20, 1.45]	1.38	[1.16, 1.63]	84.60***	64.54	31	12,068	As below		
Yes	1.31	[1.12, 1.58]	1.31	[1.07, 1.62]	17.03	29.56	13	3,434	1, 2, 8, 9, 11, 12, 13, 16, 20, 22, 27, 29, 35		
No	1.32	[1.17, 1.48]	1.43	[1.12, 1.84]	67.56***	74.84	18	8,634	5, 6, 7, 10, 14, 17, 18, 19, 23, 24, 25, 26, 31, 32, 34, 36, 37, 38		
<i>Q</i> _{between}					0.01						
Therapeutic community	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All		
Yes	2.03	[1.68, 2.44]	1.99	[1.62, 2.46]	10.62	15.25	10	9,358	1, 3, 4, 7, 9, 10, 18, 22, 23, 27		
No	1.08	[0.99, 1.19]	1.19	[0.98, 1.43]	91.17***	70.38	28	12,370	2, 5, 6, 8, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38		

(continued)

TABLE 2: (continued)

Focus	Fixed-Effect		Random-Effect		Q	I ²	K	n	Studies
	OR	95% CI	OR	95% CI					
<i>Q</i> _{between}									
Gender-informed	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	34.72***	72.90	38	21,728	All
Clear evidence	1.09	[0.95, 1.25]	1.22	[0.92, 1.62]	136.51***	71.46	13	4,673	3, 5, 8, 9, 16, 20, 22, 23, 25, 26, 28, 30, 33
Partial evidence	1.21	[1.03, 1.42]	1.39	[1.03, 1.88]	42.05***	59.53	6	3,067	7, 11, 19, 24, 27, 36
No evidence	1.39	[1.21, 1.58]	1.40	[1.04, 1.90]	12.36*	76.38	19	13,988	1, 2, 4, 6, 10, 12, 13, 14, 15, 17, 18, 21, 29, 31, 32, 34, 35, 37, 38
<i>Q</i> _{between}									
Location	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	5.91	72.90	38	21,728	All
Institution	1.38	[1.20, 1.62]	1.40	[1.09, 1.80]	136.51***	67.85	16	7,249	1, 8, 9, 10, 11, 12, 13, 14, 15, 19, 21, 22, 23, 35, 36, 38
Community	1.02	[0.90, 1.15]	1.17	[0.89, 1.54]	46.66***	77.19	15	6,343	2, 5, 6, 16, 17, 20, 24, 25, 26, 28, 29, 30, 33, 34, 37
Both	1.75	[1.38, 2.23]	1.73	[1.30, 2.32]	61.39***	25.36	7	8,136	3, 4, 7, 18, 27, 31, 32
<i>Q</i> _{between}									
Delivery approach ^a	1.19	[1.08, 1.28]	1.27	[1.07, 1.52]	20.42***	71.80	33	20,681	As below
Women-only group	1.21	[1.10, 1.32]	1.32	[1.09, 1.60]	113.46***	73.05	29	19,357	1, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 35, 36, 38
Individual delivery	0.92	[0.70, 1.22]	0.94	[0.62, 1.43]	103.91***	51.96	4	1,324	2, 33, 34, 37
<i>Q</i> _{between}									
					6.24				
					3.31				

Note. OR = odds ratio; CI = confidence interval.

a. It was impossible to separately examine mixed-gender group delivery studies given there were only four, and in one (17), all male offenders self-identified as transgendered; it was considered inappropriate to combine this study with the others. For one study, the delivery approach was not indicated.

p* < .05. **p* < .001.

Significant variability was also explained by location, with interventions offered in an institution or bridging the institution and community associated with better outcomes than those offered only in the community. The delivery approach did not explain variability in findings, though only women-only groups and individual delivery approaches could be examined. Four studies reported a mixed-gender group delivery approach, but these were highly heterogeneous (e.g., in one study, all male participants self-identified as transgendered) and could not be appropriately combined in analyses. Finally, whether an intervention used a cognitive-behavioral approach and whether it was a traditional correctional program or intervention (as opposed to a case-management approach or diversion program) did not explain a significant amount of the variability in findings.

Higher Quality Studies

The extensive unexplained variability identified in these analyses supported a replication of these examinations limited to only higher quality studies—those where an attempt was made to account for group non-equivalence—rated as 4 or 5 on the SMS. As shown in Table 3, results for these 18 studies were largely consistent with those for the larger sample, with an overall effect size using the fixed-effects model (1.25) and using the random-effects model (1.26). The proportion of variance unexplained was lower than when all three quality levels of studies were combined, though still high ($I^2 = 63.48$). The overall approach, the focus on substance use, and the use of a therapeutic community, all continued to account for significant portions of the variability among effect sizes, with the patterns across levels of these moderators unchanged.

Differences emerged among the remaining intervention-level variables, with the greatest being with respect to whether interventions were gender-informed. Whereas this variable was non-significant in analyses including all studies, among only higher quality studies, the effect size for gender-informed interventions was significantly and considerably greater than that for gender-neutral programs. A less striking difference was found for the use of a cognitive-behavioral approach, which, among higher quality studies, accounted for a considerable portion of the variability. Specifically, interventions using this approach being associated with greater effect sizes than those using other approaches. The presence of outliers, however, was highly influential in this finding. Among these higher quality studies, location was not a significant moderator, and delivery approach could not be examined due to there being too few studies in conditions other than the women-only group approach.

EFFECT OF ADDITIONAL MODERATOR VARIABLES

Table 4 summarizes examinations of possible additional design and study-level categorical moderator variables. Again, these analyses were conducted for all studies as well as only for higher quality studies. Given the results were very similar, only the former are presented. In terms of design-related moderators, no significant differences were found to be associated with the study design or the nature of the control condition. A fixed-effect meta-regression showed that there were also no significant effects associated with the study sample size ($b = .000036$, $SE = .00027$, $k = 38$, $z = .139$, $p = ns$) or recidivism follow-up period ($b = .003$, $SE = .017$, $k = 35$, $z = .173$, $p = ns$). The measure of recidivism used, however, explained a significant portion of the variability among studies, with examinations using new convictions as the measure of recidivism (OR = 1.38) tending to be associated with

TABLE 3: Effect Sizes According to Intervention-Level Variables—Higher Quality Studies

Focus	Fixed-Effect		Random-Effect		Q	I ²	k	n	Studies
	OR	95% CI	OR	95% CI					
Overall	1.25	[1.11, 1.40]	1.26	[1.01, 1.58]	46.55***	63.48	18	5,711	2, 3, 6, 9, 10, 12, 13, 16, 18, 20, 21, 22, 23, 24, 26, 29, 34, 35
Approach	1.25	[1.11, 1.40]	1.26	[1.01, 1.58]	46.55***	63.48	18	5,711	All
Program/intervention	1.36	[1.15, 1.62]	1.31	[0.94, 1.82]	38.42***	68.77	13	3,321	3, 9, 10, 12, 13, 16, 18, 20, 21, 22, 23, 29, 35
Other	1.13	[0.95, 1.34]	1.16	[0.91, 1.46]	5.71	29.95	5	2,390	2, 6, 24, 26, 34
Q _{between}					2.42				
Substance use is primary focus	1.25	[1.11, 1.40]	1.26	[1.01, 1.58]	46.55***	63.48	18	5,711	All
Yes	1.51	[1.25, 1.82]	1.46	[1.01, 2.12]	24.27***	71.15	8	2,471	2, 6, 9, 10, 20, 21, 22, 23
No	1.09	[0.93, 1.27]	1.09	[0.85, 1.42]	15.73	42.79	10	3,240	3, 12, 13, 16, 18, 24, 26, 29, 34, 35
Q _{between}					6.55*				
Cognitive-behavioral	1.30	[1.14, 1.46]	1.31	[1.04, 1.63]	37.94***	60.46	16	5,351	As below (outliers removed)
Yes	1.20	[0.94, 1.51]	1.19	[0.88, 1.60]	12.22	34.51	9	1,978	2, 9, 12, 13, 16, 20, 22, 29, 35
Yes (outlier removed)	1.32	[1.03, 1.68]	1.32	[1.03, 1.68]	5.25	0.00	8	1,714	2, 9, 13, 16, 20, 22, 29, 35
No	1.34	[1.15, 1.55]	1.40	[1.00, 1.97]	25.08***	76.08	7	3,373	6, 10, 18, 23, 2,426, 34
No (outlier removed)	1.19	[1.01, 1.39]	1.23	[0.95, 1.60]	9.67	48.29	6	2,729	6, 18, 23, 2,426, 34
Q _{between}					23.02***				
Therapeutic community	1.25	[1.11, 1.40]	1.26	[1.01, 1.58]	46.55***	63.48	18	5,711	All
Yes	1.93	[1.51, 2.48]	1.77	[1.22, 2.59]	9.58	47.79	6	1,589	3, 9, 10, 18, 22, 23
No	1.08	[0.94, 1.25]	1.08	[0.87, 1.35]	20.97*	47.55	12	4,122	2, 6, 12, 13, 16, 20, 21, 24, 26, 29, 34, 35
Q _{between}					16.00***				
Gender-informed	1.36	[1.17, 1.58]	1.31	[1.01, 1.70]	42.06***	64.38	16	4,021	As below
Clear/partial evidence ^a	1.68	[1.32, 2.12]	1.68	[1.32, 2.12]	1.16	0.00	6	1,374	3, 9, 16, 20, 22, 23, 26
No	1.19	[0.98, 1.43]	1.09	[0.73, 1.67]	35.77***	74.84	10	2,647	2, 6, 10, 12, 13, 18, 21, 29, 34, 35
Q _{between}					5.13*				
Location	1.23	[1.09, 1.40]	1.19	[0.75, 1.86]	45.12***	66.76	16	5,588	As below
Institution	1.32	[1.08, 1.62]	1.19	[0.75, 1.86]	34.53***	79.73	8	2,600	9, 10, 12, 13, 21, 22, 23, 35
Community	1.20	[1.02, 1.39]	1.25	[1.01, 1.55]	9.98	29.85	8	2,988	2, 6, 16, 20, 24, 26, 29, 34
Q _{between}					0.61				

Note. OR = odds ratio; CI = confidence interval.

a. The "clear evidence" and "partial evidence" categories were collapsed together, given the limited numbers of studies in each.

* $p < .05$. *** $p < .001$.

TABLE 4: Additional Moderator Analyses

Focus	Fixed-Effect		Random-Effect				K	n	Studies
	OR	95% CI	OR	95% CI	Q	I ²			
Control condition	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All
No intervention	0.22	[0.05, 0.39]	0.34	[-0.05, 0.74]	56.42***	78.73	13	10,225	1, 4, 5, 6, 15, 16, 17, 19, 21, 29, 30, 31, 37
Other intervention/ treatment as usual	0.20	[0.10, 0.29]	0.29	[0.10, 0.48]	80.03***	70.01	25	11,503	2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 18, 20, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36, 38
<i>Q</i> _{between}					0.06				
Recidivism measure	0.19	[0.11, 0.28]	0.28	[0.10, 0.47]	133.00***	74.44	35	21,060	As below
New conviction	0.32	[0.19, 0.45]	0.35	[0.07, 0.64]	45.27***	75.70	12	13,995	4, 10, 12, 13, 14, 16, 23, 24, 25, 27, 30, 36
Charge or arrest	0.06	[-0.08, 0.19]	0.21	[-0.10, 0.52]	64.33***	79.79	14	5,536	5, 6, 7, 9, 11, 17, 18, 20, 26, 28, 33, 34, 37, 38
Any return to custody	0.20	[-0.02, 0.42]	0.31	[-0.05, 0.67]	15.74*	49.18	9	1,529	2, 3, 8, 15, 19, 21, 22, 31, 35
<i>Q</i> _{between}					7.66*				
Publication status	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All
Published	0.19	[0.10, 0.28]	0.29	[0.10, 0.49]	116.19***	74.18	31	12,339	2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34
Unpublished	0.25	[0.05, 0.45]	0.31	[-0.07, 0.69]	20.08***	70.11	7	9,389	1, 4, 16, 35, 36, 37, 38
<i>Q</i> _{between}					0.24				
Country	1.22	[1.13, 1.32]	1.35	[1.13, 1.60]	136.51***	72.90	38	21,728	All
United States	0.25	[0.16, 0.35]	0.36	[0.16, 0.57]	119.57***	74.91	31	18,776	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 14, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, 37, 38
Other	0.05	[-0.12, 0.21]	0.01	[-0.28, 0.31]	12.38	51.54	7	2,952	8, 12, 13, 15, 24, 30, 31
<i>Q</i> _{between}					4.56*				

Note. OR = odds ratio; CI = confidence interval.
p* < .05. **p* < .001.

larger effect sizes than those using new charges or arrests ($OR = 1.06$) or any return to custody ($OR = 1.22$).

Finally, in terms of study-level categorical variables, no significant effects were found for publication status or, in another meta-regression, publication year ($b = .004$, $SE = .006$, $k = 38$, $z = .635$, $p = ns$). Studies conducted in the United States, however, were associated with larger effects ($OR = 1.28$) than were those conducted elsewhere ($OR = 1.05$).

DISCUSSION

These results demonstrated that women who participated in correctional interventions had improved rates of success on release over non-participants, or over participants in alternative interventions such as standard probation supervision, regular work release, and unspecified treatment as usual. Specifically, meta-analytic results demonstrated that women who participated in these interventions had a weighted mean OR of 1.22 (fixed-effects) to 1.35 (random-effects) meaning that participation was associated with 22% to 35% greater odds of community success. This rate compares favorably with reductions in recidivism of about 10%, overall, or of up to 30% for the most appropriate interventions, commonly cited in the literature for correctional programs that primarily include male offenders (Lösel, 1995). Indeed, our results may even underestimate the actual impact of correctional interventions on women, given that a number of the studies included in the meta-analysis had used an alternative service or approach (i.e., some kind of treatment as usual) as the comparison condition instead of a non-treatment option. Based on these results, then, we can conclude that correctional interventions for women “work” and are effective in contributing to public safety through reduced recidivism.

Overall, across the full sample of studies included in our meta-analysis, participation in either gender-informed or gender-neutral interventions significantly improved outcomes. However, when including only higher quality studies in the analysis, we found larger effect sizes for gender-informed compared with gender-neutral interventions (OR of 1.68 for gender-informed interventions, compared with 1.19 for gender-neutral ones). The reason why this difference only emerged among higher quality studies was unclear. We were unable to control for participant characteristics that could have helped determine whether women in the sample studies had gender-specific risk or need factors, or gendered pathways to crime. This may have contributed to the heterogeneity in our overall results for gender-informed interventions. Specifically, findings related to gender-informed interventions may have been muted because this approach may not be optimal for all justice-involved women.

A recent study of correctional treatment demonstrated that gender-informed programming for youth in secure detention was associated with a lower risk of recidivism only for girls with gender-specific risk factors (Day et al., 2014). Of note, the findings further demonstrated that the effectiveness of gender-informed programs for boys was not associated with whether they displayed risk factors commonly associated with girls’ delinquency and confinement. The authors concluded that incarcerated girls require different approaches depending on their histories of trauma and associated mental and physical health issues, and specifically, that whereas girls who follow gendered pathways into detention benefit from the relational approach used in gender-informed programs, girls without such issues benefit more from traditional (gender-neutral) programming (Day et al., 2014).

Similar findings were noted by Saxena and colleagues (2014) in their study exploring correctional outcomes for women offenders who participated in gender-informed substance abuse treatment. They examined the interaction between randomization into gender-informed (vs. gender-neutral) substance abuse treatment and participant history of abuse (sexual/physical) on post-treatment outcomes. The sample consisted of 115 incarcerated women assessed at baseline and 6 and 12 months after release. Longitudinal regression showed that women reporting abuse who were randomized into gender-informed interventions had significantly reduced odds of depression and used fewer substances in comparison with those who reported abuse and were randomized to the gender-neutral program group. The authors concluded that women offenders who have experienced prior abuse may benefit most from interventions that are trauma-informed and gender-sensitive.

Taken together, these findings suggest that there may be a subgroup of women offenders who should be prioritized for gender-informed interventions. In particular, it appears that those who have followed gendered pathways into the criminal justice system will display the most significant reductions in risk following participation in gender-informed treatment. As studies reporting such information begin to accumulate, this hypothesis can also be subjected to meta-analysis.

Other intervention characteristics were also examined to determine if they were associated with interventions' effectiveness. Among the studies included in this research, we found that the 16 interventions that targeted substance abuse produced the strongest effects (OR = 1.52). Strong effects were also found for therapeutic community approaches, possibly because they too targeted substance abuse (seven of the 10 therapeutic community studies were focused on substance abuse treatment and the remaining three all included substance abuse among other targets). The treatment effect estimate specific to the substance abuse interventions in our study was similar to that found by Tripodi and colleagues (2011), who meta-analyzed six U.S.-based studies that all reported on substance abuse interventions (OR = 1.79¹). Overall, these two meta-analyses align in demonstrating that substance abuse interventions for women are associated with a particularly large impact on recidivism rates.

The importance of targeting women's substance abuse in correctional programming is consistent with findings illustrating that this dynamic risk factor is not only highly prevalent among women offenders (e.g., Brown & Motiuk, 2008; Cobbina, Huebner, & Berg, 2012), but perhaps more importantly, more strongly associated with recidivism for women than for men (Andrews et al., 2012; Olver, Stockdale, & Wormith, 2014; Van der Knaap, Alberda, Oosterveld, & Born, 2012). This is a significant finding because of the link between trauma and substance abuse as highlighted in Daly's early pathways work. Accordingly, current researchers highlight the importance of correctional interventions that acknowledge the realities of women's lives, which include the high prevalence of violence and other types of abuse. They argue that a history of being abused often plays a fundamental role in women's substance abuse and other mental health problems (e.g., Covington, 2008; Messina & Grella, 2006). Consequently, gender-informed paradigms are holistic and address trauma, substance abuse, and mental health needs in an integrated approach.

Our examination also found that interventions offered in an institution or bridging the institution and community were associated with better outcomes than those offered only in the community. This is not typically a finding in the literature where studies have noted the superiority of community-based programs to those offered during incarceration (Andrews, Bonta, & Hoge, 1990; Lipsey, 2009). It is possible that this weaker effect for community-based

interventions may be linked to dosage or format (i.e., many of the community-based interventions in this study were relatively short or case-management focused rather than more traditional correctional programs). That said, the body of research supporting community-based programs is based on male study samples. As noted by Bloom and colleagues (2005, 2006), women face specific challenges as they reenter the community from jail or prison. In addition to women offender stigma, they may carry additional burdens such as single motherhood, transportation issues, difficulty finding safe and affordable housing, and higher prevalence of mental illness. Outside of the structured prison environment, these issues present additional challenges to women's engagement in programs (Grella & Rodriguez, 2011). Moreover, the concept of a continuum of care—that is, community aftercare or maintenance combined with in-custody interventions—has been supported by those advocating gender-informed approaches (e.g., Bloom et al., 2005; Grella & Rodriguez, 2011) and identified as important for women in two rapid evidence assessments (Lart, Pantazis, Pemberton, Turner, & Almeida, 2008; Stewart & Gobeil, 2015).

STRENGTHS AND LIMITATIONS

The current study adds importantly to the existing literature by being the first to examine, using meta-analytic approaches, the relative effects of gender-informed and gender-neutral correctional interventions. Given the extensive debate in this area (e.g., Kendall, 2004; Lovins et al., 2007), this aggregation of results contributes to the strong foundation required for correctional jurisdictions to implement evidence-based interventions for women.

That said, it is important to acknowledge the limitations of meta-analyses. In particular, this approach may lead to the combination of interventions that are in fact not similar. In the present case, analyses did reveal relatively large amounts of unexplained variability across studies. Ideally, it would have been possible to identify moderators that could have explained large components of that variance. However, studies varied considerably in the information that was reported. For example, it was not possible to code interventions' dosages or the fidelity with which they were implemented, though both of these have been identified as key in the success of correctional interventions (Andrews & Dowden, 2005; Bourgon & Armstrong, 2006; Gendreau, Goggin, & Smith, 1999). Indeed, even the details of the approach used in interventions were not consistently available, which may have contributed to unexpected or unstable findings, such as those relating to cognitive-behavioral approaches.

Other studies failed to report statistical information—particularly studies that included both men and women, which frequently did not disaggregate results by gender. These studies could not be included in the meta-analysis. Had they been, they might have contributed to a fuller understanding of the effectiveness of interventions for women. Overall, future meta-analyses will be strengthened by a continuation of the movement toward high-quality, comprehensive primary research that provides adequate detail to allow for useful examination of moderator effects.

CONCLUSION

Results of the current meta-analysis demonstrate that correctional interventions work to reduce recidivism for women. There is preliminary evidence from high-quality studies that gender-informed programs are more effective than gender-neutral approaches. Recent research suggests this may be particularly true for women who have followed gendered

trajectories into the criminal justice system (Day et al., 2014; Saxena et al., 2014). Interventions focused on substance use and those offered in institutional settings are also particularly effective. These results provide an early roadmap for correctional jurisdictions to maximize the impact of interventions for women and improve correctional outcomes. As the primary studies continue to build a larger body of evidence, prospective meta-analyses will build on this work by, where feasible, considering more detailed information about the client group (e.g., trajectories, demographic information), the quality of the research, and the intervention focus.

NOTE

1. Given the differences in the coding approach used in the Tripodi, Bledsoe, Kim, and Bender's (2011) study and ours, it was necessary to take the reciprocal of the odds ratios reported by Tripodi and colleagues to allow comparisons.

REFERENCES

- References marked with an asterisk indicate studies included in the meta-analysis.
- Andrews, D. A., Bonta, J., & Hoge, R. D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal Justice and Behavior, 17*, 19-52.
- Andrews, D. A., & Dowden, C. (2005). Managing correctional treatment for reduced recidivism: A meta-analytic review of programme integrity. *Legal and Criminological Psychology, 10*, 173-187.
- Andrews, D. A., Guzzo, L., Raynor, P., Rowe, R. C., Rettinger, L. J., Brews, A., & Wormith, J. S. (2012). Are the major risk/need factors predictive of both female and male reoffending? A test with the eight domains of the Level of Service/Case Management Inventory. *International Journal of Offender Therapy and Comparative Criminology, 56*, 113-133.
- 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.
- *Armstrong, G. S., Burruss, G., & Henderson, M. (2007). *An evaluation of the Cook County community transitional services for female offenders program*. Carbondale, IL: Center for the Study of Crime, Delinquency and Corrections. Retrieved from http://www.icjia.org/public/pdf/ResearchReports/Cook%20Co%20CBTSFO%20Final%20Report_July%202007.pdf
- Belknap, J. (2007). *The invisible woman: Gender, crime, and justice* (3rd ed.). Belmont, CA: Wadsworth.
- Blanchette, K., & Brown, S. L. (2006). *The assessment and treatment of women offenders: An integrative perspective*. Chichester, UK: John Wiley.
- Bloom, B., Owen, B., & Covington, S. S. (2005). *Gender-responsive strategies for women offenders: A summary of research, practice, and guiding principles for women offenders*. Washington, DC: National Institute of Corrections, U.S. Department of Justice. NIC Accession Number 020418. Available from www.nicic.gov.
- Bloom, B., Owen, B., & Covington, S. S. (2006). Gender responsive strategies: Theory, policy, guiding principles and practices. In R. Immarigeon (Ed.), *Women and girls in the criminal justice system* (pp. 29-1-29-21). Kingston, NJ: Civic Research Institute.
- Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Chichester, UK: John Wiley.
- Bourgon, G., & Armstrong, B. (2006). Transferring the principles of effective treatment into a "real world" setting. *Criminal Justice and Behavior, 32*, 3-25.
- Brennan, T., Breitenbach, M., Dieterich, W., Salisbury, E. J., & Van Voorhis, P. (2012). Women's pathways to serious and habitual crime: A person-centered analysis incorporating gender responsive factors. *Criminal Justice and Behavior, 39*, 1481-1508.
- Brown, S., & Motiuk, L. (2008). *Using dynamic risk factors to predict criminal recidivism in a sample of male and female offenders*. Ottawa, Ontario, Canada: Carleton University. Retrieved from http://www.carleton.ca/gendercrimelab/wp-content/uploads/CPA_2008-DFIA.pdf
- Browne, A., Miller, B., & Maguin, E. (1999). Prevalence and severity of lifetime physical and sexual victimization among incarcerated women. *International Journal of Law and Psychiatry, 22*, 301-322.
- *Cann, J. (2006). *Cognitive skills programmes: Impact on reducing reconviction among a sample of female prisoners* (Home Office Findings 276). London, England: Home Office.
- Cobbina, J. E., Huebner, B. M., & Berg, M. T. (2012). Men, women, and post-release offending: An examination of the nature of the link between relational ties and recidivism. *Crime & Delinquency, 58*, 331-361.
- Covington, S. C. (2008). Women and addiction: A trauma-informed approach. *Journal of Psychoactive Drugs, 40*(Suppl. 5), 377-385.

- Daly, K. (1992). Women's pathways to felony court: Feminist theories of lawbreaking and problems of representation. *Southern California Review of Law and Women's Studies*, 2, 11-52.
- Day, J. C., Zahn, M. A., & Tichavsky, L. P. (2014). What works and for whom? The effects of gender responsive programming on girls and boys in secure detention. *Journal of Research in Crime & Delinquency*, 52, 93-129.
- Dowden, C., & Andrews, D. A. (1999). What works for female offenders: A meta-analytic review. *Crime & Delinquency*, 45, 438-452.
- Dowden, C., & Andrews, D. A. (2000). Effectiveness of correctional treatment and violent reoffending: A meta-analysis. *Canadian Journal of Criminology*, 42, 449-467.
- *Dowden, C., & Blanchette, K. (2002). An evaluation of the effectiveness of substance abuse programming for female offenders. *International Journal of Offender Therapy and Comparative Criminology*, 46, 220-230.
- *Durrance, P., & Ablitt, F. (2001). "Creative solutions" to women's offending: An evaluation of the Women's Probation Centre. *Probation Journal*, 48, 247-259.
- *Farrell, A. (2000). Women, crime and drugs: Testing the effect of therapeutic communities. *Women & Criminal Justice*, 11, 21-48.
- Fleiss, J. L. (1994). Measures of effect size for categorical data. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 245-260). New York, NY: Russell Sage.
- Garg, A. X., Hackman, D., & Tonelli, M. (2008). Systematic review and meta-analysis: When one study is just not enough. *Clinical Journal of the American Society of Nephrology*, 3, 253-260.
- *Gat, I. (2000). *Incarcerated mothers: Effects of the Mother/Offspring Life Development program (MOLD) on recidivism, prosocial moral development, empathy, hope, and parent-child attachment* (Unpublished doctoral dissertation). University of Nebraska-Lincoln.
- *Gehring, K. S., Van Voorhis, P., & Bell, V. R. (2010). "What Works" for female probationers? An evaluation of the Moving On program. *Women, Girls, and Criminal Justice*, 11(1), 6-10.
- Gendreau, P., Goggin, C., & Smith, P. (1999). The forgotten issue in effective correctional treatment: Program implementation. *International Journal of Offender Therapy and Comparative Criminology*, 43, 180-187.
- *Gordon, E. (2010). *A cross-sectional analysis of release method as a correlate of recidivism among female prisoners in the State of Georgia* (Unpublished doctoral dissertation). Capella University, Minneapolis, MN.
- Grella, C. E. (2008). From generic to gender-responsive treatment: Changes in social policies, treatment services, and outcomes of women in substance abuse treatment. *Journal of Psychoactive Drugs*, 5, 327-343.
- Grella, C. E. (2013). Gender-specific treatments for substance use disorders. In P. M. Miller (Ed.), *Interventions for addiction: Comprehensive addictive behaviors and disorders* (pp. 177-185). San Diego, CA: Elsevier.
- Grella, C. E., & Rodriguez, L. (2011). Motivation for treatment among women offenders in prison-based treatment and longitudinal outcomes among those who participate in community aftercare. *Journal of Psychoactive Drugs*, 43(Suppl. 7), 58-67.
- *Guydish, J., Chan, M., Bostrom, A., Jessup, M. A., Davis, T. B., & Marsh, C. (2011). A randomized trial of probation case management for drug-involved women offenders. *Crime & Delinquency*, 57, 167-198.
- *Hall, E. A., Prendergast, M., Wellisch, J., Patten, M., & Cao, Y. (2004). Treating drug-abusing women prisoners: An outcomes evaluation of the Forever Free program. *The Prison Journal*, 84, 81-105.
- Hanson, R. K., Bourgon, G., Helmus, L., & Hodgson, S. (2009). The principles of effective correctional treatment also apply to sexual offenders: A meta-analysis. *Criminal Justice and Behavior*, 36, 865-891.
- Hanson, R. K., & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology*, 66, 348-362.
- *Harrell, A., Roman, J., & Sack, E. (2001). *Drug court services for female offenders, 1996-1999: Evaluation of the Brooklyn Treatment Court*. Washington, DC: The Urban Institute. Retrieved from http://www.urban.org/uploadedPDF/410356_Brooklyn-Treatment-Court.pdf
- Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. San Diego, CA: Academic Press.
- Hedges, L. V., & Vevea, J. L. (1998). Fixed-effects versus and random-effects models in meta-analysis. *Psychological Methods*, 3, 486-504.
- Herschhaft, B. A., Veysey, B. M., Tubman-Carbone, H. R., & Christian, J. (2009). Gender differences in the transformation narrative: Implications for revised reentry strategies for female offenders. *Journal of Offender Rehabilitation*, 48, 463-482.
- Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British Medical Journal*, 327, 557-560.
- *Johnson, J. E., Friedmann, P. D., Green, T. C., Harrington, M., & Taxman, F. S. (2011). Gender and treatment response in substance use treatment-mandated parolees. *Journal of Substance Abuse Treatment*, 40, 313-321.
- *Jolliffe, D., Hedderman, C., Palmer, E., & Hollin, C. (2011). *Re-offending analysis of women offenders referred to Together Women (TW) and the scope to divert from custody* (Ministry of Justice Series 11/11). London, England: Ministry of Justice. Retrieved from <http://www.justice.gov.uk/downloads/publications/research-and-analysis/moj-research/effect-early-release-hdc-recidivism.pdf>

- Kendall, K. (2004). *Dangerous thinking: A critical history of correctional cognitive behaviouralism*. In G. Mair (Ed.), *What matters in probation* (pp. 53-89). Devon, UK: Willan.
- Kerig, P. K., & Schindler, S. R. (2013). Engendering the evidence base: A critical review of the conceptual and empirical foundations of gender-responsive interventions for girls' delinquency. *Laws, 2*, 244-282.
- *Kubiak, S. P., Kasiborski, N., & Schmittel, E. (2010). Assessing long-term outcomes of an intervention designed for pregnant incarcerated women. *Research on Social Work Practice, 20*, 528-535.
- Lart, R., Pantazis, C., Pemberton, S., Turner, W., & Almeida, C. (2008). *Interventions aimed at reducing re-offending in female offenders: A Rapid Evidence Assessment (REA)* (Ministry of Justice Series 8/08). London, England: Ministry of Justice.
- *Liau, A. K., Shively, R., Horn, M., Landau, J., Barriga, A., & Gibbs, J. C. (2004). Effects of psychoeducation for offenders in a community correctional facility. *Journal of Community Psychology, 32*, 543-558.
- *Lindquist, C. H., Lattimore, P. K., Barrick, K., & Visher, C. A. (2009). *Prisoner reentry experiences of adult females: Characteristics, service receipt, and outcomes of participants in the SVORI multi-site evaluation*. Washington, DC: U.S. Department of Justice. Retrieved from <https://www.ncjrs.gov/pdffiles1/nij/grants/230420.pdf>
- Lipsley, M. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims & Offenders, 4*, 124-147.
- Lösel, F. (1995). The efficacy of correctional treatment: A review and synthesis of meta-evaluations. In J. McGuire (Ed.), *What works: Reducing reoffending: Guidelines from research and practice* (pp. 79-111). Chichester, UK: Wiley.
- Lovins, L. B., Lowenkamp, C. T., Latessa, E. J., & Smith, P. (2007). Application of the risk principle to female offenders. *Journal of Contemporary Criminal Justice, 23*, 383-398.
- Lowenkamp, C. T., Latessa, E. J., & Smith, P. (2006). Does correctional program quality really matter? The impact of adhering to the principles of effective intervention. *Criminology & Public Policy, 5*, 575-594.
- *MacSwain, M.-A., Farrell MacDonald, S., & Cheverie, M. (2015). *Post-release outcomes of Methadone Maintenance Treatment Program (MMTP) participants: A comparative study (R-322)*. Ottawa, Ontario: Correctional Service of Canada.
- Martinson, R. (1974, Spring). What works? Questions and answers about prison reform. *The Public Interest*, pp. 22-54.
- *Matheson, F. I., Doherty, S., & Grant, B. A. (2009). *Women offender substance abuse programming & community reintegration (R-202)*. Ottawa, Ontario: Correctional Service of Canada.
- *Messina, N., Burdon, W., & Prendergast, M. (2006). Prison-based treatment for drug-dependent women offenders: Treatment versus no treatment. *Journal of Psychoactive Drugs, 3*, 333-343.
- *Messina, N., Calhoun, S., & Warda, U. (2012). Gender-responsive drug-court treatment: A randomized controlled trial. *Criminal Justice and Behavior, 39*, 1539-1558.
- Messina, N., & Grella, C. E. (2006). Childhood trauma and women's health outcomes in a California prison population. *American Journal of Public Health, 96*, 1842-1848.
- Messina, N., Grella, C. E., Burdon, W., & Prendergast, M. (2007). Childhood adverse events and current traumatic distress: A comparison of men and women drug-dependent prisoners. *Criminal Justice and Behavior, 34*, 1385-1401.
- *Messina, N., Grella, C. E., Cartier, J., & Torres, S. (2010). A randomized experimental study of gender-responsive substance abuse treatment for women in prison. *Journal of Substance Abuse Treatment, 38*, 97-107.
- Miller, J. B. (1986). *What do we mean by relationships?* (Working Paper Series, Work in Progress No. 33). Wellesley, MA: Stone Center.
- *Miller, P. (2010). *The impact of prison-based substance abuse treatment on rates of recidivism among female offenders* (Unpublished doctoral dissertation). Capella University, Minneapolis, MN.
- *Millson, B., Robinson, D., & Van Dieten, M. (2010). *Women Offender Case Management Model: Outcome evaluation* (NIC Accession Number 018017). Washington, DC: National Institute of Corrections.
- *Mosher, C., & Phillips, D. (2006). The dynamics of a prison-based therapeutic community for women offenders: Retention, completion, and outcomes. *The Prison Journal, 86*, 6-31.
- Olver, M. E., Stockdale, K. C., & Wormith, J. S. (2014). Thirty years of research on the Level of Service scales: A meta-analytic examination of predictive accuracy and sources of variability. *Psychological Assessment, 26*, 156-176.
- Overton, R. C. (1998). A comparison of fixed-effects and mixed (random-effects) models for meta-analysis tests of moderator variable effects. *Psychological Methods, 3*, 354-379.
- *Pelissier, B. M. M., Camp, S. D., Gaes, G. G., Saylor, W. G., & Rhodes, W. (2003). Gender differences in outcomes from prison-based residential treatment. *Journal of Substance Abuse Treatment, 24*, 149-160.
- Reisig, M. D., Holtfreter, K., & Morash, M. (2006). Assessing recidivism risk across female pathways to crime. *Justice Quarterly, 23*, 384-405.
- Rettinger, J. L., & Andrews, D. A. (2010). General risk and need, gender specificity and recidivism of female offenders. *Criminal Justice and Behavior, 37*, 29-46.
- *Robbins, C. A., Martin, S. S., & Surratt, H. L. (2009). Substance abuse treatment, anticipated maternal roles, and reentry success of drug-involved women prisoners. *Crime & Delinquency, 55*, 388-411.

- *Roe-Sepowitz, D. E., Hickle, K. E., Perez-Loubert, M., & Egan, T. (2011). Adult prostitution recidivism: Risk factors and impact of a diversion program. *Journal of Offender Rehabilitation, 50*, 272-285.
- *Sacks, J. Y., McKendrick, K., & Hamilton, Z. (2012). A randomized clinical trial of a therapeutic community treatment for female inmates: Outcomes at 6 and 12 months after prison release. *Journal of Addictive Diseases, 31*, 258-269.
- Salisbury, E., & Van Voorhis, P. (2009). Gendered pathways: A quantitative investigation of women probationer's paths to incarceration. *Criminal Justice and Behavior, 36*, 541-566.
- Saxena, P., Messina, N. J., & Grella, C. E. (2014). Who benefits from gender-responsive treatment? Accounting for abuse history on longitudinal outcomes for women in prison. *Criminal Justice and Behavior, 41*, 417-432.
- *Schram, P. J., & Morash, M. (2002). Evaluation of a life skills program for women inmates in Michigan. *Journal of Offender Rehabilitation, 34*, 47-70.
- *Scott, C. K., & Dennis, M. L. (2012). The first 90 days following release from jail: Findings from the Recovery Management Checkups for Women Offenders (RMCWO) experiment. *Drug and Alcohol Dependence, 125*, 110-118.
- *Seabrook, R. L. (2007). *The effects of the Georgia cognitive skills experiment for pre-release female offenders* (Unpublished doctoral dissertation). Rutgers University, Newark, NJ.
- Sherman, L. W., Gottfredson, D. C., MacKenzie, D. L., Eck, J., Reuter, P., & Bushway, S. D. (1998). *Preventing crime: What works, what doesn't, what's promising*. Washington, DC: National Institute of Justice, U.S. Department of Justice. Retrieved from <https://www.ncjrs.gov/works/>
- Simpson, S. S., Yahner, J. L., & Dugan, L. (2008). Understanding women's pathways to jail: Analyzing the lives of incarcerated women. *The Australian & New Zealand Journal of Criminology, 41*, 84-108.
- *Stalans, L. J., Seng, M., & Lurigio, A. (2008). *Final report: Implementation and short-term impact evaluation of the Lake County Adult Probation Department's Women's Specialized Services Program*. Chicago: Illinois Criminal Justice Information Authority. Retrieved from <https://www.ncjrs.gov/pdffiles1/Archive/225111NCJRS.pdf>
- Stewart, L., & Gobeil, R. (2015). Correctional interventions for women offenders: A rapid evidence assessment. *Journal of Criminological Research, Policy and Practice, 1*, 116-130.
- Tam, K., & Derksen, D. (2014). *Exposure to trauma among women offenders: A review of the literature* (Research Report R333). Ottawa, Ontario: Correctional Service of Canada.
- *Torre, M. E., & Fine, M. (2005). Bar none: Extending affirmative action to higher education in prison. *Journal of Social Issues, 61*, 569-594.
- Tripodi, S. J., Bledsoe, S. E., Kim, J. S., & Bender, K. (2011). Effects of correctional-based programs for female inmates: A systematic review. *Research on Social Work Practice, 21*, 15-31.
- *Tuning, C. E. (2004). *Education and the female inmate: A study of whether educational programs offered at the Prince William Manassas Regional Adult Detention Center have any effect on female inmate post-release recidivism* (Unpublished doctoral dissertation). George Mason University, Fairfax, VA.
- Van der Knaap, L. M., Alberda, D. L., Oosterveld, P., & Born, M. P. (2012). The predictive validity of criminogenic needs for male and female offenders: Comparing the relative impact of needs in predicting recidivism. *Law and Human Behavior, 36*, 413-422.
- Van Voorhis, P. (2012). Volmer Award address: On behalf of women offenders, women's place in the science of evidence-based practice. *Criminology & Public Policy, 11*, 111-145.
- Van Wormer, K. (2001). *Counseling female offenders and victims: A strengths-based approach*. New York, NY: Springer.
- *Waid, C. A. (2012). *An assessment of substance abuse treatment programs in Florida's correctional institutions for women* (Unpublished doctoral dissertation). The Florida State University, Tallahassee.
- *Watson, L., Adkins, G., Cook, M. D., & Stageberg, P. (2010). *Process and outcome evaluation of the STAR (Sisters Together Achieving Recovery) program*. Des Moines: Iowa Department of Human Rights Division of Criminal and Juvenile Justice Planning. Retrieved from http://www.humanrights.iowa.gov/cjpp/Images/pdf/STAR_Evaluation_Report.pdf
- *Zlotnick, C., Johnson, J., & Njavits, L. M. (2009). Randomized controlled pilot study of cognitive-behavioral therapy in a sample of incarcerated women with substance use disorder and PTSD. *Behavior Therapy, 40*, 325-336.

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