Chapter 7: Effectiveness of Treatment for Adult Sex Offenders
by Roger Przybylski

Introduction
Sex offenders have received considerable attention in recent years from both policymakers and the public. This is due at least in part to the profound impact that sex crimes have on victims and the larger community. Perpetrators of sex crimes have come to be viewed by policymakers, practitioners, and arguably the public as a unique group of offenders in need of special management practices. Indeed, therapeutic interventions aimed at reducing the likelihood of reoffending have become a staple of contemporary sex offender management practice. (For more on “Sex Offender Management Strategies,” see chapter 8 in the Adult section.)

According to a recent Safer Society (McGrath et al., 2010) survey, 1,307 sex-offender-specific treatment programs were operating in the United States in 2008. That year, treatment programs for sex offenders were operating in all 50 states and the District of Columbia, and more than 80 percent of the programs were community based. Sex offender treatment programs in the United States in 2008 provided therapeutic services to more than 53,811 individuals who committed sex crimes.

While there is strong scientific evidence that therapeutic interventions work for criminal offenders overall, the effectiveness of treatment for sex offenders remains subject to debate. Inconsistent research findings and the fact that those studies that have found a positive treatment effect have not been randomized controlled trials are two primary factors contributing to the uncertainty about treatment effectiveness.

The mechanisms that lead to sexually abusive behavior vary by offender. Treatment needs vary by offender as well, and treatment effectiveness is likely to vary depending on various individual and contextual factors. Like therapeutic interventions for other criminal offenders, sex offender treatment at its broadest level is a tool for promoting offender accountability, reducing recidivism, and enhancing public safety. Within that context, policymakers should recognize that even modest reductions in recidivism achieved through treatment can translate into fewer victims, reductions in individual and community harm, and a positive return on taxpayer investment (Drake, Aos, & Miller, 2009; Donato, Shanahan, & Higgins, 1999).

Issues To Consider
While there is growing interest in crime control strategies that are based on scientific evidence, determining what works is not an easy task. It is not uncommon for studies of the same phenomena to produce ambiguous or even conflicting results, and there are many examples of empirical evidence misleading crime control policy and practice because shortcomings in the quality of the research were overlooked and inaccurate conclusions about an intervention’s effectiveness were made (see, e.g., Sherman, 2003; McCord, 2003; Boruch, 2007). The importance of basing conclusions about what works on highly trustworthy and credible evidence cannot be overstated, and both the quality and consistency of the research evidence always have to be considered.

Because the quality of research studies may vary and it can be difficult for policymakers and practitioners to understand how one study might differ from another, brief descriptions of the types of studies discussed in this review are provided below. The defining characteristics of experiments (or randomized controlled trials), quasi-experiments, and various forms of synthesis research—specifically, narrative reviews, systematic reviews, and meta-analyses—are briefly described here.

Single Studies
In the fields of criminology and criminal justice, there is general agreement that certain types of single studies—namely, well designed and executed experiments or randomized controlled trials (RCTs) —provide the most trustworthy evidence about an intervention’s effectiveness (see, e.g., Sherman et al., 1997; Mackenzie, 2006; Farrington &Welsh, 2007). Modeled on laboratory experiments, RCTs have several key features, most notably the use of random assignment. In random assignment, the researcher randomly decides which study subjects receive the intervention under examination (treatment) and which study subjects do not (control). In RCTs, subjects in the treatment group and subjects in the control group are compared on outcomes of interest, such as recidivism. A comparatively
(and statistically significant) lower rate of recidivism for the subjects in the treatment group would indicate that the treatment being tested worked. The random assignment of subjects creates the optimal study conditions for making causal inferences about the effectiveness of an intervention. In other words, the researcher can reasonably conclude that an observed program result—such as a lower recidivism rate for treated subjects—is due to treatment and not some other factor.

While RCTs are an important method for determining the effectiveness of an intervention, they can be difficult to implement in real-life settings. RCTs are expensive and require a level of organizational (and at times, community) cooperation that can be difficult to obtain. In addition, there may be resistance to the use of random assignment on the grounds that withholding potentially beneficial treatment from some study subjects for the sake of research is unethical. In practice, various constraints can preclude an evaluator from using an RCT, and few of these studies have been employed in the assessment of sex offender treatment.

When an RCT cannot be used, researchers examining the effectiveness of an intervention typically employ the next best approach, a quasi-experiment. Many quasi-experiments are similar to RCTs; however, they do not employ random assignment. These studies typically involve a comparison of outcomes—such as recidivism—observed for treatment participants and a comparison group of subjects who did not receive treatment. In this approach, researchers try to ensure that the treatment and comparison subjects are similar in all ways but one: participation in the treatment program. This is often accomplished by matching the treatment and comparison offenders on demographics, criminal history, risk level, and other factors that are related to the outcome of interest. Sometimes statistical techniques are employed retrospectively to create equivalence between the treated and comparison subjects. When treatment and comparison subjects are closely matched, the study can be capable of producing highly trustworthy findings. But in practice, equivalence between the groups can be hard to achieve, which may result in difficulties in reducing bias and inferring causality. As a result, quasi-experiments are typically less adept at reducing bias and inferring causality than RCTs (Boruch, 2007; Cook, 2006). In fact, findings from single studies of treatment effectiveness that did not employ treatment and comparison groups that were closely matched have been typically viewed as untrustworthy (see, e.g., Beech et al., 2007a, 2007b).

**Synthesis Research: Narrative Reviews, Systematic Reviews, and Meta-Analysis**

There is also agreement in the scientific community that single studies are rarely definitive (see, e.g., Lipsey, 2002; Petrosino & Lavenberg, 2007; Beech et al., 2007a). Individual studies with seminal findings exist; however, single studies—even an RCT—should be replicated before definitive conclusions about a program’s effectiveness are made, and the effectiveness of an intervention can always best be understood by examining findings from many different studies (Lipsey, 2002; Petticrew, 2007; Petrosino & Lavenberg, 2007). Researchers typically accomplish this by conducting a narrative or systematic review of a large body of research concerning an intervention’s effectiveness.

A narrative review is a qualitative synthesis of findings from many different individual studies. Conclusions are made by the reviewer using professional judgment. Narrative reviews have been criticized for their subjectivity and lack of transparency, but they provide a rudimentary mechanism for assessing the general quality and consistency of the research evidence to arrive at a conclusion about whether an intervention works. Narrative reviews were the most common form of synthesis research in the past. Today, researchers primarily rely on a more objective and quantitative process called a systematic review. Unlike a narrative review, a systematic review adheres to a pre-established protocol to locate, appraise, and synthesize information from all relevant scientific studies on a particular topic (Petrosino & Lavenberg, 2007). Methodological quality considerations are a standard feature of most systematic reviews today, and studies that fail to reach a specified standard of scientific rigor are typically excluded from the analysis. Many systematic reviews rely exclusively on well-designed and executed RCTs and quasi-experiments to draw conclusions about an intervention’s effectiveness. This helps enhance the trustworthiness of the review findings. A well-designed and executed systematic review produces a comprehensive summary of the scientific evidence on a particular topic, such as whether or not an intervention is effective in reducing recidivism.

Systematic reviews are increasingly incorporating a statistical procedure called meta-analysis to synthesize findings from multiple studies. Meta-analysis enhances the quantitative nature of the review and helps to reduce bias and the potential for erroneous conclusions. In practice, meta-analysis combines the results of many evaluations into one large study with many subjects. This is important, because single studies based on a small number of subjects can produce misleading findings about a program’s effectiveness (Lipsey, 2002). By pooling the subjects from the original studies, meta-analysis counters a common methodological problem in evaluation research—small sample size—thereby helping the analyst draw more accurate and generalizable conclusions. In addition, meta-analysis focuses on the magnitude of effects found across studies rather than their statistical significance. Determining effect sizes is important because, as Lipsey (2002, p. 201) points out, an outcome evaluation of an individual program “can easily fail to attain statistical significance for what are, nonetheless, meaningful program effects.” Hence, effect size statistics provide the researcher with a more representative estimate of the intervention’s effectiveness than estimates derived from any single study or from multistudy synthesis techniques that simply calculate the proportion of observed effects that are statistically significant.

Meta-analysis has been criticized by some researchers, primarily for combining different research approaches in the same analysis or for including studies of different quality—sometimes even studies of very poor quality—to arrive at a single estimate of treatment effectiveness (Petrosino & Lavenberg, 2007). However, advances in methods regarding heterogeneity and methodological variability can be used to address these concerns (see, e.g., Petrosino & Lavenberg, 2007; Lipsey, 2002; Wilson & Lipsey, 2001). Meta-analyses that are based on prudent exclusionary criteria, that incorporate sophisticated statistical tests to discover potential bias, and that explore how methodological and contextual variations impact treatment effects are uniquely equipped to provide policymakers and practitioners with highly trustworthy evidence about what works (Petrosino & Lavenberg, 2007; Lipsey, 2002; Wilson &
Summary of Research Findings

Findings From Single Studies

One of the few studies to use an RCT design to evaluate the effectiveness of treatment for adult sex offenders was conducted by Marques and colleagues (2005). Widely known as the California Sex Offender Treatment and Evaluation Project (SOTEP), the study examined the effects of a cognitive behavioral relapse prevention program on the recidivism of sex offenders who were serving prison sentences for child molestation or rape. The research is widely referenced in the literature because of its use of random assignment.

Marques and her colleagues (2005) compared the recidivism rates of 204 sex offenders treated in an intensive treatment program with the recidivism rates of sex offenders in two untreated control groups. One control group consisted of 225 incarcerated sex offenders who volunteered for treatment but who were randomly selected not to receive it. The other control group consisted of 220 incarcerated sex offenders who did not want treatment. The outcome measures of interest were sexual and nonsexual violent recidivism. No significant differences were found among the three groups in their rates of sexual or violent recidivism. Based on a mean followup period of approximately 8 years, the observed sexual recidivism rates were 21.6 percent for the sex offenders who completed a year or more of treatment, 20 percent for the sex offenders who volunteered for treatment but who did not receive it, and 19.1 percent for the sex offenders who refused treatment. This null finding—that is, the finding that treatment did not lead to a significant reduction in recidivism—applied for both rapists and child molesters, and for high-risk as well as low-risk offenders. (For a discussion of adult “Sex Offender Risk Assessment,” see chapter 6 in the Adult section.) Marques and her colleagues (2005, p. 99) concluded the following: “In the context of growing optimism about the benefits of sex offender treatment, this study’s message is, ‘Not so fast, we are still far from understanding how and when treatment works.’”

In discussing their findings, the researchers explored possible explanations for the study’s overall results. Marques and her colleagues (2005) suggested that, despite the use of random assignment, the treatment and control groups likely differed in some important ways. For example, the treated subjects tended to be higher risk, and may have been less motivated or more sexually deviant than control group subjects. In addition, the screening procedures used in the research likely eliminated some of the higher risk offenders from the study. As a result, the intervention may have been too intensive for the offenders in the treatment group. Finally, the treatment program itself did not reflect "state-of-the-art" treatment in several ways (Marques et al., p. 100). For example, the program did not fully adhere to the risk-need-responsivity (RNR) principles of effective intervention because it did not focus on high-risk offenders and treatment targets included only some dynamic risk factors. (See the discussion of RNR in the section "Findings From Synthesis Research.") Given the limitations of the study, Marques and colleagues (2005) called for "additional controlled investigations to address the many questions that remain about when and how treatment works for sexual offenders" (pp. 99–100). The researchers emphasized the importance of including appropriate comparison groups in future treatment outcome studies, and they urged researchers who assess the effects of treatment "to control for prior risk by using an appropriate actuarial measure for both treatment and comparison groups" (p. 103).

It is worth noting that some of the subgroup analyses performed in the SOTEP study did find a treatment effect. Specifically, high-risk offenders who participated in treatment and demonstrated they "got it"—meaning that they derived benefit from the program, or basically met specified treatment goals—recidivated at a significantly lower rate than offenders who "did not get it." Only 10 percent of the high-risk treated offenders who "got it" recidivated, compared to 50 percent of the high-risk subjects who "did not get it." While this finding was based on a small sample—only 38 high-risk study subjects were part of the analysis—a similar finding was observed for treated child molesters who "got it" based on a larger sample of 126 subjects. Individuals with child victims who "got it" recidivated at a significantly lower rate than similar offenders who "did not get it"—9.3 percent compared to 31.3 percent.

Another study that did not find overall evidence of a positive treatment effect was conducted by Hanson, Broom, and Stephenson (2004). Recidivism rates for 403 sex offenders released from prison into mandated community-based treatment and a comparison group of 321 untreated sex offenders released from prison in earlier years were examined. Based on an average followup period of 12 years, no significant differences were found between the treated and untreated sex offenders in terms of their sexual, violent, or overall recidivism rates.

Somewhat different results were found in an evaluation of the effectiveness of the national sex offender treatment program operating in prisons in England and Wales in the early 1990s (Friendship, Mann, & Beech, 2003). The researchers compared 2-year reconviction rates for a sample of 647 prisoners who voluntarily participated in and completed prison-based treatment between 1992 and 1994 and a retrospectively selected sample of 1,910 sex offenders who had been incarcerated but had not participated in treatment. The comparison group members were matched to the treatment sample on year of discharge and risk level. While no significant differences in the 2-year sexual reconviction rates were found between the treatment and comparison groups, there was a significant difference between the treatment and comparison group reconviction rates for sexual and violent crimes combined. Treated offenders had a combined sexual and violent 2-year reconviction rate of 4.6 percent, compared to a rate of 8.1 percent for the untreated comparison offenders (Friendship, Mann, & Beech, 2003).

Significant differences were also found for the medium-low-risk and medium-high-risk offender groups.

For low-risk and high-risk offenders, treated offenders had a slightly lower rate of recidivism than the untreated offenders, but the differences were not statistically significant. Overall, the treatment effects found in the analysis persisted when factors linked to recidivism (such as risk level and prior criminal
Friendship, Mann, and Beech (2003) point out that treatment should not be expected to have the same effect on all sexual offenders, as success can depend on various factors, including the treatment climate, program delivery, and how the participant responds to treatment. With this in mind, researchers are increasingly examining whether a positive treatment effect is found for a particular subgroup of treated offenders, even if positive treatment effects are not observed for program participants overall. The SOTEP study discussed above is an important example (Marques et al., 2005). The study is frequently cited as evidence that treatment for sex offenders is not effective, yet some of the treatment subgroups—such as high-risk offenders who “got it”—demonstrated significantly lower rates of recidivism than their comparison group counterparts. Beech and colleagues (2001) reported a somewhat similar finding in their study that examined sexual reconviction rates for 53 sex offenders 6 years after participating in community-based treatment. Offenders who were responsive to treatment (based on a positive change in pro-offending attitudes) were less likely to sexually recidivate than offenders who were not.

Oliver, Wong, and Nicholaichuk (2008) conducted a treatment outcome study that examined the effects of a high-intensity sex offender treatment program in a Canadian prison. The program employed a cognitive-behavioral approach and it subscribed to the RNR principles of effective correctional intervention. The 2008 study was an extension of an earlier evaluation that found that sex offender treatment worked for both first-time and repeat sex offenders. In this study, 14.5 percent of treated offenders were convicted of new sexual offenses compared to 33.2 percent of the untreated comparison group offenders, based on an average followup period of 6 years (Nicholaichuk et al., 2000). A higher proportion of treated offenders (48 percent) compared with untreated offenders (28.3 percent) also remained out of prison during the followup period. Treatment, however, did not appear to affect the rate at which new nonsexual crimes were committed.

The 2008 study was more rigorous than the original study. It was based on a larger sample size (472 treated and 265 untreated sex offenders) and a longer followup period. It also incorporated survival analysis, statistical controls of several factors that have been empirically linked to sexual recidivism (such as time at risk, age at release, and sexual offending history), and an intent-to-treat design. Sexual reconviction rates were examined across followup periods of various lengths of time. Significant differences between the recidivism rates of treated and untreated offenders were found at each followup period (see table 1).

### Table 1. Sexual Recidivism Rates

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<tr>
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<th>Sexual Recidivism Rate, by Followup Period (%)</th>
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<tr>
<td></td>
<td>3 Years</td>
</tr>
<tr>
<td>Treated offenders</td>
<td>11.1</td>
</tr>
<tr>
<td>Untreated offenders</td>
<td>17.7</td>
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</table>

Note: Differences between treated and untreated offenders are statistically significant: 3 years ($p < 0.012$), 5 years ($p < 0.023$), 10 years ($p < 0.030$). Source: Oliver, Wong, & Nicholaichuk (2008).

Positive treatment effects persisted after controlling for age and sexual offending history. In addition, survival analysis indicated that positive treatment effects persisted over time. Oliver, Wong, and Nicholaichuk (2008, p. 533) stated:

“In conclusion, the present study provides empirical support to indicate that a high-intensity treatment program for moderate- to high-risk sex offenders that follows the ‘what works’ principles can yield reductions in sexual recidivism in both the shorter- and longer-term, even after potentially confounding variables were controlled for. In short, treatment appeared to ‘work’ for this group of sex offenders.”

A recent study of prison-based sex offender treatment in Minnesota also found positive results. Researchers examined treatment effectiveness using a sample of 2,040 sex offenders released from prisons in Minnesota between 1990 and 2003 (Duwe & Goldman, 2009). This study used propensity score matching (PSM) to create the study’s comparison group. PSM is a sophisticated statistical technique for achieving greater equivalence between the treatment and comparison offenders. The researchers examined recidivism outcomes for 1,020 sex offenders who received treatment while incarcerated and 1,020 matched comparison sex offender inmates who had not received treatment. The average followup period was 9.3 years. After controlling for other factors, study results showed that participating in treatment significantly reduced the likelihood and pace of recidivism (see table 2).

### Table 2. Rearrest Recidivism Rates

<table>
<thead>
<tr>
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<th>Rearrest Recidivism Rate, by Offense Type (%)</th>
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<tbody>
<tr>
<td></td>
<td>Sex Offense</td>
</tr>
<tr>
<td>Treated offenders</td>
<td>13.4</td>
</tr>
<tr>
<td>Untreated offenders</td>
<td>19.5</td>
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</table>

Note: Significant at $p < .01$. Source: Duwe & Goldman (2009).

Other studies examining the effectiveness of prison-based treatment for sexual offenders also have found positive results. McGrath and colleagues (2003), for example, examined the recidivism rates of 195 adult male sex offenders who were referred to a prison-based cognitive-behavioral treatment
program. Fifty-six offenders completed treatment, 49 entered but did not complete treatment, and 90 refused treatment services. The study subjects were similar in terms of their pretreatment risk for sexual recidivism. The researchers found a sexual recidivism rate of 5.4 percent for the sex offenders who completed treatment, based on an average followup period of approximately 6 years. Far higher sexual recidivism rates were found for the offenders who did not complete treatment and for those who refused treatment—30.6 percent and 30.0 percent, respectively.

A 2003 study of a prison-based sex offender treatment program in Colorado also found positive results (Lowden et al., 2003). The program employed a cognitive-behavioral approach within a therapeutic community (TC) environment. Results showed that participation in treatment was significantly related to success on parole. Sex offenders who completed treatment and participated in aftercare had revocation rates three times lower than untreated sex offenders. The length of time that an offender participated in treatment was related to positive outcomes after release. Each additional month spent in the TC increased the likelihood of success upon release by 1 percent (12 percent per year). Seventy-nine percent of inmates who participated in TC treatment and who were released on parole were arrest-free after 3 years, compared to 58 percent of former sex offender inmates released on parole who did not participate in treatment.

Zgoba and Simon (2005) examined the effectiveness of prison-based treatment in New Jersey. Although results did not show a positive treatment impact on sexual recidivism, treatment was found to reduce nonsexual recidivism. The study sample included 495 treated offenders from the state’s only sex-offender-specific prison. Sexual and nonsexual recidivism rates for the treated sex offenders were compared with those for a sample of 223 sex offenders from the general prison population who did not receive treatment. All study subjects were released from prison during a 3-year period (1994–1997). Based on this followup period, about 9 percent of the treated sex offenders were reconvicted of a sexual offense, compared to 8.2 percent of the nontreated sex offenders released from the general prison population. However, only 12.3 percent of the treated sex offenders had a nonsexual reconviction, compared to 26.8 percent of the nontreated sex offenders.

Several studies concerning sex offender treatment have been conducted by the Washington State Institute for Public Policy (WSIPP). In one study, Barnoski (2006a) examined the effectiveness of Washington’s Specialized Sex Offender Sentencing Alternative (SSOSA). Under SSOSA, certain felony sex offenders are granted, in lieu of imprisonment, a special sentence that involves some jail time, community supervision, and outpatient treatment (Barnoski, 2006a). The evaluation found that the sexual and violent crime recidivism rates for offenders granted a SSOSA were consistently lower than the rates for other types of sex offenders. Barnoski (2006b) also examined the effectiveness of a prison-based sex offender treatment program in Washington that uses a combination of treatment techniques, including psychotherapy, psychosocial classes, behavioral treatment, and family involvement. The study found that the program did not reduce the recidivism rates of program participants.

Finally, Kriegman (2006) reanalyzed data from two studies that examined the recidivism rates of sex offenders. After a 5-year followup, the “more dangerous” (treated) offenders in the analysis had a significantly lower rate of recidivism than the “less dangerous” (untreated) offenders. In fact, the observed recidivism rate for the untreated offenders was twice as high as the rate for the offenders who received treatment—38 percent compared to 19 percent.

In summary, several single examinations designed to evaluate the effectiveness of treatment for adult sex offenders have been conducted in recent years. While only one of these studies employed an experimental design, the scientific rigor of recent research has improved relative to studies conducted years ago. Recent research more frequently employed matched comparison groups, statistical controls of factors that are linked to treatment effects, lengthier followup periods, and propensity score matching. Findings from single studies of sex offender treatment conducted within the past 10 years remain somewhat inconsistent, but the weight of the evidence from more rigorous studies suggests that treatment—particularly cognitive behavioral approaches—can have a positive effect.

Findings From Synthesis Research

One of the most influential early reviews of sex offender treatment outcome research was conducted by Furby, Weinrott, and Blackshaw (1989). Based on a review of 42 individual studies, the researchers concluded that, due to methodological shortcomings and inconsistent findings, very little is known about the effectiveness of sex offender treatment. More recently, the U.S. General Accounting Office (1996), now called the U.S. Government Accountability Office, published a review of sex offender treatment research based on 22 other reviews covering 550 studies. In this 1996 report, the office reported to Congress that definitive conclusions about the effectiveness of sex offender treatment could not be made. While both of these early reviews produced inconclusive results at best, systematic reviews conducted more recently have produced more positive, albeit qualified findings.

One exception to the pattern of recent positive review findings comes from a systematic review focused on psychological interventions for sex offenders conducted by Kenworthy and colleagues (2004). Nine studies, all RCTs, were included in the analysis, and the researchers concluded that due to limited data the effects of treatment are unclear.

An earlier meta-analysis of 43 studies of psychological treatment for sex offenders conducted by Hanson and colleagues (2002) produced somewhat different results. The study was based on a total of 5,078 treated offenders and 4,376 untreated offenders. Average followup periods ranged from 1 to 16 years, with a median of 46 months. Hanson and his colleagues found that treatment produced a small but statistically significant reduction in both sexual and overall recidivism. The researchers also reported that newer treatment programs were found to have a positive treatment effect, while older treatment programs were associated with a small but not statistically significant increase in sexual recidivism. In discussing their findings, Hanson and colleagues (2002, p. 186) stated, “we believe that the balance of available evidence suggests that current treatments reduce recidivism, but that firm conclusions await more and better research.”
The meta-analysis conducted by Hanson and colleagues (2002) was criticized by Rice and Harris (2003) for its reliance on poor-quality studies. Rice and Harris described the methodological shortcomings of many of the studies in the meta-analysis and argued that the positive, albeit tentative, conclusions drawn by Hanson and colleagues were not justified. More broadly, Rice and Harris (2003) concluded, "...the effectiveness of psychological treatment for sex offenders remains to be demonstrated" (p. 428) and "...it is abundantly clear that any conclusions about the effectiveness of psychological therapy await many more random assignment studies" (p. 437).

While the Rice and Harris critique of the meta-analysis is a constructive and valuable treatise on threats to validity and the hazards of weak inference, it is important to recognize that the quality of a study and the credibility of its findings can be viewed differently by different researchers. As Beech and colleagues (2007a, pp. 1–2) pointed out in their discussion of methodological quality considerations in sex offender treatment research:

> "Effective programs do not just influence sexually motivated problem behavior; they also have a broader impact on criminality (Lösel & Schmucker, 2005)."

The problem facing the field of sex offender research is that the best studies identified by Rice and Harris (2003), by Kenworthy et al. (2004), and by Hanson et al. (2002) were all different. It was not that one group of researchers was more lenient or more restrictive than another concerning study quality; the problem is that most of the studies rated as credible by one group were considered inherently biased by the other groups.

In fact, Craig, Browne, and Stringer (2003) reported that 18 of the 19 treatment studies published between 1995 and 2003 demonstrated positive treatment effects, and a third of those used sound methodological techniques. While there are well-constructed guidelines and tools available that promote objectivity and reliability in the assessment of methodological rigor, differences of opinion about the quality and scientific value of certain methods or individual studies are not uncommon.

Lösel and Schmucker’s (2005) study of sex offender treatment effectiveness employed one of criminology’s most commonly used tools for evaluating the quality of a study: the Maryland Scientific Methods Scale (SMS). SMS is used to assess the methodological quality of a study along a number of dimensions, including:

- The study’s ability to control outside factors and eliminate major rival explanations for an intervention’s effects.
- The study’s ability to detect program effects.
- Other considerations, such as attrition and the use of appropriate statistical tests (Sherman et al., 1998).

Using SMS, Lösel and Schmucker (2005) excluded any studies that did not employ a control/comparison group. Altogether, 69 independent studies and 22,181 subjects were included in the analysis, making it one of the largest meta-analyses of studies of the effectiveness of sex offender treatment ever undertaken. In 40 percent of the comparisons, equivalence between the group of study subjects who received treatment and the group of comparison subjects who did not receive treatment was either demonstrated or could be assumed. Nearly one-half of the comparisons in the analysis addressed cognitive-behavioral programs. About one-half were based on programs operating in an institutional setting. Significant differences between the recidivism rates of treated and untreated offenders were found (see table 3).

### Table 3. Recidivism Rates, per Meta-Analysis

<table>
<thead>
<tr>
<th>by Offense Type (%)</th>
<th>Sex Offense</th>
<th>Violent Offense</th>
<th>Any Offense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated offenders</td>
<td>11.1</td>
<td>6.6</td>
<td>22.4</td>
</tr>
<tr>
<td>Untreated offenders</td>
<td>17.5</td>
<td>11.8</td>
<td>32.5</td>
</tr>
</tbody>
</table>

Note: Significant at \( p < .01 \).

*Recidivism rates based on \( n \)-weighted averages. Unweighted average recidivism rates: 12% for treated and 24% for untreated. Average followup period: slightly more than 5 years.


Lösel and Schmucker (2005) also found that physical treatments had larger treatment effects. Among psychological treatments, however, cognitive-behavioral treatments and behavior therapy had significant treatment effects. Treatment effects also were greater for sex offenders who completed treatment, as dropping out of treatment doubled the odds of recidivating.

Even though the study protocol excluded studies that either did not employ a control/comparison group or those that only compared treatment completers and treatment dropouts, only six of the studies in the meta-analysis employed a randomized design. In addition, equivalence between the treatment and comparison groups could not be assumed in about 60 percent of the studies in the analysis. This led Lösel and Schmucker (2005, p. 135) to suggest that one should draw "very cautious" conclusions from the study. In discussing their findings, Lösel and Schmucker (2005, p. 135) stated:

> The most important message is an overall positive and significant effect of sex offender treatment ... Sex offender treatment also has an effect on general recidivism ... Obviously, effective programs do not just influence sexually motivated problem behavior but also have a broader impact on criminality.

Another important meta-analysis was conducted by Mackenzie (2006). Her analysis of 28 evaluations extended the earlier work by Gallagher and colleagues (1999), examining the effectiveness of sex offender treatment. The original meta-analysis by Gallagher and colleagues found evidence that cognitive-behavioral approaches with relapse prevention components are effective at reducing recidivism. Sex offenders treated...
with cognitive-behavioral/relapse prevention techniques recidivated at a rate that was 8 percentage points below that of comparison sex offenders.

Mackenzie's (2006) meta-analysis is important not only because the review protocol excluded studies that did not employ a no-treatment comparison group, but also because it included an analysis of treatment effects based only on highly rigorous evaluations. MacKenzie found that treated sex offenders had a significantly lower rate of recidivism than untreated sex offenders. The average recidivism rate was 12 percent for the treated offenders in the analysis, compared to 22 percent for the untreated comparison offenders. Because large differences in effect sizes were found across studies, MacKenzie examined how various substantive and methodological characteristics of the studies affected treatment outcomes. In one analysis, the effects of various treatment types were examined using only studies of high methodological quality. Based only on these high-quality studies, MacKenzie found that cognitive-behavioral/relapse prevention treatment, behavioral treatment, and hormonal medication significantly reduced sexual recidivism. For sex offenders receiving cognitive-behavioral/relapse prevention treatment, the average recidivism rate was 9 percent, compared to an average recidivism rate of 21 percent for untreated sex offenders. No significant differences were found based on whether treatment was delivered by a criminal justice agency or other organization or whether treatment was delivered in an institution or the community. MacKenzie concluded that sex offender treatment programs using cognitive-behavioral/relapse prevention approaches are effective at reducing recidivism.

As previously mentioned, several studies concerning the effectiveness of sex offender treatment have been conducted by WSIPP, which is widely recognized for its work regarding meta-analysis and cost-benefit analysis. As part of a larger study on evidence-based public policy options to reduce crime and criminal justice system costs, Drake, Aos, and Miller (2009) conducted a meta-analysis of six rigorous studies of adult sex offender treatment with aftercare and found that these programs reduced recidivism, on average, by 9.6 percent. In addition, these programs produced a net return on investment of more than $4,000 per program participant, or more than $1.30 in benefits per participant for every $1 spent.

Another important meta-analysis was recently conducted by Hanson and colleagues (2009). The study's primary aim was to determine whether the RNR principles associated with effective interventions for general offenders also applied to sex offender treatment. The RNR principles have emerged from more than 30 years of research on interventions for criminal offenders. This research has produced a body of evidence that clearly demonstrates that rehabilitation works (Gendreau & Ross, 1987; Lipsey & Cullen, 2004; Joliffe & Farrington, 2007). It also has demonstrated that effective interventions share a common set of features. These common characteristics form what criminologists Don Andrews, Paul Gendreau, and their colleagues have called the "principles of effective intervention" (Andrews, 1995; Gendreau, 1996; Gendreau, Goggin, & Smith, 1999; Andrews & Dowden, 2005). Three of these are commonly known as the RNR principles:

1. Higher risk offenders are more likely to benefit from treatment than lower risk offenders. This is the risk principle. In practice, more intensive levels of treatment should be reserved for higher risk offenders. In fact, using high levels of treatment with low-risk offenders is not only inefficient, it can actually increase recidivism (Lovins, Lowenkamp, & Latessa, 2009; Wilson, 2007).

2. To effectively reduce recidivism, programs should target the criminogenic needs of higher risk offenders. This is the need principle. Criminogenic needs are dynamic risk factors that are related to subsequent offending, such as substance abuse or an antisocial lifestyle. Dynamic risk factors can be changed through programming, whereas static risk factors, such as criminal history and age at first arrest, cannot.

3. Successful programs are responsive to the motivation, cognitive ability, and other characteristics of the offender. This is the responsivity principle. In essence, therapeutic interventions must be tailored to the learning style and capabilities of the offender.

Research has demonstrated that programs incorporating the RNR principles are far more effective at reducing recidivism than those that do not (Andrews & Bonta, 2006). Given the strong scientific evidence supporting the efficacy of treatment for offenders overall, and the role that RNR plays in effective treatment, there is a growing interest in applying the RNR principles to treatment for sex offenders.

Although Hanson and colleagues (2009) sought to test the relevance of the RNR principles for sex offender treatment, a secondary aim was to assess treatment effectiveness using only studies that met a minimum level of scientific rigor. Using the Guidelines of the Collaborative Outcome Data Committee, which were explicitly developed to assess the quality of research on sex offender treatment outcomes, the researchers excluded from the analysis more than 100 potentially relevant studies because they did not meet minimum levels of study quality. However, of the 23 studies that were finally included in the analysis, only 5 (22 percent) were rated as good in terms of methodological quality; 18 were rated as weak. Based on an average followup period of 4.7 years, Hanson and colleagues found average sexual recidivism rates of 10.9 percent for treated offenders and 19.2 percent for the untreated comparison offenders. The average overall recidivism rate was 31.8 percent for treated sex offenders and 48.3 percent for untreated comparison subjects. The researchers also found that adhering to the RNR principles increased treatment effectiveness. While treatment that adhered to one or two of the principles was more effective than treatment that did not adhere to any of the principles, treatment that adhered to all three principles was most effective.

A study by Lovins, Lowenkamp, and Latessa (2009) examined the direct effects of the risk principle on sex offenders. The researchers sought to determine whether intensive treatment was more effective for higher risk sex offenders and whether less-intensive treatment had greater effects for lower risk sex offenders. The study sample included 348 sex offenders paroled from a state correctional institution. Of this sample, 110 were released to a halfway house for residential sex offender treatment and 238 were released directly to the community. While offenders released directly to the community may have received outpatient treatment, sex offenders released to a halfway house were subjected to a more intensive level of treatment. The researchers examined general recidivism but not sexual recidivism in the study. Study subjects were categorized based on their assessed risk levels.
Results showed that intensive treatment was effective in reducing recidivism for all risk categories of sex offenders, except low-risk offenders. In fact, high-risk offenders who completed intensive residential treatment were more than two times less likely to recidivate than high-risk sex offenders who did not receive intensive treatment. Conversely, low-risk sex offenders who received intensive treatment were 21 percent more likely to recidivate than low-risk sex offenders who were released directly to the community. These findings lend further support to the importance of the principles of effective intervention in sex offender treatment programming.

Finally, three other reviews completed in recent years deserve brief mention, as they also have reported positive treatment effects. Luong and Wormith (2006) conducted a meta-analysis of 30 studies and found that sex offenders who received treatment recidivated at a significantly lower rate than sex offenders who did not receive treatment. The researchers reported that for every 100 untreated sex offenders who sexually recidivate, 82 treated sex offenders will do so. Again, cognitive-behavioral approaches were associated with significant reductions in both sexual and general recidivism. Prentky, Schwartz, and Burns-Smith (2006, p. 5) conducted a narrative review of treatment effectiveness studies and concluded that "the most reasonable estimate at this point is that treatment can reduce sexual recidivism over a five year period by 5–8%." Finally, Przybylski (2008, p. 53) reviewed recent systematic reviews of sex offender treatment effectiveness, many incorporating meta-analysis, as part of a larger review of what works to reduce recidivism. He concluded that "the most recent scientific evidence suggests that certain types of sex offender treatment can reduce recidivism."

While researchers agree that the evidence concerning the effectiveness of treatment for sex offenders is far from definitive, findings from systematic reviews and meta-analyses conducted in recent years suggest that certain sex offender treatment approaches can and do work. Specifically, cognitive-behavioral/relapse prevention approaches appear to be effective in reducing recidivism, whether delivered in an institutional or community-based setting. The empirical evidence also demonstrates, however, that differential treatment impacts are likely to occur for different offenders. Adhering to the RNR principles of effective intervention appears to be important. Matching treatment to the risk levels and criminogenic needs of sex offenders may help maximize treatment effectiveness and the return on investment of treatment resources.

Based on findings from a recent Safer Society survey (McGrath et al., 2010), sex offender treatment programs operating in the United States in 2008 most frequently identified cognitive-behavioral therapy as one of the top three theoretical models that best described their treatment approach (McGrath et al., 2010). Relapse prevention therapy was the second most frequently identified model, but the number of programs endorsing relapse prevention has fallen since 2002. McGrath and colleagues (2010, p. vii) speculated that the decrease in the use of the relapse prevention model likely reflects the "considerable criticism leveled by practitioners and researchers against relapse prevention in recent years," specifically the criticisms that relapse prevention describes only one pathway to offending and that it overemphasizes risk avoidance as opposed to individual strengths and goals.

McGrath and his colleagues (2010) also reported that about one-third of the treatment programs in the United States responding to the Safer Society survey identified the Good Lives Model (GLM) and about one-quarter identified the self-regulation model (SRM) as one of the top three theoretical models that best described their treatment approach. These two models—GLM and SRM—are designed, at least in part, to address some of the perceived shortcomings of the relapse prevention model. (For more on SRM, see chapter 3, "Sex Offender Typologies," in the Adult section.)

GLM is grounded in the belief that sex offenders, like most individuals, seek to achieve psychological well-being and that offenders desist from criminal behavior when prosocial behavior provides a more fulfilling life. Rather than focusing solely on risk avoidance and management, GLM attempts to equip sex offenders with the skills, attitudes, and resources needed to lead a prosocial, fulfilling life, thereby reducing the likelihood of reoffending. SRM postulates that sex offenders follow different pathways to offending behavior and that treatment will be most effective if it takes those pathways into account. Four different offense pathways are identified in SRM, and they address both an individual's offending behavior goals and the manner in which the individual tries to reach them (Yates & Kingston, 2006).

SRM was recently integrated with GLM to create a more comprehensive treatment approach for managing risk and helping sex offenders develop prosocial lifestyles.

While there is both statistical and anecdotal evidence suggesting that the use of the GLM/SRM treatment approach has become more prevalent, little is known about the efficacy of these treatment models (either alone or in tandem) for reducing the recidivism of sex offenders. To date, studies have focused on validating GLM and SRM for sex offenders or discovering within-treatment change (Yates & Kingston, 2006; Yates et al., 2009; Kingston, Yates, & Firestone, 2012). While there is growing interest in the GLM/SRM approach, and research is beginning to lay the requisite empirical foundation of support, research has not yet examined whether the approach is effective at reducing recidivism among sex offenders.

"Findings from systematic reviews and meta-analyses conducted in recent years suggest that certain treatment approaches can and do work."

"Adhering to the RNR principles is important. High- and moderate-risk offenders benefit most from treatment."

"The GLM/SRM approach to treatment has become more prevalent. Research examining the effectiveness of this approach with sexual offenders is needed."
Given the impact sex crimes have on victims and the larger community, and the growing number of sex offenders under correctional supervision, the need for knowledge about criminal justice interventions that are effective at reducing the recidivism of sex offenders may be greater today than ever before.

While there is strong scientific evidence that therapeutic interventions work for criminal offenders in general, the effectiveness of treatment for sex offenders has been the subject of considerable debate. Inconsistent research findings and measurement shortcomings have contributed to the uncertainty about treatment effectiveness, but both the pattern of findings and quality of the evidence have changed in recent years.

This review examined the evidence on treatment effectiveness from both individual studies and synthesis research conducted during the past 10 years. While there is agreement among researchers that the knowledge base is far from complete, the evidence suggests that certain therapeutic interventions for sex offenders can and do work. Specifically, cognitive-behavioral/relapse prevention approaches have been identified as being effective at reducing both sexual and nonsexual recidivism.

Because so few studies of treatment effectiveness have employed an experimental design—and RCTs have not produced clear evidence of a treatment effect—some researchers will likely disagree that a positive conclusion about treatment effectiveness is warranted. While there is an undeniable need for more high-quality research on treatment effectiveness, especially well-designed and well-executed RCTs, there are several reasons why it is reasonable to conclude, albeit cautiously, that some treatment approaches can produce at least moderate reductions in recidivism for some sex offenders.

**TREATMENT EFFICACY**

There are several reasons why it is reasonable to conclude, albeit cautiously, that some treatment approaches can produce at least moderate reductions in recidivism for some sex offenders:

- A relatively consistent pattern of positive findings has emerged from recent research.
- Systematic reviews and meta-analyses that employ more advanced and scientifically rigorous methods consistently indicate that treatment works.
- Recent studies have found positive treatment effects for various subgroups of treatment participants, even when positive treatment effects were not discovered for the entire treatment sample.

First, a relatively consistent pattern of positive findings has emerged from recent research, and studies of treatment effectiveness conducted in recent years have generally improved in quality. More and more findings are based on studies employing matched comparison groups or statistical controls to achieve treatment and comparison group equivalence.

Second, systematic reviews and meta-analyses that employ more advanced and scientifically rigorous methods consistently indicate that treatment works. For example, using only high-quality studies, Mackenzie (2006) found that cognitive-behavioral/relapse prevention treatment, behavioral treatment, and hormonal medication significantly reduced sexual recidivism. For sex offenders receiving cognitive-behavioral/relapse prevention treatment, Mackenzie found an average recidivism rate of 9 percent, compared to an average recidivism rate of 21 percent for untreated sex offenders. No significant differences were found based on whether treatment was delivered by a criminal justice agency or other organization or whether treatment was delivered in an institution or in the community. Drake, Aos, and Miller's (2009) meta-analysis of six highly rigorous studies of adult sex offender treatment with aftercare found that these programs reduced recidivism, on average, by 9.6 percent. In addition, these programs produced a net return on investment of more than $4,000 per program participant.

Third, recent studies have found positive treatment effects for various subgroups of treatment participants, even when positive treatment effects were not discovered for the entire treatment sample. For example, findings from the SOTEP study, which are often cited as evidence that treatment has not been shown to work because of the study’s use of random assignment, indicated that treatment produced significant reductions in recidivism for subgroups of treatment participants who "got it" (Marques et al., 2005). Findings like these suggest not only that treatment works for certain offenders, but also that positive treatment effects can be masked in aggregate findings for the overall treatment sample.

Taken together, the overall pattern of positive findings from single studies and synthesis research, the positive findings that have emerged specifically from meta-analyses that are based on prudent exclusionary criteria and that employ advanced statistical tests, and subgroup analysis research findings that clearly align with empirically supported principles about effective interventions, all lend support to the conclusion that treatment for sex offenders can be effective. Treatment, however, does not affect all sex offenders in the same way. The empirical evidence clearly demonstrates that treatment may have a differential impact, depending on the characteristics of the treatment participant and other contextual factors. Sex offenders clearly vary in terms of their recidivism risk levels, criminogenic needs, and pathways to offending. Hence, rather than following a one-size-fits-all approach, treatment is apt to be most effective when it is tailored to the risks, needs, and offense dynamics of individual sex offenders.
The differential impact of treatment, and the need for tailored rather than uniform treatment approaches, was acknowledged by the national experts—both researchers and practitioners—at the SOMAPI forum. There is mounting evidence that the RNR principles are important for sex offender treatment. Lovins, Lowekamp, and Latessa (2009) found that high-risk sex offenders who completed intensive residential treatment were more than two times less likely to recidivate than high-risk sex offenders who did not receive intensive treatment. Conversely, low-risk sex offenders who received intensive treatment were 21 percent more likely to recidivate than low-risk sex offenders who did not receive intensive treatment. Hanson and colleagues (2009) found that treatment that adhered to the RNR principles of effective intervention showed the largest reductions in recidivism. In discussing the implications of their research findings for treatment providers, Hanson and colleagues (2009, p. 25) stated, “we believe that the research evidence supporting the RNR principles is sufficient so that they should be a primary consideration in the design and implementation of intervention programs for sex offenders.”

While the knowledge base regarding treatment effectiveness has greatly improved, significant knowledge gaps and unresolved controversies remain. The need for more high-quality studies on treatment effectiveness has long been a theme in the literature, and both RCTs and highly rigorous quasi-experiments that employ equivalent treatment and comparison groups were identified as future research needs by the experts who participated in the SOMAPI forum.

While sound RCTs that examine treatment effectiveness are greatly needed, policymakers and practitioners, as well as researchers, must recognize that the use of an RCT design does not automatically make a study’s findings trustworthy, nor does the need for trustworthy evidence obviate the need for high-quality quasi-experiments. Given the constraints typically found when working with offender populations, it is unlikely that findings from RCTs conducted in different treatment settings and with different populations of sex offenders will become available in the immediate future. Hence, findings from quasi-experiments that examine treatment effects using equivalent treatment and comparison groups remain important, as they can make significant contributions to the evidence base regarding treatment effectiveness. Propensity score matching and other advanced techniques for controlling bias and achieving equivalence between treatment and comparison subjects can help enhance the credibility of evidence produced by studies that do not employ random assignment.

Systematic reviews and meta-analyses that are based on prudent exclusionary criteria and that employ the most rigorous analytical methods available are also needed. Future research should also attempt to build a stronger evidence base on the differential impact of treatment on different types of sex offenders. Empirical evidence that specifies what works for certain types of offenders, and in which situations, is important for both policy and practice, and it too was identified as a key research priority by the SOMAPI forum participants. Subgroup analyses are particularly important because the positive effects of treatment for a particular subgroup of offenders can be masked in a finding that treatment failed to have a positive impact for the overall treatment sample. Researchers must be diligent, however, not to selectively emphasize treatment benefits for a subgroup of study subjects while ignoring findings for the larger treatment sample (Sherman, 2003). New treatment models, such as GLM/SRM, also need to be rigorously evaluated to assess their effectiveness at reducing recidivism.

Finally, most of the concerns about weak study designs are raised to avoid the pitfalls of erroneously concluding that treatment is effective when it is not. Concluding that treatment is ineffective when it actually is effective seems equally problematic. Given the modest reductions in recidivism that have been found in prior treatment effectiveness studies, researchers should be cognizant of the need to design evaluations of treatment programs with sufficient statistical power to detect small treatment effects.

Given the quality and consistency of the empirical evidence, it is reasonable to conclude, albeit cautiously, that certain types of treatment can produce reductions in recidivism for certain sex offenders. While a number of researchers are likely to view the empirical evidence in a similar way, some may view a positive conclusion about treatment effectiveness as unwarranted, given the current evidence base. Because treatment has become an integral part of sex offender management in jurisdictions throughout the country, it seems that one of the crucial questions to ask is whether the empirical evidence assembled to date warrants continued support for treatment—provided treatment is well-designed and delivered—or whether it would be safer to desist from treating sex offenders until far more definitive evidence becomes available. Given the evidence assembled to date, pursuing the latter seems unwarranted. While various important questions and methodological concerns need to be addressed in the future, the quality and consistency of the evidence indicates that treatment can lead to at least modest reductions in recidivism, which in turn can translate into fewer victims, less individual and community harm, and a positive return on taxpayer investment.

Notes

1 Of the 1,307 U.S. programs, 608 provided treatment services to adult sexual offenders.
RCTs are considered superior for discovering treatment effects and inferring causality because of their capacity to create valid counterfactuals and reduce bias.

For an example of a narrative review, see Furby, Weinrott, and Blackshaw (1989).

Methodological quality considerations typically include an assessment of the following: the study’s ability to control outside factors and eliminate major rival explanations for an intervention’s effects; the study’s ability to detect program effects; and other considerations, such as attrition and the use of appropriate statistical tests. Based on the assessment, studies of substandard quality are typically excluded from the analysis. In addition, studies that are included in the analysis may be weighted based on their relative scientific rigor.

Meta-analysis also generates a summary statistic called the average effect size, which helps the analyst determine not only if the intervention is effective, but also how effective it is. There are several methods used to calculate an effect size, as described in Lipsey and Wilson (2001). The mean difference effect size is common when outcomes are continuously measured; the odds-ratio effect size is common when outcomes are measured dichotomously.

Such as statistical tests of homogeneity.

A total of 259 study subjects were assigned to the treatment group, but 55 offenders withdrew prior to starting treatment.

Of the 204 sex offenders who entered treatment, 190 completed 1 year or more of treatment and 14 dropped out of the program before completing at least 1 year of treatment. The observed sexual recidivism rate for treatment dropouts was 35.7 percent, based on a mean followup period of 8.4 years.

The researchers noted that the evaluation was undertaken before a system of accreditation was in place to ensure treatment program quality.

Survival analysis is a technique for standardizing the time at risk for all study participants, thereby producing a more accurate estimate of recidivism. It can be used to examine the pace at which recidivism occurs over specified intervals of time. In the treatment group, intent-to-treat analysis includes data about study participants who dropped out of, or were dropped from, the study before completing treatment.

One study involved 251 sex offenders civilly committed in Massachusetts between 1959 and 1985 (Prentky et al., 1997); the other study involved 31 sex offenders recommended for civil commitment by clinicians but deemed "not sexually dangerous" by courts and released without treatment (Cohen, Groth, & Siegel, 1978).

The "more dangerous" sex offenders were deemed to be "sexually dangerous" by two "qualified examiners" (clinicians) and were subsequently civilly committed by the courts to the Massachusetts Treatment Center for Sexually Dangerous Persons. The "less dangerous" sex offenders were found to be "not sexually dangerous" by the courts and were released without treatment after serving whatever criminal sanctions the court imposed (Kriegman, 2006).

Thirty-eight studies reported sexual recidivism (4,321 treated sex offenders and 3,591 comparison offenders) and 30 studies reported general recidivism (3,356 treated sex offenders and 2,475 comparison offenders).

Sexual recidivism ($p < .001$); overall recidivism ($p < .001$).

Seven of the comparisons in the analysis were based on a randomized design, but one of those was compromised and was not rated by the researchers as a randomized study.

Fifteen studies in the overall analysis focused on cognitive-behavioral programs; seven of these studies were rated 3 or higher on SMS, indicating a high level of scientific rigor. Four studies focused on behavioral programs; three of these studies rated 3 or higher on SMS.

Cohen's $d = 0.48$.

Cognitive behavioral/relapse prevention treatment: mean odds-ratio = 2.04; behavioral treatment: mean odds-ratio = 2.92; hormonal treatment: mean odds-ratio = 4.01.

Mackenzie (2006) also found that programs using chemical castration/psychotherapy were effective in reducing recidivism but cautioned that the finding was based on a single study conducted in Germany. She also noted that no further discussion followed because surgical castration is not used in the United States.

Average followup periods ranged from 1 to 21 years, with a median of 4.7 years.

Sexual recidivism ($p < .01$); general recidivism ($p < .01$).
References


