

Juvenile Sexual Offender Treatment: A Systematic Review of Evidence-Based Research

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Executive Summary

There has been an increasing awareness of the etiology, occurrence, and impact of juvenile sexual aggression during the past 15 years (Kolko, Noel, Thomas, & Torres, 2004). However, social work research has not kept pace with the exponential growth of treatment options for these adolescents (Efta-Breitbach & Freeman, 2004b). Furthermore, much of the research on juvenile sexual offenders (JSO) is methodologically weak, which precludes the identification of best practices regarding treatment planning, outcome prediction, and innovative treatment procedures (Hanson, Broom, & Stephenson, 2004). To address this challenge, a systematic review of quantitative research on juvenile sexual offender treatment was conducted. The purpose was to provide practitioners and policymakers with evidence-based research to more effectively implement treatment programs for these youth.

The systematic review employed a rigorous vetting process based on the standards developed by the What Works Clearinghouse (WWC) in the Institute of Education Sciences. After a comprehensive electronic and manual search of the literature, quantitative studies conducted from 1995-2005 that examined the effect of treatment on juvenile sexual offender outcomes were assessed on the quality of their research designs and methods according to the WWC Study Design and Implementation Device. In the final stage of the review, meta-analyses were generated to calculate effect sizes for the recidivism outcomes in seven of the studies that merited inclusion into the evidence base. The average follow-up time for the seven studies was 6 years, while the average length of treatment was 16 months. Three of the studies were conducted in a community-based setting, three were in a residential setting, and one was in a correctional setting.

According to the results, there is a small to moderate positive effect of treatment on the recidivism rates of JSO. Specifically, juveniles who complete a cognitive-behavioral treatment program are less likely to commit any re-offenses, sexual re-offenses, nonsexual violent re-offenses, or nonsexual nonviolent re-offenses than are juveniles who do not receive treatment, receive an alternative treatment, or do not complete treatment. However, these findings are limited by the sparse evidence base and are undermined by threats to the internal and external validity of the studies. For example, there are reservations that treated JSO were comparable to untreated JSO in the recidivism studies. Although these weaknesses may complicate the interpretation of the findings, several important implications for social work practice, policy, and research emerged from the systematic review.

The primary recommendation for practitioners is to provide JSO with cognitive-behavioral treatment options within a continuum of care model. For example, community-based settings should be considered for the treatment of lower risk JSO. The main recommendation for policymakers is to enact developmentally appropriate standards for JSO that are not solely based on adult guidelines. Legislators also should provide the financial resources necessary for treatment providers, probation departments, and child welfare agencies to adequately deliver timely treatment programs and ongoing support services. Future research should be conducted on the mediating and moderating effects of different treatment modalities, settings, and intervention lengths. In addition, there is a need for more experimental, longitudinal, and predictive research on this topic.

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Introduction

This report describes a systematic review of evidence-based research on the treatment of juvenile sexual offenders (JSO). The report provides a brief introduction to the intervention, details the search strategies used to locate the literature set, and describes how the selected studies were coded and evaluated on methodological criteria. In addition, findings, conclusions, limitations, and recommendations are presented for the studies that merited inclusion into the evidence base.

Topic

Similar to other reviews on the same topic (e.g., Abracen & Looman, 2005), this systematic review covers many but not all facets of sexual offender treatment. For example, this report does not address etiology, treatment theories, risk assessment, prior victimization, developmental disabilities, or female sexual offenders. Based on the intervention typology used in a systematic review of adult sexual offender treatment by Kenworthy, Adams, Bilby, Brooks-Gordon, and Fenton (2003), this review primarily focused on psychological therapies including cognitive-behavioral, behavioral, and psychodynamic interventions. The review also considered multisystemic therapy and biological treatments for sexual offenders (Efta-Breitbach & Freeman, 2004b).

Although there is no single definition, “cognitive-behavioral treatments should at least involve attempts to change internal processes – thoughts, beliefs, emotions, physiological arousal – alongside changing overt behavior, such as social skills or coping” (Kenworthy et al., 2003, p. 3). Cognitive-behavioral interventions include relapse prevention, cognitive restructuring, empathy building, impulse control, skills training, anger management, sex education, and other sex offender specific therapies

(Efta-Breitbach & Freeman, 2004b). Behavioral interventions include aversion therapy, covert sensitization, olfactory conditioning, and masturbation satiation (Kenworthy et al., 2003). Psychodynamic interventions include psychoanalysis and psychotherapy (Kenworthy et al., 2003). Multisystemic therapy is a holistic treatment model, in which the “youth and family’s school, work, peers, and neighborhood are viewed as interconnected systems with dynamic and reciprocal influences on the behavior of family members” (Borduin & Schaeffer, 2002, p. 2). Biological interventions include castration, pharmacological treatments, and neurosurgery (Efta-Breitbach & Freeman, 2004b).

Juvenile sexual offender treatment programs exist along a continuum from outpatient (i.e., community-based) to inpatient (i.e., residential, correctional) settings (Becker & Hunter, 1997; Bourke & Donohue, 1996). Within these settings, there are several treatment modalities including family, group, and individual therapy (Becker & Hunter, 1997). According to a recent study of residential treatment centers for JSO, the most common treatment components are full disclosure of inappropriate sexual behavior, relapse prevention, correction of cognitive distortions, empathy training, anger management, and sex education (Walker & McCormick, 2004).

The target population for this review is youth who have been adjudicated of a sexual offense and have been court-ordered to a community or residential placement or incarcerated in a secure facility. According to Brown and Kolko (1998), “these children may be referred to as sexually reactive children, sexually abusive youth, children with sexual behavior problems, molesters, assaulters, rapists, [or] juvenile sexual offenders” (p. 368).

Context

Before the 1990s, “juveniles who committed sex offenses received little attention in the research literature. Their behavior was often explained as normal experimentation or developmental curiosity, whereas the focus of investigation of deviant sexual behavior was on adult sexual offenders” (Veneziano & Veneziano, 2002, p. 247). There has been an increasing awareness of the etiology, occurrence, and impact of juvenile sexual aggression during the past 15 years (Kolko, Noel, Thomas, & Torres, 2004). As youth-related violence, especially of a sexual nature, has become more prevalent (Moore, Franey, & Geffner, 2004), the issue has garnered increased attention from policymakers (Rice & Harris, 2003). For example, more than 90% of states have made significant legislative changes in juvenile court transfers, sentencing, confidentiality, and notification procedures (Hunter, 2000).

The corresponding growth in treatment services for JSO, “reflects both increased societal concern about rising rates of juvenile sexual aggression, and the professional belief that early intervention may help stem the emergence of chronic patterns of sexual offending” (Hunter, 2000, p. 4). As a result, the juvenile justice and child welfare systems have been pressed to demonstrate that the safety of victims and society is not compromised when JSO receive treatment rather than confinement (Rice & Harris, 2003).

However, social work research has not kept pace with the exponential growth of treatment options for these adolescents (Efta-Breitbach & Freeman, 2004b). According to Becker and Hunter (1997), “although there is a considerable body of literature on the treatment of adult sex offenders, there are few controlled outcome on the effectiveness of

treatment for children with sexual behavior problems and adolescent sex offenders” (p. 189-90). Most glaringly, there are inaccurate and incomplete data on the prevalence of juvenile sexual offending (Charles & McDonald, 1997). Furthermore, much of the research on JSO is methodologically weak (Brown & Kolko, 1998), which precludes the identification of best practices regarding treatment planning, outcome prediction, and innovative treatment procedures (Hanson, Broom, & Stephenson, 2004).

Controversies

The major controversy in the field reflects the “shift of juvenile courts to a more adult-like criminal justice model” (Center for Sex Offender Management [CSOM], 1999, p. 9). The Center for Sex Offender Management (1999) concludes that, “subjecting juveniles to stricter penalties for sex offenses poses special legal and clinical concerns” (p. 11). For example, the passage of Megan’s Law has resulted in many juveniles being required to register as sex offenders (Trivits & Reppucci, 2002). Chaffin (1998) argues that, “punitive or aversive treatment approaches must be considered within the context of a current political climate that exaggerates our fear of juvenile crime and energizes corresponding movements to punish children and youth as we would hardened adults” (p. 315).

A related controversy is whether adult sexual offender standards are appropriate for JSO. According to the research, the development and implementation of juvenile sexual offender treatment has borrowed heavily from models, assumptions, and strategies employed in programs designed for adults (Becker & Hunter, 1997; Chaffin, 1998). Furthermore, most assessment methods for JSO are based on research findings from adult sexual offenders (Bourke & Donohue, 1996).

There also is controversy regarding the most appropriate treatment setting for this population. Connolly and Wolf (1995) contend that, “if the care and safety needs of the young offender can be met by community-based services, it is more appropriate for the young person to remain within the community” (p. 4). Although there is limited evidence, many child welfare professionals believe that residential treatment programs are more costly and time consuming than are community-based alternatives (Brown & Kolko, 1998). Other controversies include the use of phallometric assessment, polygraph testing, arousal conditioning, and drug therapy for JSO (CSOM, 1999).

Outcomes

Not surprisingly, “most people would regard the reduction of re-offending as the most important indicator of change in sexual offenders and this is most commonly cited in treatment outcome studies” (Vizard, Monck, & Misch, 1995, p. 743). According to the research, the factors influencing the recidivism of JSO include treatment completion, family history and dysfunction, prior abuse and maltreatment, delinquent behaviors and peer groups, offense characteristics, deviant arousal, and mental health problems (Efta-Breitbach & Freeman, 2004a).

There are, of course, other outcomes paramount to the effective treatment and adjustment of JSO. Specifically, deviant sexual preferences and antisocial orientation are major outcomes of interest (Hanson & Morton-Bourgon, 2005). Furthermore, cognitive, behavioral, and social skills (e.g., community transition, behavior problems, competence) are important outcomes (Vizard et al., 1995). In addition, there are victim and societal outcomes that are essential to the evaluation of JSO treatment programs.

Methodology

The systematic review employed a rigorous vetting process based on the standards developed by the What Works Clearinghouse (WWC) in the Institute of Education Sciences. The following narrative provides a step-by-step description of the search, retrieval, coding, and meta-analytic procedures used to include and analyze the studies in the juvenile sexual offender treatment evidence base.

Search Strategy

In the first stage of the review, a comprehensive electronic search was implemented. As this is a social work related topic, the databases for Family and Society Studies Worldwide, Social Sciences Citation Index, Social Work Abstracts, and Sociological Abstracts were accessed to identify literature on juvenile sexual offender treatment. The Educational Resource Information Center (ERIC), Master Abstracts International, and Dissertation Abstracts International databases also were accessed to cast a wider net for appropriate studies.

The following terms were used independently or in combination to search these databases: “juvenile sexual offender treatment, sexual offender treatment, juvenile sexual offenders, cognitive-behavioral treatment, behavioral treatment, biological treatment, psychodynamic treatment, multisystemic therapy, polygraph testing, and recidivism.” The search was bounded to studies completed from 1995-2005, so that all treatment interventions occurred during a similar policy, practice, and historical context.

Search Results

The initial electronic search yielded 685 citations for journal articles, conference papers, evaluation reports, dissertations, book chapters, and policy papers on juvenile

sexual offender treatment. During the second stage of the review process, abstracts for each of the 685 citations were read and assessed according to the initial selection criteria. As a result, full-text copies for the 135 articles and reports that employed quantitative methods to study juvenile sexual offender treatment were sought.

To ensure that studies were not missed during the electronic search, a visual examination was conducted on the reference lists for the 135 articles and reports and for related meta-analyses. After this manual search, 69 additional studies were identified for possible acquisition. After reading the abstracts for these 69 citations, 59 that met the inclusion criteria were sought. Finally, a hand search for studies published from 1995 to 2005 in *Sexual Abuse: A Journal of Research and Treatment* yielded three additional studies. Due to out-of-print reports, unpublished conference presentations, and extinct websites, 188 of the 197 documents were acquired (95% retrieval rate). Similar to other systematic reviews, some studies may not have been identified, although it is unlikely that any large-scale or well-designed studies were missed by the search (Kenworthy et al., 2003).

The citations for all 188 articles and reports (see reference list) were entered into Reference Manager 9, which is an interactive literature management software package. The citations were then uploaded to the EPPI-Reviewer online review database, which is a tool for storing and analyzing data for systematic reviews. EPPI-Reviewer is maintained by the Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre) at the University of London and can be accessed at <http://eppi.ioe.ac.uk>.

Inclusion Criteria

During the third stage of the review, a “keywording” rubric was used to categorize each study by the type of intervention, intensity of data collection, type of research design, type of sample, and type of outcome. Specifically, a study had to investigate a juvenile sexual offender treatment intervention using a between-groups or within-subjects quantitative research design. The sample for an eligible study had to be drawn from children under the age of 18 who were adjudicated for a sexual offense. Furthermore, the study had to include offender outcomes, such as recidivism, social adjustment, or sexual behavior. If there were multiple articles or reports from a single study, only the most recent and/or complete document was eligible for inclusion.

After the rubric was pilot tested for clarity, the 188 articles and reports were keyworded in EPPI-Reviewer by two members of the research team to ensure consistency in the inclusion decision. Based on the aforementioned criteria, it was determined that 33 studies were qualified to be included in the next stage of the review process. The most common reasons for exclusion were the type of offender (i.e., adult) and type of research design (i.e., descriptive or qualitative).

Data Extraction

During the fourth stage of the review, the 33 eligible studies were assessed on the quality of their research designs and methods according to standards set forth in the WWC Study Design and Implementation Device (*Study DIAD*). As shown in Appendix A, a “data extraction” instrument was developed to provide guidelines for answering the eight composite questions posed by the *Study DIAD*. It should be noted that the original version of the *Study DIAD* was used in this systematic review. Although the new version

is different from a procedural standpoint, the core standards that define the composite questions remain the same.

Two researchers extracted data from each of the 33 studies and entered the results into EPPI-Reviewer. An interrater reliability analysis on the coding of the composite questions indicated a 75% agreement between the primary reviewer and the two secondary reviewers. Although this reliability estimate is acceptable, it is in the low range because of the complexity of the research designs and the subjectivity of some of the composite questions. Specifically, the questions regarding the fidelity and replicability of the interventions and the adequacy of reported data for effect size calculations were responsible for most of the disagreement. However, the reviewers came to consensus on the final coding for each study.

Overall, 11 studies met the criteria for all composite questions in the *Study DIAD* and were included in the evidence base. Eight of the studies were published in peer-reviewed journals, two were doctoral dissertations, and one was a master's thesis. Except for two studies conducted in Canada (Byrne, 1999; Worling & Curwen, 2000), all of the studies in the evidence base were completed in the United States. Studies that did not qualify were deemed inadequate because of insufficient statistical reporting and non-equivalent group comparisons. Although only one study used random assignment (i.e., Weinrott, Riggan, & Frothingham, 1997), the other ten studies met the commonly accepted requirement for inclusion in a systematic review, as they “extracted data on untreated participants from the same setting, who approximately match the treated offenders on relevant demographics and offense history features” (Marshall & McGuire, 2003, p. 654).

Meta-Analysis

The purpose of a meta-analysis is to estimate the overall effect of an intervention by aggregating the outcome data from studies that share common features (e.g., sample). Thus, a consistent definition of recidivism was necessary to combine the outcome data across the studies included in the evidence base (Hall, 1995). For this review, recidivism was defined as any charge, arrest, adjudication, or conviction for a new offense. Other outcomes were investigated by studies in the evidence base (i.e., social competence, community transition, behavior problems, deviant sexual arousal), but were not included in the meta-analyses because there was only one study for each outcome.

In the final stage of the review, meta-analyses were conducted for the four recidivism outcomes with at least three studies reporting appropriate data. Specifically, standardized effect sizes were computed using EPPI-Reviewer for any re-offenses (i.e., sexual or nonsexual), sexual re-offenses (e.g., rape, sexual assault, incest, frottage, indecent exposure), nonsexual violent re-offenses (e.g., assault, robbery, kidnapping), and nonsexual nonviolent re-offenses (e.g., theft, weapons possession). The specific outcome measures used for effect size calculations in all 11 studies are shown in Appendix E.

Effect Size Calculation

Until effect sizes are considered, there is no sense of the magnitude of differences, regardless of statistical significance, between treated and untreated JSO. The most common effect size statistics used in meta-analysis are Cohen's d and Hedges' g , both of which represent the strength of a relationship between an independent variable and a dependent variable in standard deviation units. For this review, Hedges' g was computed by dividing the difference between group means by the pooled population value of the

standard deviation of the groups. In addition, the g value for each study was “corrected” for differences in group sample sizes.

An effect size may be positive or negative depending upon the direction of the difference between two groups. For this review, a positive effect size was in the favor of treated JSO. Because effect sizes are estimates and not parameters, confidence intervals are calculated to quantify some of the uncertainty inherent in capturing the “true” effect of an intervention. If a confidence interval includes zero, then the effect size is not statistically significant. Most researchers suggest the following scale to interpret the magnitude of a g effect size: $g < .20$ is small, $g = .50$ is moderate, and $g > .80$ is large. A small effect size is interpreted as having little consequence for child welfare outcomes, whereas moderate and large effect sizes are interpreted as having greater implications for social work practice and policy.

The combined effect size for each outcome was computed as a weighted mean of the effect size for each study, with the weight being the inverse of the square of the standard error. Thus, a study is given greater weight for a larger sample size and more precise measurement, both of which reduce standard error. A t value also was computed to test the significance of the combined effect size by dividing the absolute value of the mean effect size by the standard error of the mean effect size. Specifically, this is a two-tailed test of the null hypothesis that the combined effect size is not significantly different from zero. When calculating the combined effect sizes, a Q statistic was computed to test for the heterogeneity of effect sizes in the group. The Q statistic indicates whether the variability is due to sampling error or to some unmeasured variable(s), in which case the combined effect size is less reliable in its estimation of the population effect size.

Findings

First, the samples and treatments for the seven recidivism studies are summarized. Second, the validity ratings for the 11 studies included in the evidence base are reported. Third, the results from the meta-analyses and subgroup analyses are presented.

Samples

As displayed in Appendix B, the total treatment sample for the seven recidivism studies was exclusively male with the exception of the Worling and Curwen (2000) study, which had 91% males in the treatment group. For the four studies that reported the ethnicity of participants, Caucasian juveniles ranged from 32% to 86%, African-American youth ranged from 2% to 50%, and Hispanic/Latino adolescents ranged from 6% to 30%. The mean age range for participants from the five studies that reported this information was 14.9 to 16.9 years old. As for victimization, four of the studies (Barlow, 1998; Guarino-Ghezzi & Kimball, 1998; Waite et al., 2005; Worling & Curwen, 2000) reported that between 20% to 75% of the JSO were sexually abused as children.

The only data reported in the seven recidivism studies for the risk level of participants were number of offenses, number of victims, age of victims, and gender of victims. For the three studies that reported number of offenses, the range was 3.0 to 6.3 for all offenses and 1.9 to 2.4 for sexual offenses. For the five studies that reported number of victims, the range was from 1 to 5 with a majority of participants having 1 to 2 reported victims. For the four studies that reported victim age, the range of child victims was 46% to 90%. For the three studies that reported victim gender (Byrne, 1999; Wolk, 2005; Worling & Curwen, 2000), the range of same-sex victims was 13% to 29%.

Treatments

As displayed in Appendix C, the average length of treatment was 16 months for the seven recidivism studies. All seven studies implemented some form of cognitive-behavioral intervention ranging from sex offender specific treatment (Guarino-Ghezzi & Kimball, 1998; Waite et al., 2005; Wolk, 2005; Worling & Curwen, 2000) to a “Healthy Lifestyles” curriculum (Byrne, 1999) to sexual awareness education (Seabloom, Seabloom, Seabloom, Barron, & Hendrickson, 2003). Although the treatment type was not explicitly stated, the Barlow (1998) study involved treatment providers typically identified with cognitive-behavioral approaches (e.g., Birdseye Boys Ranch, UT).

Three of the studies were conducted in a community-based or outpatient setting (Seabloom et al., 2003; Wolk, 2005; Worling & Curwen, 2000), three were conducted in a residential or institutional setting (Barlow, 1998; Byrne, 1999; Guarino-Ghezzi & Kimball, 1998), and one was conducted in a correctional facility (Waite et al., 2005). Three of the studies incorporated individual, group, and family treatment modalities (Seabloom et al., 2003; Wolk, 2005; Worling & Curwen, 2000), two used group therapy exclusively (Guarino-Ghezzi & Kimball, 1998; Waite et al., 2005), one employed group and individual therapy (Byrne, 1999), and one used family therapy (Barlow, 1998).

Validity Ratings

The ratings derived from the WWC Cumulative Research Evidence Assessment Device (*CREAD*) provide an indication of the overall quality of the research designs and methods used by the eleven studies in the evidence base. As stated in the *CREAD* guidelines, the objective is to “provide an expression of the confidence with which a conclusion can be drawn about the existence of causal effects of an intervention based on

an entire body of accumulated evidence.” Thus, the eight between-groups and three within-subjects studies were evaluated on their construct, internal, external, and statistical conclusion validity as defined by the *CREAD*. It should be noted that the original version of the *CREAD* was used for this systematic review. Although the current version is different in format and terminology, the recommended evidence standards for assessing research validity remain the same.

Composite Question #1: Construct Validity – Intervention

The authors are *somewhat confident* that the intervention was properly defined in the evidence base. Specifically, four of the studies (36%) fully reflected commonly held or theoretically derived ideas about JSO treatment. However, the interventions were adequately described to allow for replication, and the implementation of juvenile sexual offender treatments was largely consistent with its defined characteristics.

Composite Question #2: Construct Validity – Outcomes

The authors are *somewhat unconfident* that the outcome measures were properly defined in the evidence base. Specifically, none of the studies provided sufficient evidence of construct validity for the outcome measures. In the studies that did not merit a “yes” on this composite question, there was evidence that the outcome measures were properly aligned to the intervention. However, there was less evidence that the measures were reliable for assessing the effect of treatment on juvenile sexual offender outcomes.

Composite Question #3: Internal Validity – Selection

The authors are *somewhat unconfident* that juveniles who completed sexual offender treatment were comparable to juveniles who did not complete treatment. As only one of the eight between-groups studies used random assignment, groups were not

equivalent as defined by the WWC standards. However, there was no indication of severe overall or differential attrition for any of the studies. Thus, the studies in the evidence base meet causal inference standards with reservations.

Composite Question #4: Internal Validity – Contamination

The authors are *somewhat confident* that the studies were free of events that happened concurrently with the intervention and may have confused its effects. Although only one of the eight between-groups studies rendered contaminating events implausible through random assignment, the three within-subjects studies merited a “yes” on this composite question. Furthermore, there was no positive evidence of a contaminating event and no identified processes that were alternative explanations for the treatment effects for the studies in the evidence base.

Composite Question #5: External Validity – Sampling

The authors are *confident* that the intervention was tested for its effectiveness using targeted participants, settings, outcomes, and occasions. Although none of the studies employed random sampling procedures, most aspects of the theoretical population and common variations of settings, classes of outcomes, and data collection occasions were represented in the evidence base. Specifically, children from all age groups and many different geographic locations were represented. The studies also employed appropriate offender outcomes and used several measurement processes.

Composite Question #6: External Validity – Testing within Subgroups

The authors are *somewhat confident* that the intervention was tested for its effectiveness within important subgroups of targeted participants, settings, outcomes, and occasions. Specifically, six of the studies (54%) tested the effectiveness of juvenile

sexual offender treatment programs on important subgroups. In addition, sufficient data were provided for an exploratory comparison of community and residential treatment settings. However, most of the studies that included subgroup analyses did not disaggregate data by treatment type.

Composite Question #7: Statistical Conclusion Validity – Effect Size Estimation

The authors are *somewhat confident* that the studies in the evidence base allowed for a precise estimation of effect sizes. Specifically, eight of the studies (73%) were based on statistical properties that allowed for sufficiently precise effect size estimates. However, the authors are less confident that the studies met all of the necessary independence, distributional, and variance assumptions.

Composite Question #8: Statistical Conclusion Validity – Completeness of Reporting

The authors are *confident* that studies were not systematically excluded because of their results. The 11 studies in the evidence base did not censor data at the outcome level because many of the findings were of no statistically significant difference between groups. In addition, the literature search was effective in uncovering studies with limited availability, such as dissertations and unpublished reports.

Recidivism Results

The following results are from the seven studies in the evidence base that reported recidivism outcomes. The average follow-up time for these studies was six years. As displayed in Appendix D, adolescents who completed sexual offender treatment had lower long-term recidivism rates than did untreated adolescents. For this review, untreated participants were comprised of juveniles who did not receive treatment, received an alternative treatment, or did not complete treatment. Specifically, treated JSO

had sexual recidivism rates from 0% to 5% and nonsexual recidivism rates from 10% to 36%, while untreated JSO had sexual recidivism rates from 5% to 18% and nonsexual recidivism rates from 10% to 75%. In addition, treated juveniles had recidivism rates from 26% to 47% for any re-offense, while untreated juveniles had recidivism rates from 46% to 71% for any re-offense.

As displayed in Table 1, the positive effect sizes for all four recidivism outcomes indicate an advantage for juveniles who completed cognitive-behavioral treatment. Specifically, treated JSO had lower recidivism rates for any re-offenses, sexual re-offenses, nonsexual violent re-offenses, and nonsexual nonviolent re-offenses.

Table 1
Combined Effect Size Statistics for Recidivism Outcomes

Recidivism Outcome	Test of Null Hypothesis		Test of Heterogeneity		
	Effect (g)	Sig. (p)	Q Value	df	p value
Any Re-Offense	.473	.001***	4.67	4	.323
Sexual Re-Offense	.252	.003**	11.4	4	.022*
Nonsexual Violent Re-Offense	.251	.006**	2.13	2	.345
Nonsexual Nonviolent Re-Offense	.376	.001***	4.29	2	.117

* $p < .05$. ** $p < .01$. *** $p < .001$.

Any Re-Offense

As displayed in Table 2, two studies (Waite et al., 2005; Wolk, 2005) found statistically significant differences in the favor of treated JSO. The other three studies (Barlow, 1998; Guarino-Ghezzi & Kimball, 1998; Worling & Curwen, 2000) reported nonsignificant differences in favor of treated adolescents. The heterogeneity statistic ($Q = 4.67$) was not statistically significant for the any re-offense outcome.

Table 2

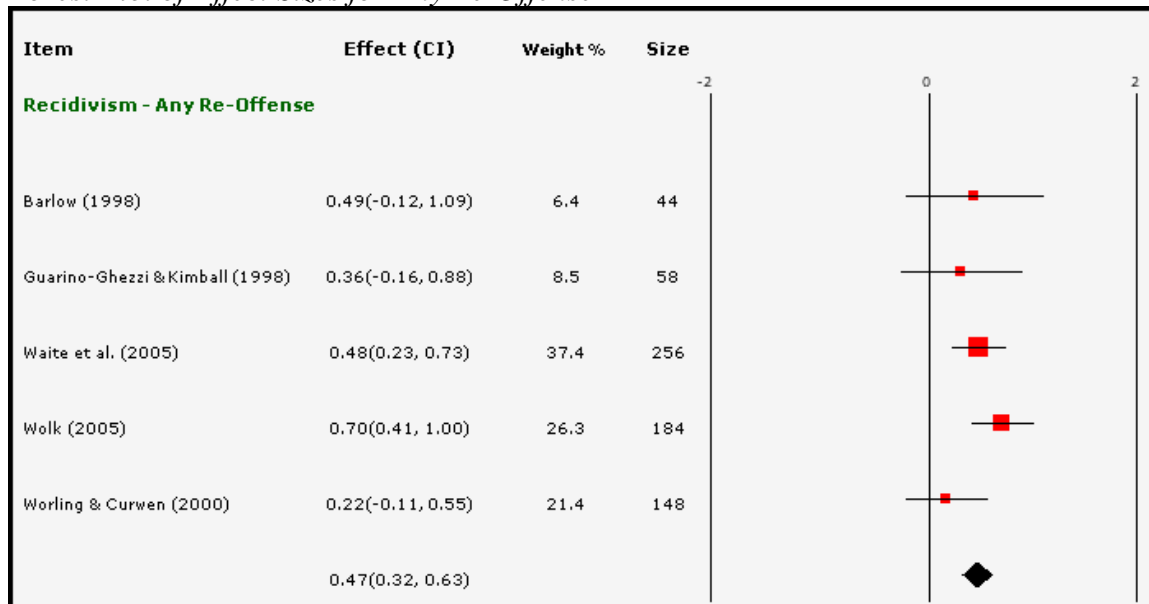
Effect Size Results for Any Re-Offense

Study	Treated (n)	Untreated (n)	Effect (g)	Lower (CI)	Upper (CI)
Barlow (1998)	20	24	.487	-.116	1.09
Guarino-Ghezzi (1998)	33	25	.360	-.164	.884
Waite (2005)	144	112	.477	.227	.727
Wolk (2005)	87	97	.704	.406	1.00
Worling (2000)	58	90	.223	-.108	.554
Combined	342	348	.473	.320	.626

As displayed in Figure 1, the combined effect size for the any re-offense outcome is .473 with a lower and upper bound of .320 and .626 respectively. Thus, there is a statistically significant, moderate positive effect of treatment on juvenile sexual offender recidivism rates for any re-offenses.

Figure 1

Forest Plot of Effect Sizes for Any Re-Offense



Sexual Re-Offense

As displayed in Table 3, two studies (Seabloom et al., 2003; Worling & Curwen, 2000) found statistically significant differences in favor of juveniles who completed sexual offender treatment. Two studies (Barlow, 1998; Byrne, 1999) reported nonsignificant differences in favor of treated adolescents. One study (Waite et al., 2005) found nonsignificant differences in favor of untreated JSO. The heterogeneity statistic was significant ($Q = 11.4$) for the sexual re-offense outcome, which indicates that the effect sizes were not completely consistent within this construct.

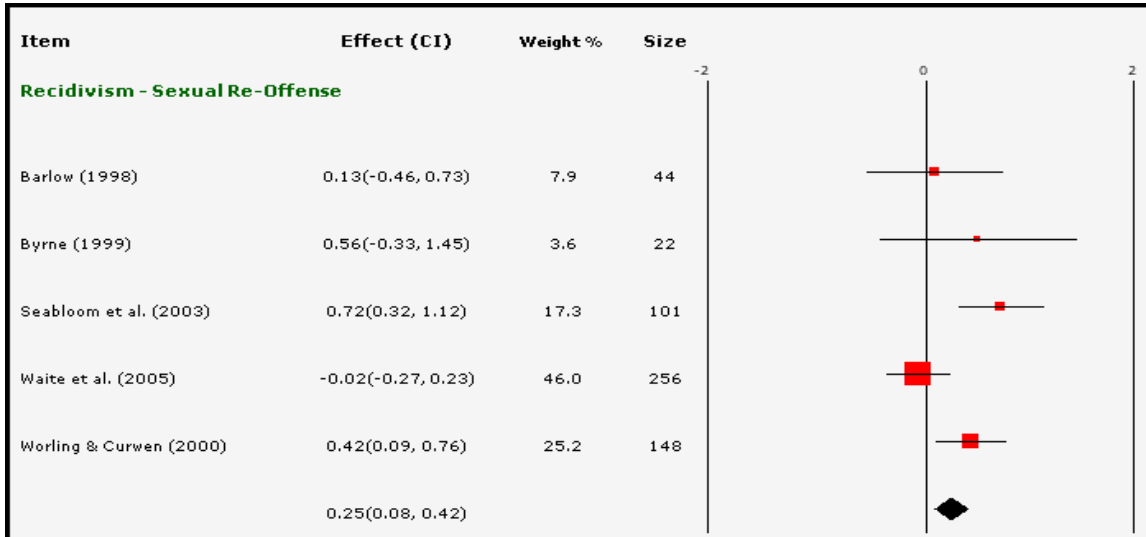
Table 3
Effect Size Results for Sexual Re-Offense

Study	Treated (<i>n</i>)	Untreated (<i>n</i>)	Effect (<i>g</i>)	Lower (<i>CI</i>)	Upper (<i>CI</i>)
Barlow (1998)	20	24	.131	-.463	.725
Byrne (1999)	14	8	.559	-.328	1.45
Seabloom (2003)	50	51	.719	.316	1.12
Waite (2005)	144	112	-.019	-.266	.228
Worling (2000)	58	90	.423	.089	.757
Combined	286	285	.252	.085	.420

As displayed in Figure 2, the combined effect size for the sexual re-offense outcome is .252 with a lower and upper bound of .085 and .420 respectively. Thus, there is a statistically significant, small positive effect of treatment on juvenile sexual offender recidivism rates for sexual re-offenses.

Figure 2

Forest Plot of Effect Sizes for Sexual Re-Offense



Nonsexual Violent Re-Offense

As displayed in Table 4, one study (Waite et al., 2005) found statistically significant differences in favor of adolescents who completed sexual offender treatment. One study (Worling & Curwen, 2000) reported nonsignificant differences in favor of treated JSO. One study (Seabloom et al., 2003) found a nonsignificant difference in favor of untreated juveniles. However, the heterogeneity statistic was not significant ($Q = 2.13$) for the nonsexual violent re-offense outcome.

Table 4

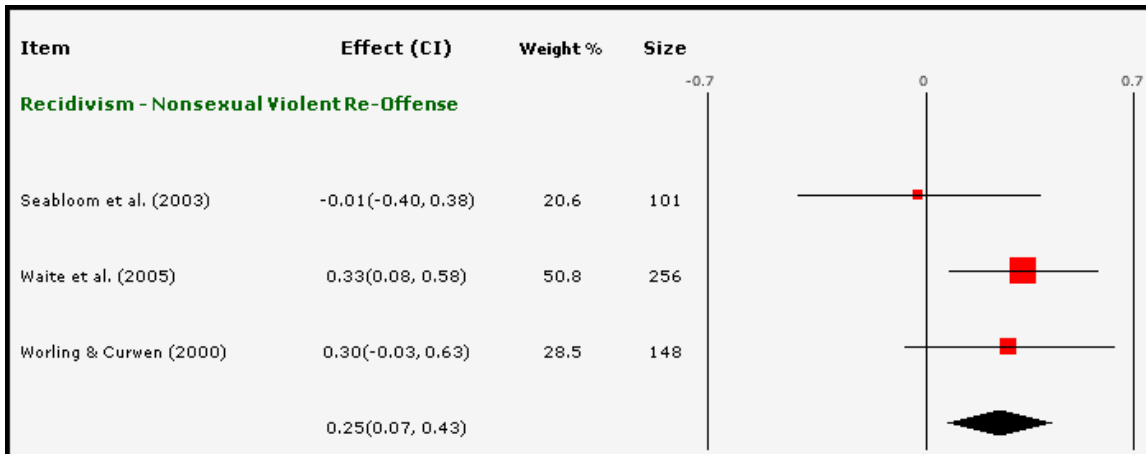
Effect Size Results for Nonsexual Violent Re-Offense

Study	Treated (n)	Untreated (n)	Effect (g)	Lower (CI)	Upper (CI)
Seabloom (2003)	50	51	-.007	-.397	.383
Waite (2005)	144	112	.328	.080	.577
Worling (2000)	58	90	.299	-.033	.631
Combined	252	253	.251	.074	.428

As displayed in Figure 3, the combined effect size for the nonsexual violent re-offense outcome is .251 with a lower and upper bound of .074 and .428 respectively. Thus, there is a statistically significant, small positive effect of treatment on juvenile sexual offender recidivism rates for nonsexual violent re-offenses.

Figure 3

Forest Plot of Effect Sizes for Nonsexual Violent Re-Offense



Nonsexual Nonviolent Re-Offense

As displayed in Table 5, one study (Worling & Curwen, 2000) found statistically significant differences in favor of adolescents who completed sexual offender treatment. The other two studies (Byrne, 1999; Waite et al., 2005) reported nonsignificant differences in favor of treated juveniles. The heterogeneity statistic was not statistically significant ($Q = 4.29$) for the nonsexual nonviolent re-offense outcome.

As displayed in Figure 4, the combined effect size for the nonsexual nonviolent re-offense is .376 with a lower and upper bound of .181 and .571 respectively. Thus, there is a statistically significant, small to moderate positive effect of treatment on juvenile sexual offender recidivism rates for nonsexual nonviolent re-offenses.

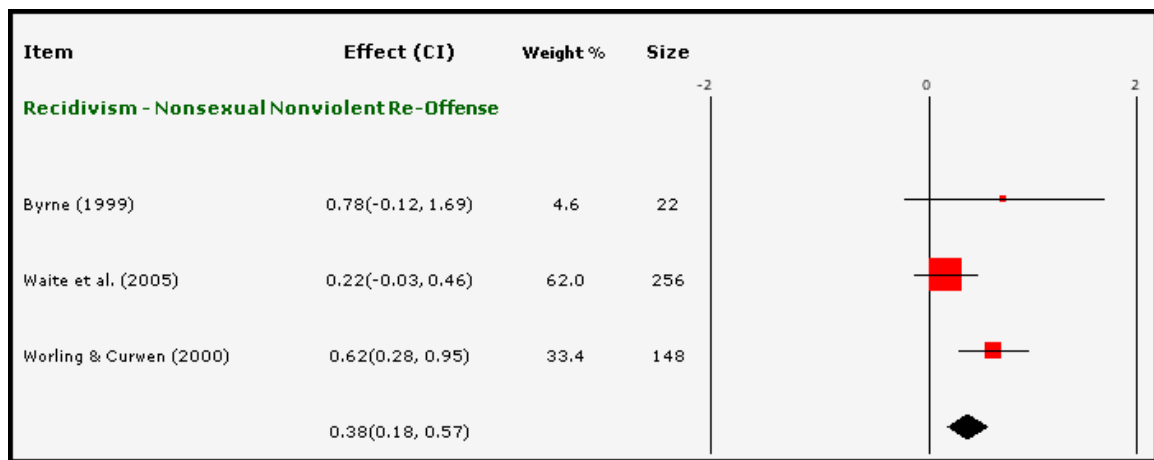
Table 5

Effect Size Results for Nonsexual Nonviolent Re-Offense

Study	Treated (n)	Untreated (n)	Effect (g)	Lower (CI)	Upper (CI)
Byrne (1999)	14	8	.783	-.123	1.69
Waite (2005)	144	112	.217	-.031	.465
Worling (2000)	58	90	.616	.278	.953
Combined	216	210	.376	.181	.571

Figure 4

Forest Plot of Effect Sizes for Nonsexual Nonviolent Re-Offense



Subgroup Analyses

The small number of studies in the evidence base did not provide the statistical power necessary to conduct subgroup analyses with any degree of confidence (Kenworthy et al., 2003). Thus, effect sizes were not calculated for gender, ethnicity, age at index offense, or type of index offense. Furthermore, there were insufficient data to generate analyses regarding the effect of treatment modality and length of treatment on the recidivism rates of JSO.

However, an exploratory analysis for treatment setting was conducted by comparing two studies from community-based settings (Wolk, 2005; Worling & Curwen, 2000) with two studies from residential settings (Barlow, 1998; Guarino-Ghezzi & Kimball, 1998). For the any re-offense recidivism outcome, the two community-based treatments had a statistically significant effect size of $g = .489$, while the two residential treatments had a statistically significant effect size of $g = .415$. For the sexual re-offense recidivism outcome, the two community-based treatments had a statistically significant effect size of $g = .543$, while the two residential treatments had a non-significant effect size of $g = .263$. These findings must be interpreted with extreme caution because of the inadequate number of studies for each setting type.

Discussion

The following discussion summarizes the findings from the systematic review while providing a framework for future conceptual and applied work in juvenile sexual offender treatment. From a practice and policy perspective, the implications are most relevant for cognitive-behavioral treatments, as the recidivism data were drawn exclusively from studies in the evidence base that used this approach.

Conclusions

According to the results, there is a small to moderate positive effect of treatment on the recidivism rates of JSO. Specifically, juveniles who complete a cognitive-behavioral treatment program are less likely to commit a sexual or nonsexual re-offense than are juveniles who do not receive treatment, receive an alternative treatment, or do not complete treatment. Thus, the studies in the evidence base “provide empirical support for the belief that the majority of juvenile sex offenders are amenable to treatment and

achieve positive treatment outcomes” (Hunter, 2000, p. 2). The sparse results from the subgroup analyses indicate that cognitive-behavioral treatment is effective in both community and residential settings.

Although it is possible that a number of rival explanations could account for these findings, it seems unlikely considering the magnitude of the overall effect sizes and the consistency of results across the four recidivism outcomes. Furthermore, these results are consistent with several meta-analyses on adult sexual offenders (e.g., Hanson et al., 2002) and with a recent meta-analysis of JSO (Reitzel & Carbonell, 2005). The positive findings from the systematic review are notable considering the insensitivity of recidivism studies to treatment effects (Barbaree, 1997). A major weakness of most meta-analyses is publication bias, in which a whole body of extant research exists but is not published and hence not accessible for review. However, this systematic review considered and included numerous unpublished studies precluding the need for a “file drawer” analysis to determine if there was publication bias.

Limitations

As evidenced by the small number of studies included in the evidence base, the major limitation is the relatively poor standing of quantitative research on juvenile sexual offender treatment (Rice & Harris, 2003). Rice and Harris (2003) assert that, “an overall effect size derived from studies of uniformly poor quality cannot obviate universal methodological weaknesses. Conclusions based on such a meta-analysis are no more justified than conclusions based on the individual studies” (p. 437). The findings also are undermined by numerous threats to the internal and external validity of the studies. Most notably, there are reservations that children in juvenile sexual offender treatment

programs were equivalent to children in comparison groups. This limitation is exacerbated because the comparison groups in the review were comprised of juveniles who did not receive treatment (e.g., refused treatment, were not offered treatment), received an alternative treatment, or did not complete treatment.

The findings should be interpreted in the context that recidivism rates obtained from juvenile justice records are likely underestimates of actual re-offending behavior. Thus, it is possible that the systematic review overestimates the effectiveness of treatment on the recidivism rates of JSO (Hall, 1995). As for other interpretative caveats, the meta-analyses did not consider how treatment modality and treatment length might differentially impact treated and untreated JSO. Furthermore, other treatment types were not included in the evidence base, so it is premature to conclude that cognitive-behavioral treatments are the most effective approach for this population.

Finally, the positive effects of sexual offender treatment were stronger for the any re-offense and nonsexual re-offense outcomes than for sexual re-offenses. Thus, cognitive-behavioral treatment programs for JSO may not completely address all of the causes of sexual recidivism. For example, Hanson and Morton-Bourgon (2005) recently found that “variables commonly addressed in sex offender treatment programs (e.g., psychological distress, denial of sex crime, victim empathy, stated motivation for treatment) had little or no relationship with sexual or violent recidivism” (p. 1154). Furthermore, the implementation fidelity of the treatment programs included in the evidence base was not assessed. Although these weaknesses may complicate the interpretation of the findings, several important implications for social work practice, policy, and research emerged from the systematic review.

Recommendations

The primary recommendation for practitioners is to provide JSO with cognitive-behavioral treatment options within a continuum of care model. For example, community-based settings should be considered for the treatment of lower risk JSO. However, “it is important that programs not compromise community safety by admitting highly aggressive and violent youth, [and] those who have psychiatric problems that are beyond the scope of the community-based program” (Hunter, 2000, p. 5). The main recommendation for policymakers is to enact developmentally appropriate standards for JSO that are not solely based on adult guidelines. Legislators also should provide the financial resources necessary for treatment providers, probation departments, and child welfare agencies to adequately deliver timely treatment programs and ongoing support services. The latter recommendation has an added economic benefit, as the “development of effective treatments for juvenile sexual offenders may help to free resources to address other important problems of children and their families” (Borduin & Schaeffer, 2002, p. 4).

To address the major limitations of research on sexual offender treatment, there is a need for experimental research with random assignment to conditions (Kenworthy et al., 2003). More specifically, Bourke and Donohue (1996) argue that, “controlled treatment outcome studies need to be performed on homogenous samples utilizing multiple standardized outcome measures and with follow-up assessments to determine relative efficacy” (p. 64). Longitudinal designs that incorporate a longer follow-up period are sorely needed because recidivism rates tend to increase over time (Gallagher, Wilson, Hirschfield, Coggeshall, & MacKenzie, 1999). As evidenced by the lack of studies with

non-recidivism outcomes, Barbaree (1997) recommends future research that analyzes measures of behavioral change to assess treatment efficacy.

There are many opportunities for social work researchers to investigate which aspects of treatment are most effective and which types of offenders are most likely to respond to treatment (Hanson et al., 2002; Rice & Harris, 1994). For example, there is a critical need for an empirically-based diagnostic assessment that objectively predicts the risk of further sexual offending by sexually aggressive youth (Hunter & Figueredo, 1999). Future research also should be conducted on the mediating and moderating effects of different treatment modalities, settings, and intervention lengths. Furthermore, “there has been remarkably little attempt to quantify the influence of factors in the young person’s environment, such as family composition, family attitudes and beliefs, the type of care, or educational arrangements” (Vizard et al., 1995, p. 750). Finally, qualitative research that explores the underlying dynamics of juvenile sexual offender treatment is a natural outgrowth of this systematic review. Overall, “researchers can contribute by producing high-quality studies and making them available for systematic integration” (Hanson et al., 2002, p. 189). This is especially true for studies on JSO, as there is barely enough research to even conduct a rigorous meta-analysis (Reitzel & Carbonell, 2005).

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Appendix A

Data Extraction Guidelines

Section A: Rationale and research question(s) or hypotheses of the study

<p>A.1 What are the broad aims of the study?</p> <p><i>Write in authors' description if there is one. Look for a purpose statement or a problem statement.</i></p>	<p>A.1.1 Explicitly stated (please specify)</p> <p>A.1.2 Implicitly stated (please specify)</p> <p>A.1.3 Unclear/Not stated</p>
<p>A.2 What are the research questions and/or hypotheses of the study?</p> <p><i>Write in authors' exact questions or hypotheses or both.</i></p>	<p>A.2.1 Explicitly stated (please specify)</p> <p>A.2.2 Implicitly stated (please specify)</p> <p>A.2.3 Unclear/Not stated</p>
<p>A.3 With what level of clarity and thoroughness was the study informed by, or linked to an existing body of empirical and/or theoretical research?</p> <p><i>Look at the introduction and examine the logic and flow of the rationale of the study. Check how recent and extensive the quantity and quality of the references are, and how compelling the case is made for examining the research questions and hypotheses for this study.</i></p>	<p>A.3.1 High quality – Probably reflective of the best evidence criterion.</p> <p>A.3.2 Medium quality – Clearly satisfactory but lacking on one or more dimensions of clarity, thoroughness, and quality of literature cited as the rationale for the study.</p> <p>A.3.3 Low quality – Achieves minimum standards, but clearly lacking on most dimensions of clarity, thoroughness, and literature cited as the rationale for the study.</p> <p>A.3.4 Unacceptable – Does not meet even the most fundamental standards of clarity, thoroughness, and literature cited as the rationale for the study.</p>

Section B: Description and DIAD Rating of the Intervention(s)

This section assesses information about the nature of the intervention(s) and ends with a judgment of Composite Question #1 about the construct validity of the intervention description(s).

<p>B.1 What was the primary type of juvenile sexual offender treatment that was researched in the study?</p> <p><i>Select all that apply</i></p>	<p>B.1.1 Cognitive-behavioral (please specify)</p> <p>B.1.2 Psychodynamic (please specify)</p> <p>B.1.3 Multisystemic Therapy (please specify)</p> <p>B.1.4 Behavioral (please specify)</p> <p>B.1.5 Biological (please specify)</p> <p>B.1.6 Other treatment (please specify)</p> <p>B.1.7 Unclear/Not stated (please specify)</p>
<p>B.2 What was the primary treatment modality in the study?</p> <p><i>Select all that apply</i></p>	<p>B.2.1 Individual</p> <p>B.2.2 Group</p> <p>B.2.3 Family</p> <p>B.2.4 Unclear/Not Stated (please specify)</p>
<p>B.3 What was the primary treatment setting in the study?</p> <p><i>Select all that apply</i></p>	<p>B.3.1 Residential setting</p> <p>B.3.2 Correctional setting</p> <p>B.3.3 Community setting</p> <p>B.3.4 Unclear/Not stated (please specify)</p>
<p>B.4 What was the mean length of the juvenile sexual offender treatment in the study?</p>	<p>B.4.1 Please specify</p> <p>B.4.2 Unclear/Not stated (please specify)</p>

<p>B.5 How would you rate the alignment of the intervention to commonly-held or theoretically-derived ideas of the approach?</p> <p><i>What level of description did the author(s) of the study provide such that the intervention in the study adhered to commonly-held or theoretically derived ideas of what the approach should be?</i></p>	<p>B.5.1 Yes - The intervention was adequately described and it fully reflected commonly-held or theoretically derived ideas about what the intervention should be.</p> <p>B.5.2 Maybe yes - At a minimum the intervention was adequately described, and it at least somewhat reflected commonly-held or theoretically derived ideas about what the intervention should be.</p> <p>B.5.3 Maybe no - The intervention was described only as a member of broader classes of approaches (across which significant variation in content can be expected).</p> <p>B.5.4 No - It is unclear what the intervention was, OR the intervention did not reflect commonly-held or theoretical ideas about what it should be.</p>
<p>B.6 How would you rate the implementation and replicability of the intervention?</p> <p><i>What level of description did the author(s) of the study provide such that the intervention in the study would be replicable by others and was implemented consistently with its described characteristics?</i></p>	<p>B.6.1 Yes - The intervention was sufficiently described at a level which would allow relatively easy and thorough replication by other implementers, and the description of the intervention implementation was fully consistent with its defined characteristics.</p> <p>B.6.2 Maybe yes - The intervention was adequately described to allow replication of the most essential elements by other implementers, and the description of the intervention implementation was largely consistent with its defined characteristics.</p> <p>B.6.3 Maybe no - The authors omit important descriptive information concerning the essential elements of the intervention such that its replication would be impossible, OR it is plausible that the intervention implementation may well have been inconsistent with its defined characteristics.</p> <p>B.6.4 No -The authors of the study omit important descriptive information concerning the essential elements of the intervention such that its replication would be impossible, AND it is plausible that the intervention implementation may well have been inconsistent with its defined characteristics.</p>

Section C: Description and DIAD Rating of the Outcome(s)

This section assesses information about the nature of the outcome(s) of the study and ends with a judgment of Composite Question #2 about the construct validity of the outcome(s).

<p>C.1 What is the conceptual name for the outcome construct(s) that is the focus of the study?</p>	<p>C.1.1 Please specify</p> <p>C.1.2 Unclear/Not stated (please specify)</p>
<p>C.2 If the outcome was recidivism, how was it defined?</p> <p><i>Select all that apply</i></p>	<p>C.2.1 Any offense</p> <p>C.2.2 Sexual offense</p> <p>C.2.3 Nonsexual violent offense</p> <p>C.2.4 Nonsexual nonviolent offense</p> <p>C.2.5 Unclear/Not stated (please specify)</p> <p>C.2.6 Not applicable</p>
<p>C.3 What measure(s) will be used in the calculation of the effect size for the study?</p> <p><i>For example, was recidivism measured by arrests, convictions, etc.?</i></p>	<p>C.3.1 Please specify</p> <p>C.3.2 Unclear/Not stated (please specify)</p>
<p>C.4 Did the study identify the actual name(s) of the instrument used to measure the outcome(s) in the study?</p>	<p>C.4.1 Yes (please specify)</p> <p>C.4.2 No</p>
<p>C.5 Did the study describe any methods used to address the validity of data collection tools in the study?</p>	<p>C.5.1 Yes (please specify)</p> <p>C.5.2 No</p>

<p>C.6 How would you rate the adequacy with which the validity of the outcome measure(s) were defined?</p> <p><i>With what level of precision and clarity did the author(s) of the study describe the outcome measure(s) used in the study? Was there evidence that the outcome measure was aligned to the intervention?</i></p>	<p>C.6.1 Yes - The study provided adequate evidence that the outcome measure was properly defined and was appropriate for the context of the study.</p> <p>C.6.2 Maybe yes - Although the study did not present adequate evidence that the outcome measure was properly defined, the measure did appear to be appropriate to the content of the study.</p> <p>C.6.3 Maybe no - The outcome and/or the measure used to assess the outcome were only described conceptually as a member of a broader class of outcomes/measures about which significant variation exists as to their specific content.</p> <p>C.6.4 No – It is unclear what the outcome is and how it was measured.</p>
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Section D: Description and DIAD Rating of the Selection Procedures

This section assesses information about the procedures used to select participants for the study, including issues associated with assignment of participants to groups, attrition, and pre- and post-equating of participants across groups. This section ends with a judgment of Composite Question #3 about the internal validity of the selection procedures.

<p>D.1 Which of the following design purposes was the focus of the study?</p>	<p>D.1.1 To compare experimental group (i.e., treated sexual offenders) with control or comparison group (untreated sexual offenders)</p> <p>D.1.2 To compare experimental group with alternative treatment group(s)</p> <p>D.1.3 To compare experimental group with non-offender group</p> <p>D.1.4 To compare treatment completers with treatment non-completers</p> <p>D.1.5 To compare single group of treated sexual offenders (i.e., within-subjects design)</p> <p>D.1.6 Other (please specify)</p>
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<p>D.2 Was any information provided on the sampling frame for the study?</p> <p><i>How did the researchers put together the list of sampling units from which they drew the actual sample for the study?</i></p> <p><i>Additionally, was there random selection of participants from a larger sampling frame?</i></p>	<p>D.2.1 Yes (please specify)</p> <p>D.2.2 No</p>
<p>D.3 What types of sexual offenses were committed by the juvenile offenders in the study?</p>	<p>D.3.1 Child molestation</p> <p>D.3.2 Rape</p> <p>D.3.3 Incest</p> <p>D.3.4 Hands-off offenses</p> <p>D.3.5 Unclear/Not stated (please specify)</p>
<p>D.4 What was the attrition rate?</p> <p><i>If not reported, subtract the final sample size (at time of measurement) from the initial sample size (at time of assignment) and divide by initial sample size to determine attrition rate.</i></p>	<p>D.4.1 Reported for study population as a whole (please specify)</p> <p>D.4.2 Reported for one/some group(s) (please specify)</p> <p>D.4.3 Reported for all groups (please specify)</p> <p>D.4.4 Unclear/Not stated (please specify)</p>
<p>D.5 Was any information provided on those who dropped out of the study?</p>	<p>D.5.1 Yes (please specify)</p> <p>D.5.2 Unclear/Not stated (please specify)</p> <p>D.5.3 Not applicable</p>

<p>D.6 How would you rate the adequacy with which participants in the comparison or alternative treatment group(s) were made comparable to those in the treatment group?</p> <p><i>This is the fundamental issue of internal validity of selection of participants.</i></p>	<p>D.6.1 Yes – Participants were randomly assigned to conditions, and there does not appear to have been serious differential attrition within groups or severe overall attrition across groups or within subjects when participants served as their own controls.</p> <p>D.6.2 Maybe yes - EITHER randomized assignment was used but there appears to have been serious differential attrition within groups or serious overall attrition across groups or within subjects, OR although random assignment was not used, there does not appear to have been serious attrition problems within or across groups or within subjects and reasonable attempts were made to make the groups comparable (i.e. matched sampling, use of a covariate).</p> <p>D.6.3 Maybe no - Randomized assignment was not used and despite some steps taken to make the groups comparable, they do not appear to have been adequate.</p> <p>D.6.4 No - It is unlikely or unknown if the participants in the groups are comparable.</p>
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Section E: Description and DIAD Rating of Contamination

This section assesses the steps used by the authors to minimize the probability that events alternative to the intervention in the research context could be responsible for the effects measured in the study. This section ends with an assessment of Composite Question #4 about the internal validity of controls over alternative events.

<p>E.1 What is the research design associated with the study?</p>	<p>E.1.1 Pretest-posttest control group design</p> <p>E.1.2 Posttest only control group design</p> <p>E.1.3 Pretest-posttest non-equivalent comparison group design</p> <p>E.1.4 Posttest only non-equivalent comparison group design</p> <p>E.1.5 Pretest-posttest single group design</p> <p>E.1.6 Posttest only single group design</p> <p>E.1.7 Other (please specify) (e.g., multiple regression, survival analysis)</p>
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<p>E.2 Was outcome measurement done in such a way that those conducting the measurement were unaware of group membership?</p> <p><i>Were those assessing the outcomes unaware whether the participant had been in the intervention or control/comparison group?</i></p>	<p>E.2.1 Yes</p> <p>E.2.2 No</p> <p>E.2.3 Not applicable (within-subjects design)</p>
<p>E.3 How did the different groups compare to one another?</p> <p><i>Were the groups equivalent at baseline or was non-comparability addressed by the authors? Groups are likely to be equivalent if they were drawn from the same sample and have similar demographic variables and pre-test outcome measures. Groups are likely to be non-equivalent if they were drawn from an external population or archival/historical sample.</i></p>	<p>E.3.1 Equivalent</p> <p>E.3.2 Non-equivalent</p> <p>E.3.3 Not applicable (within-subjects design)</p>
<p>E.4 How would you rate the adequacy with which the study controlled events that happened concurrently with the intervention that might have confused its effect(s)?</p> <p><i>Specifically, was there evidence of a changed expectancy/novelty/disruption, a local history event, or any other intervention contaminants?</i></p>	<p>E.4.1 Yes - Concurrent processes and events that might be alternative explanations to a treatment effect have been ruled out, either explicitly or implicitly.</p> <p>E.4.2 Maybe yes - There were no identified processes or events that could be alternative explanations for a treatment effect, but some alternative explanations cannot be explicitly ruled out either because there was some evidence that alternative explanations might exist, or because no attention was given to ruling out an alternative explanation and it is reasonable to expect that one or more alternative explanations might exist.</p> <p>E.4.3 No - Identifiable processes or events that are described to be occurring simultaneously with the treatment or approach may have caused the observed effect.</p>

Section F: Description and DIAD Rating of Sampling External Validity

This section assesses how representative the actual participants, settings, outcomes, and data collection activities were to the theoretical population, school settings, typical measures, and appropriate measurement processes. This section ends with an assessment of Composite Question #5 about the external validity of sampling of participants, settings, outcomes, and measurement occasions.

<p>F.1 Which method(s) was used to collect the data for the study (if this is a secondary analysis of an existing dataset, please describe the method(s) used in the original data collection process)?</p> <p><i>Indicate all that apply and give further detail where possible.</i></p>	<p>F.1.1 Child welfare case records</p> <p>F.1.2 Juvenile justice case records</p> <p>F.1.3 Standardized assessment</p> <p>F.1.4 Survey/Questionnaire</p> <p>F.1.5 Interview</p> <p>F.1.6 Observation</p> <p>F.1.7 Other (please specify)</p> <p>F.1.8 Unclear/Not stated (please specify)</p>
<p>F.2 What was the timing of measurement for the treatment and comparison groups in the study?</p>	<p>F.2.1 Cross-sectional - <i>Data were collected at the same point in time for both groups</i></p> <p>F.2.2 Longitudinal - <i>Data were collected over the same period of time for both groups</i></p> <p>F.2.3 Cohort comparison/Historical control - <i>Data were collected at a different point in time for each group</i></p> <p>F.2.4 Unclear/Not stated (please specify)</p>
<p>F.3 What was the mean length of follow-up time after treatment for participants in the study?</p>	<p>F.3.1 Please specify</p> <p>F.3.2 Unclear/Not stated (please specify)</p> <p>F.3.3 Not applicable</p>

<p>F.4 How would you rate the adequacy with which the actual sample, setting, outcome(s), and measurement processes reflected the theoretical population and typical norms for settings, outcomes, and measurement processes?</p>	<p>F.4.1 Yes - The actual sample generalizes well to the theoretical population and the setting, outcome(s) and measurement processes generalize well to common variations in settings, classes of outcome(s), and processes and timing of data collection.</p> <p>F.4.2 Maybe yes - Most aspects of the theoretical population and common variations of settings, classes of outcomes, and data collection processes and timing are represented in the study.</p> <p>F.4.3 Maybe no - Although some important characteristics of the theoretical population and typical settings, outcomes, and data collection processes and timing are represented by the study, many important characteristics are not.</p> <p>F.4.4 No - The actual sample does not adequately reflect any characteristics of the theoretical population, and the setting, outcomes, and data collection timing and processes have characteristics that are not within the boundaries of accepted and typical practice.</p>
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Section G: Description and DIAD Rating of Testing Sub-groups External Validity

This section assesses how broadly the intervention was tested across important sub-groups of children, and across substantive variations within the intervention as a whole. This section ends with an assessment of Composite Question #6 about the external validity of testing within sub-groups.

<p>G.1 What is the mean age of the participants in the study?</p>	<p>G.1.1 Please specify age at treatment</p> <p>G.1.2 Unclear/Not stated</p>
<p>G.2 What is the stated percentage(s) for each of the ethnic classifications of the participants in the study?</p> <p><i>If available, use percentage calculations by the authors of the study. If not reported by the authors, calculate these percentages yourself, but specify that you calculated these percentages and not the authors.</i></p>	<p>G.2.1 White/European</p> <p>G.2.2 Black/African-American</p> <p>G.2.3 Native American/American Indian</p> <p>G.2.4 Asian</p> <p>G.2.5 Hispanic/Latino</p> <p>G.2.6 Unclear/Not stated</p>

<p>G.3 What is the predominant gender of the participants of the study?</p> <p><i>State in terms of percentage of males in study</i></p>	<p>G.3.1 Please specify</p> <p>G.3.2 Unclear/Not stated</p>
<p>G.4 What is the stated percentages for the socio-economic composition of the participants in the study?</p>	<p>G.4.1 Please specify</p> <p>G.4.2 Unclear/Not stated</p>
<p>G.5 What is the stated percentage(s) for the age of victims of the juvenile sexual offenders in the study?</p>	<p>G.5.1 Children (under 18)</p> <p>G.5.2 Adults (18 and over)</p> <p>G.5.3 Unclear/Not stated</p>
<p>G.6 What is the stated percentage(s) for the gender of victims of the juvenile sexual offenders in the study?</p>	<p>G.6.1 Same gender</p> <p>G.6.2 Opposite gender</p> <p>G.6.3 Unclear/Not stated</p>
<p>G.7 How broadly was the intervention analyzed across important sub-groups of children, and across substantive variations of the intervention?</p>	<p>G.7.1 Yes - The analyses in the study examined the effect(s) of the intervention across important sub-groups of children AND included separate analyses of key sub-components of the intervention for differential effectiveness on the different sub-groups of children.</p> <p>G.7.2 Maybe yes - Some sub-group analyses were conducted AND some estimates were made exploring differential effects of intervention sub-components.</p> <p>G.7.3 Maybe no - Some sub-group analyses were conducted OR some estimates were made exploring differential effects of intervention sub-components. However, key sub-groups were omitted from the analyses and differential effects were not explored for key intervention sub-components.</p> <p>G.7.4 No - Only the main effects of the intervention were reported AND no sub-group analyses were conducted.</p>

Section H: Description and DIAD Rating of the Statistical Validity of the Data

This section assesses the thoroughness with which the statistical properties of the data were reported, including how well the data satisfied important assumptions underlying the analytic techniques that were used, and how reliable the instruments were for measuring the outcome(s) of the study. This section ends with an assessment of Composite Question #7 about the statistical validity of measurement.

<p>H.1 Which statistical techniques were used to analyze the data in the study?</p>	<p>H.1.1 Please specify</p> <p>H.1.2 Unclear/Not stated (please specify)</p>
<p>H.2 Does the author describe any technical information about the reliability of instruments used to measure the outcome(s) of the study?</p> <p><i>For example, internal consistency, test – retest, interrater reliability.</i></p> <p><i>When more than one approach was used, provide details for each.</i></p>	<p>H.2.1 Yes (please specify)</p> <p>H.2.2 No</p>
<p>H.3 What is the unit of data analysis?</p> <p><i>Were the results reported according to the unit of allocation? For example, if individuals were allocated to different groups, results from individuals should be analyzed and reported.</i></p>	<p>H.3.1 Same as unit of allocation</p> <p>H.3.2 Different from unit of allocation (please specify)</p> <p>H.3.3 Unclear/Not stated (please specify)</p>
<p>H.4 Are there any obvious shortcomings in the statistical reporting in the study?</p>	<p>H.4.1 Yes (please specify)</p> <p>H.4.2 No</p>

<p>H.5 How thoroughly were the assumptions underlying the statistical analyses for the study reported, and how reliable does the outcome measurement instrumentation appear to be?</p> <p><i>Most importantly, are subjects statistically independent (i.e., the outcomes for participants in a group are unrelated to the outcomes of other participants in the group)?</i></p>	<p>H.5.1 Yes - Reporting for all assumptions underlying the statistics used in the study is provided and reliability estimates for all measures are given.</p> <p>H.5.2 Maybe yes - Some reporting of the statistical properties of the data are provided, as are some estimates of instrument reliability.</p> <p>H.5.3 Maybe no - Key information about how well the data met assumptions for the statistical analyses are omitted OR reliability estimates are not given for the instruments used in the study.</p> <p>H.5.4 No - Neither reliability estimates nor information about the statistical properties of the data were reported.</p>
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Section I: Description and DIAD Rating of the Effect Size Calculation

This section assesses the adequacy with which the study reports effect size estimates or the data necessary to calculate effect sizes. This section ends with an assessment of Composite Question #8 about completeness of data reporting.

<p>I.1 How many participants were in the study?</p> <p><i>State the final number of participants included in the analyses. For multi-group studies, state total number of experimental and control participants.</i></p>	<p>I.1.1 Please specify</p> <p>I.1.2 Unclear/Not stated (please specify)</p>
<p>I.2 Was the sample large enough for sufficiently precise effect size estimates?</p>	<p>I.2.1 Yes</p> <p>I.2.2 No</p>
<p>I.3 What is the effect size(s) for the intervention in the study?</p> <p><i>Specify effect size(s) for each outcome in the study.</i></p>	<p>I.3.1 Reported by the author (please specify)</p> <p>I.3.2 Calculated by the reviewer (please specify)</p> <p>I.3.3 Unclear/Not stated (please specify)</p>

<p>I.4 How adequately were the results of statistical tests reported so that effect sizes for all important outcomes in the study are available?</p>	<p>I.4.1 Yes – All outcomes either have effect sizes reported by the authors or provide data to allow precise calculation of effect sizes.</p> <p>I.4.2 Maybe yes - Sufficient statistical information was reported to allow, at a minimum, imprecise effect sizes to be calculated for most outcomes.</p> <p>I.4.3 Maybe no - For most outcomes, effect sizes were not reported, nor is there adequate statistical information to allow effect sizes to be calculated with precision for most outcomes.</p> <p>I.4.4 No - Neither sample sizes nor effect sizes were reported for all outcomes, OR insufficient data were provided to allow for the calculation of effect sizes.</p>
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Section J: Inclusionary Criteria

This section assesses whether the study meets all DIAD standards for inclusion in the systematic review.

<p>J.1 Does the study meet all DIAD standards for inclusion in the systematic review?</p>	<p>J.1.1 Yes</p> <p>J.1.2 No</p>
<p>J.2 If the study does not meet all DIAD standards for inclusion, please indicate which standard(s) was not met.</p>	<p>J.2.1 Intervention specification (Section B)</p> <p>J.2.2 Outcome specification (Section C)</p> <p>J.2.3 Group comparison (Section D)</p> <p>J.2.4 Contamination (Section E)</p> <p>J.2.5 Sampling validity (Section F)</p> <p>J.2.6 Statistical validity (Section H)</p> <p>J.2.7 Effect size calculation (Section I)</p>

Appendix B

Samples for Studies in the Evidence Base

Author and Publication Date	Locale	Age	Demographics	Risk Level
Barlow (1998)	Five level-six residential treatment centers in Utah during 1995	15.2 years	100% Male 86% Caucasian 9% Hispanic 2% African-American	2.4 sex offenses 6.3 all offenses 4.5 victims 90% child victims
Byrne (1999)	Newfoundland and Labrador Youth Centre (Canada) from April 1994	14.9 years	100% Male	1.9 sex offenses 6.3 all offenses 1.9 victims
Guarino-Ghezzi & Kimball (1998)	MA Department of Youth Services between January 1993 and July 1994	NOT REPORTED	100% Male 53% Caucasian 17% Hispanic 16% African-American	84% 1-2 victims 46% child victims
Kelley, Lewis, & Sigal (2004)	NJ residential facility for emotionally disturbed youth	14.9 years	100% Male 77% Caucasian 11% African-American 6% Hispanic	NOT REPORTED
Ownbey, Jones, Judkins, Everidge, & Timbers (2001)	“Intensive Program” in Forsyth County (NC) Department of Social Services	9.5 years	50% Male 50% Caucasian 50% African-American	NOT REPORTED
Ray, Smith, Peterson, Gray, Schaffner, & Houff (1995)	Sexually Reactive Youth Program in Spokane, WA	10.5 years	73% Male 73% Caucasian 20% Hispanic	100% child victims
Seabloom, Seabloom, Seabloom, Barron, & Hendrickson (2003)	Personal/Social Awareness Program in MN between 1977 and June 1986	NOT REPORTED	100% Male	73% 1-2 sex offenses

Author and Publication Date	Locale	Age	Demographics	Risk Level
Waite, Keller, McGarvey, Wieckowski, Pinkerton, & Brown (2005)	VA Division of Juvenile Justice incarceration facilities from 1992 through 2001	16.9 years	100% Male 50% African-American 44% Caucasian 6% Hispanic	3.0 all offenses 85% 1-5 victims
Weinrott, Riggan, & Frothingham (1997)	Portland, OR and Echo Glen Children's Center near Seattle, WA	14.7 years	100% Male 94% Caucasian	135 sex offenses 2.9 victims 100% child victims
Wolk (2005)	County juvenile probation department counseling center in TX	15.0 years	100% Male 38% African-American 32% Caucasian 30% Hispanic	90% 1 victim 57% child victims
Worling & Curwen (2000)	Sexual Abuse, Family Education and Treatment Program in Toronto, Ontario (Canada) between October 1987 and October 1995	15.5 years	91% Male	55% child victims

Appendix C

Treatments for Studies in the Evidence Base

Author and Publication Date	Type	Setting	Modality	Length
Barlow (1998)	Unclear but included providers that typically use cognitive-behavioral treatment	Residential	Family	13 months
Byrne (1999)	“Healthy Lifestyles” cognitive-behavioral curriculum	Residential	Group Individual	4 months
Guarino-Ghezzi & Kimball (1998)	Offense specific cognitive-behavioral treatment with peer group confrontation and relapse prevention	Residential	Group	16 months
Kelley, Lewis, & Sigal (2004)	Sex offender specific cognitive-behavioral treatment with milieu, recreational, and adventure-based therapy	Residential	Family Group Individual	12 months
Ownbey, Jones, Judkins, Everidge, & Timbers (2001)	Treatment-oriented foster care program	Community	Individual	NOT REPORTED
Ray, Smith, Peterson, Gray, Schaffner, & Houff (1995)	Therapeutic foster care program	Residential	Family Group Individual	NOT REPORTED
Seabloom, Seabloom, Seabloom, Barron, & Hendrickson (2003)	Cognitive-behavioral treatment with educational and sexual awareness seminars	Community	Family Group Individual	15 months

Author and Publication Date	Type	Setting	Modality	Length
Waite, Keller, McGarvey, Wieckowski, Pinkerton, & Brown (2005)	Self-contained, sex offender specific cognitive-behavioral treatment with relapse prevention	Correctional	Group	24 months
Weinrott, Riggan, & Frothingham (1997)	Vicarious sensitization treatment	70% Community 30% Residential	Individual	3 months
Wolk (2005)	Sex offender specific treatment	Community	Family Group Individual	9-24 months
Worling & Curwen (2000)	Cognitive-behavioral treatment with sexual abuse specific assessment, treatment, consultation, and long-term support	Community	Family Group Individual	24 months

Appendix D

Outcomes for Studies in the Evidence Base

Author and Publication Date	Type	Findings	Recidivism Rates	Follow-up Length
Barlow (1998)	Any Re-offense Sexual Re-offense	No difference between treated and untreated JSO on recidivism rates for either outcome	<u>Treated</u> 5% Sexual Re-offense 30% Any Re-offense <u>Untreated</u> 8% Sexual Re-offense 54% Any Re-offense	1-2 years
Byrne (1999)	Sexual Re-offense Nonsexual Nonviolent Re-offense	No difference between treated and untreated JSO on recidivism rates for either outcome	<u>Treated</u> 0% Sexual Re-offense 36% Nonsexual Re-offense <u>Untreated</u> 13% Sexual Re-offense 75% Nonsexual Re-offense	3 years
Guarino-Ghezzi & Kimball (1998)	Any Re-offense Community Transition	No difference between treated and untreated JSO on recidivism rates Treated JSO had a more successful first aftercare placement	<u>Treated</u> 30% Any Re-offense <u>Untreated</u> 48% Any Re-offense	1 year
Kelley, Lewis, & Sigal (2004)	Behavior Problems Social Competence	No difference in reported behavior problems for treated JSO JSO had greater reported social competence after treatment	NOT APPLICABLE	1 year
Ownbey, Jones, Judkins, Everidge, & Timbers (2001)	Propensity to Re-offend	JSO had lower estimated propensity to sexually re-offend after treatment	NOT APPLICABLE	2 years
Ray, Smith, Peterson, Gray, Schaffner, & Houff (1995)	Overall Functioning	JSO had better reported overall functioning after treatment	NOT APPLICABLE	3 years

Author and Publication Date	Type	Findings	Recidivism Rates	Follow-up Length
Seabloom, Seabloom, Seabloom, Barron, & Hendrickson (2003)	Sexual Re-offense Nonsexual Violent Re-offense	Treated JSO had lower recidivism rates for sexual re-offenses than untreated JSO No difference between groups for nonsexual violent re-offenses	<u>Treated</u> 0% Sexual Re-offense 10% Nonsexual Violent Re-offense <u>Untreated</u> 18% Sexual Re-offense 10% Nonsexual Violent Re-offense	18 years
Waite, Keller, McGarvey, Wieckowski, Pinkerton, & Brown (2005)	Any Re-offense Sexual Re-offense Nonsexual Violent Re-offense Nonsexual Nonviolent Re-offense	Treated JSO had lower recidivism rates for any re-offense and nonsexual violent re-offenses than untreated JSO No difference between groups for sexual and nonsexual nonviolent re-offenses	<u>Treated</u> 5% Sexual Re-offense 47% Any Re-offense 31% Nonsexual Violent Re-offense 11% Nonsexual Nonviolent Re-offense <u>Untreated</u> 5% Sexual Re-offense 71% Any Re-offense 47% Nonsexual Violent Re-offense 19% Nonsexual Nonviolent Re-offense	10 years
Weinrott, Riggan, & Frothingham (1997)	Deviant Sexual Arousal	Treated JSO had lower reported levels of deviant sexual arousal than untreated JSO	NOT APPLICABLE	3 months
Wolk (2005)	Any Re-offense	Treated JSO had lower recidivism rates for any re-offense than untreated JSO	<u>Treated</u> 26% Any Re-offense <u>Untreated</u> 60% Any Re-offense	3 years
Worling & Curwen (2000)	Any Re-offense Sexual Re-offense Nonsexual Violent Re-offense Nonsexual Nonviolent Re-offense	Treated JSO had lower recidivism rates for sexual and nonsexual nonviolent re-offenses than untreated JSO No difference between groups for any and nonsexual violent re-offenses	<u>Treated</u> 5% Sexual Re-offense 35% Any Re-offense 19% Nonsexual Violent Re-offense 21% Nonsexual Nonviolent Re-offense <u>Untreated</u> 18% Sexual Re-offense 46% Any Re-offense 32% Nonsexual Violent Re-offense 50% Nonsexual Nonviolent Re-offense	6 years

Appendix E

Effect Size Calculations for Studies in the Evidence Base

Barlow (1998): The percentage of participants with a conviction for any re-offense or sexual re-offense was entered into a 2X2 table for effect size calculations. The study compared treatment completers with treatment non-completers.

Byrne (1999): The percentage of participants with a conviction for a sexual re-offense or nonsexual nonviolent re-offense was entered into a 2X2 table for effect size calculations. The study compared an experimental group with a comparison group that was not offered treatment.

Guarino-Ghezzi & Kimball (1998): The percentage of participants with an arraignment for any re-offense was entered into a 2X2 table for effect size calculation. For the community transition outcome, the percentage of participants succeeding in first aftercare placement was entered into a 2X2 table for effect size calculations. The study compared an experimental group with an alternative treatment group.

Kelley, Lewis, & Sigal (2004): The mean pre/post score on the total problems and total competence scales of the Child Behavior Checklist (CBCL) were used for effect size calculations. The study analyzed a single group of treated adolescents.

Ownbey, Jones, Judkins, Everidge, & Timbers (2001): The mean scores for baseline and post-propensity to re-offend were entered into a paired samples t-test for effect size calculations. The study analyzed a single group of treated adolescents.

Ray, Smith, Peterson, Gray, Schaffner, & Houff (1995): The mean pre/post scores on the overall level of functioning scale of the Title XIX Mental Health Assessment and Progress Report were used for effect size calculations. The study analyzed a single group of treated adolescents.

Seabloom, Seabloom, Seabloom, Barron, & Hendrickson (2003): The percentage of participants with a charge, arrest, and/or conviction for a sexual re-offense or nonsexual violent re-offense was entered into a 2X2 table for effect size calculations. The study compared treatment completers with treatment non-completers.

Waite, Keller, McGarvey, Wieckowski, Pinkerton, & Brown (2005): The percentage of participants with an arrest for any re-offense, sexual re-offense, nonsexual violent re-offense, or nonsexual nonviolent re-offense was entered into a 2X2 table for effect size calculations. The study compared an experimental group and alternative treatment group.

Weinrott, Riggan, & Frothingham (1997): The mean gain score on phallometric measures was used for effect size calculations. The study compared an experimental group with a wait-list control group.

Wolk (2005): The percentage of participants with an arrest for any re-offense was entered into a 2X2 table for effect size calculations. The study compared treatment completers with treatment non-completers.

Worling & Curwen (2000): The percentage of participants with a criminal charge for any re-offense, sexual re-offense, nonsexual violent re-offense, or nonsexual nonviolent re-offense was entered into a 2X2 table for effect size calculations. The study compared an experimental group with a comparison group of treatment refusers, treatment non-completers, and participants who only received assessment services.