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A Systematic Review of Behavioral Health Interventions for Sex Offenders With Intellectual Disabilities

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Abstract

This article reviews evaluation studies of programs designed to treat sex offenders with intellectual and developmental disabilities (IDD) published in peer-reviewed journals between 1994 and 2014. The design of this study is mirrored after PRISMA (Preferred Reporting of Items for Systematic Reviews and Meta-Analyses) recommendations for conducting a systematic literature review. The study design, study setting, characteristics of participants, type of treatment, and intervention procedures comprise areas of focus for evaluating the implementation of treatment programs. Therapeutic outcomes include changes in attitudes consistent with sex offending, victim empathy, sexual knowledge, cognitive distortions, and problem sexual behaviors. Eighteen treatment evaluation studies were identified from the United States, the United Kingdom, Australia, and New Zealand. Cognitive-behavioral treatments were the most commonly delivered treatment modality to sex offenders with IDD. Other less common treatments were dialectical behavioral therapy, problem solving therapy, mindfulness, and relapse prevention. No randomized controlled trials were identified. The most common designs were multiple case studies and pre- and post-treatment assessments with no control and repeated measures follow-up. Small sample sizes, no control groups, and wide variation in treatment length and follow-up time complicate the qualitative synthesis of study findings. Short follow-up times introduce the potential for bias in conclusions surrounding treatment efficacy for many of the studies reviewed in this analysis. The overall quality of studies examining treatments for sex offenders with IDD is poor and requires further development before rendering firm conclusions about the effectiveness of interventions for this population.

Keywords

sexual offender treatment; special needs; treatment effectiveness

Introduction

It is well established that treatment providers must attenuate the risk of harm to society by delivering effective evidence-based treatments to sex offenders. Cognitive-behavioral

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therapies (CBT) are widely considered the mainstream treatment modality applied to rehabilitate general populations of sex offenders (Keeling, Rose, & Beech, 2008; Wilson, Bouffard, & Mackenzie, 2005; Witt, Greenfield, & Hiscox, 2008). Concerns have arisen, however, surrounding the applicability of traditional CBT modalities to populations of sex offenders, with intellectual and developmental disabilities (IDD; Keeling, Rose, & Beech, 2006a). Guided by the principle that programs must remain responsive to the unique psychosocial needs and risk of relapse presented by the individual, sex offender treatments have emerged that cater to the cognitive, emotional, and behavioral challenges presented by sex offenders with IDD (Allam, Middleton, & Browne, 1997; Aust, 2010; Beech & Ward, 2004; Blacker, Beech, Wilcox, & Boer, 2011; Keeling, Rose, & Beech, 2006b; Taylor, Lindsay, & Willner, 2008). The objective of this article is to identify and gauge the quality of empirical evaluations of programs for sex offenders with IDD using a structured systematic review. First, elucidation of the scope of the problem of sex offenders with IDD is discussed alongside a clinical conceptualization of the rationale behind providing specialized treatments to this population. Subsequently, the analysis will turn to a systematic review to critically examine international evaluations of treatment studies for sex offending behaviors among populations with IDD (Moher, Liberati, Tetzlaff, & Altman, 2009; Swartz, 2011). A qualitative synthesis is provided that discusses what conclusions are possible surrounding the implementation and therapeutic outcomes of treatment for sex offenders with IDD as well as critical areas in need of improvement in future empirical inquiry.

Intellectual Disabilities and Sex Offending Behaviors

It is long understood that deficits in cognitive functioning and emotional regulation place persons with IDD at greater risk of succumbing to involvement in the criminal justice system (Lindsay, 2011; Lindsay, Hastings, & Beech, 2011). It is unclear whether their disproportionate involvement is attributable to a greater propensity toward antisocial criminality or, alternatively, if police officers and legal officials are more likely to interpret “problem behaviors” that come with impairments associated with IDD as criminal behavior and thereby resort to arrest rather than treatment (Holland, Clare, & Mukhopadhyay, 2002). Although persons with IDD comprise between 1% and 3% of the general population in the United States, inmates with IDD are estimated to account for between 4% and 10% of the overall prison population (Petersilia, 2000). There are several systemic factors, however, that present challenges to quantifying differences in criminality between persons with IDD and the general population (Barron, Hassiotis, & Baner, 2002; Craig & Lindsay, 2010). Upon entry into the criminal justice system, those who are identified as having an IDD undergo a process of “filtering” through diversionary programs to secure forensic hospitals and community corrections that underestimate delinquency in this population (Craig & Lindsay, 2010; Petersilia, 2000).

Similarly, persons with IDD often go undetected in criminal justice systems (Barron et al., 2002; Hutchison, Hummer, & Wooditch, 2013; Petersilia, 2000). Offenders in the United States with IDD are rarely screened through psychological testing prior to court hearings, hastily confess and waive Miranda rights during encounters with law enforcement, and do not understand self-incrimination (Petersilia, 2000). Finally, criminal justice administrators and officers are often reluctant to accept persons who are identified with IDD into their

facilities due to a lack of training and available services (Hutchison et al., 2013). Variance in inclusion criteria, sampling, and IQ thresholds further complicate empirical estimates of the co-occurrence of IDD and delinquency (Lindsay, 2002). Measuring rates of sex offending among persons with IDD is equally challenging. Hayes (1991) found rates of sex offending among persons with IDD that paralleled rates of sex offending among mainstream populations. Conversely, several studies have found higher rates of prior sex offending among inmates with IDD (Glaser & Deane, 1999; Gross, 1985; Murphy, Coleman, & Haynes, 1983). For instance, Gross (1985) identified between 21% and 51% of offenders with IDD reported a history of a sexual offense.

Following incarceration, persons with IDD exhibit overall rates of recidivism that exceed rates in the general population (Camilleri & Quinsey, 2011; Heaton & Murphy, 2013; Klimecki, Jenkinson, & Wilson, 1994; Lambrick & Glaser, 2004; Lindsay, Elliot, & Astell, 2004; Polaschek, 2003). Klimecki et al. (1994) found an overall recidivism rate in Australia of persons with IDD of 41%. In addition to overall recidivism, sex offenders with IDD experience high rates of recidivism relative to mainstream sex offenders. A meta-analysis of 61 follow-up studies with an aggregate sample size of 23,393 participants identified an overall recidivism rate of 13.4% among general sex offender populations (Hanson & Bussiere, 1998). After 5 years, a 20-year follow-up evaluation found an overall recidivism rate of 43% among sex offenders with IDD (Lindsay, Steptoe, Wallace, Haut, & Brewster, 2013). One must exercise caution, however, when interpreting estimates of recidivism among persons with IDD. The social environment of persons with IDD is characterized by stricter general social control by parents, community neighbors, and employers than non-IDD populations, which increases the probability of detecting sexually abusive behaviors (Lindsay et al., 2004; Lindsay & Michie, 2013). This may explain higher rates of sexual recidivism rather than an individual predisposition to reoffending.

Several evaluation studies have put forth specialized and adapted treatment approaches to reduce rates of recidivism and address the needs of sex offenders with IDD. Sex offenders with IDD may lack the skills necessary to effectively modulate emotions, endure distress, tolerate frustration, communicate feelings, process new information, comprehend social norms and accurately interpret socio-sexual cues (Nezu, Nezu, & Dudek, 1998). There is a greater likelihood that sex offenders with IDD struggle with diminished problem-solving skills, and deficits in expressing emotions (Nezu et al., 1998). Taken together, these challenges have motivated the development of specialized treatment programs for sex offenders with IDD.

Method

The following study synthesizes findings surrounding the effectiveness of therapeutic treatments for sex offenders with IDD. This systematic review builds upon prior literature reviews examining treatments for sex offenders with IDD (e.g., Courtney & Rose, 2004; Craig, Stringer, & Moss, 2006; Keeling et al., 2008; Lindsay, 2002) by (a) covering multiple treatment modalities (individual or group), (b) providing a more detailed accounting of treatment procedures (implementation variables), (c) examining how cognitive (i.e., knowledge, attitudes) and behavioral changes were measured, and (d) analyzing how these

studies followed participants to longitudinally assess treatment outcomes post-intervention. In recent years, several new empirical program evaluation studies have arisen that are yet to be qualitatively synthesized. Using a structured systematic review methodology, the quality of studies are judged based on the following factors: (a) overall study design and sample size; (b) explanation and measurement of variation in treatment settings; (c) explanation, standardization, and measurement of treatment procedures; (d) loss to follow-up; (e) length of follow-up time; (f) psychometric measures of changes in knowledge and attitudinal and cognitive outcomes; and (g) the conceptualization and measurement of recidivism/sexually abusive behaviors. The framework used to structure the review of literature and evaluate the quality of studies embraces the PRISMA (Preferred Reporting Items for Systematic Reviews) framework. PRISMA permits inclusion and qualitative evaluation of a constellation of study designs while remaining loyal to a rigorous review methodology (Moher et al., 2009; Swartz, 2011).

Figure 1 presents the PRISMA flow diagram of the steps and procedure used to identify and select records for inclusion in this analysis. Studies evaluating the effectiveness of behavioral treatments for sex offenders with intellectual disabilities were located through searching five online databases: (a) Ovid-MEDLINE, (b) PsycINFO, (c) PubMed, (d) ProQuest, and (e) ScienceDirect. Searches were performed in December, 2014, and employed the following search terms: “sex offen*,” “developmental disab*,” “intellect* disab*,” “retard*.” The initial review of literature revealed 832 records based upon combinations of the search terms. For each database, the search was restricted to a 20-year period between 1994 and 2014 and was designed to retrieve only articles that were published in peer-reviewed journals. Reference lists were consulted in every article for additional studies using the “ancestry approach” successfully developed by Johnson (1993) and implemented in a prior narrative review of mindfulness-based interventions for persons with IDD by Harper, Webb, and Rayner (2013). Ancestry analysis revealed an additional 15 potential records for inclusion in the study. Using the structured systematic review method and the ancestry approach, a total of 846 records published between 1994 and 2014 underwent initial screening, 348 records remained after excluding duplicates and 312 were excluded on the basis of not being a treatment evaluation study or not having relevant content. The first stage of record selection identified 36 articles for full-text screening.

In the second stage, the remaining 36 articles were further screened using several inclusion criteria. At minimum, the characteristics of the study sample included a numeric or categorical classification of level of intellectual functioning (e.g., mild or borderline IDD), sample size, average age, and gender. The study sample was required to consist entirely of sex offenders with IDD and the primary objective of treatment was restricted to reducing problematic sexual behaviors. All study participants were required to have an index offense (i.e., the offense leading to the most recent arrest before starting treatment) of sex offending or were referred to a sex offending treatment program for inappropriate sexual behaviors. Studies that focused on treatments for problem behaviors among persons with IDD (e.g., aggression, angry outbursts) with a small subset of subjects who also have histories of problematic sexual behaviors were excluded from consideration. Implementation variables were required to include length and frequency of sessions, topics covered during sessions, duration of treatment period, treatment modality, and methods of delivering treatment. In

addition to implementation variables, studies were required to have specified how therapeutic outcomes were measured through either preexisting standardized psychometric instruments or questionnaires designed by the study's authors explicitly for evaluation of treatment effectiveness. Specifically, studies were included if any of the following outcome variables were measured: victim empathy, sexual knowledge, attitudes in favor of offending, cognitive distortions, and behavioral recidivism or relapse. Pharmacological studies and single case study designs were not included in the review. Applying the inclusion criteria to the remaining 36 articles excluded five studies on the basis of missing details on treatment, one on the basis of studying only referral characteristics, one as an unpublished manuscript (identified using ancestry analysis), two for evaluating pharmacological interventions, two as a prevalence or recidivism study, three for conducting an implementation study, and four for not focusing exclusively on treating sex offending among persons with IDD (refer to Figure 1). After screening for content relevance and eligibility based on inclusion criteria, 18 studies were selected for inclusion in the final systematic review. Two articles, Murphy et al. (2010) and Heaton and Murphy (2013), were written on the same study and are thus analyzed together.

Results

Study Characteristics

Study design—Table 1 summarizes study designs, sample characteristics, and treatment procedures for the 18 studies included in the systematic review. Several different designs were employed to evaluate treatments for sex offenders with IDD. Five articles utilized a single treatment group study design with no comparison group that assessed respondents at baseline, post-treatment, and at follow-up (Craig, Stringer, & Sanders, 2012; Lindsay & Smith, 1998; Murphy, Powell, Guzman, & Hays, 2007; Murphy et al., 2010; Rose, Rose, Hawkins, & Anderson, 2012). Three articles employed a single treatment group study design with no comparison group that assessed subjects at baseline and post-treatment but did not follow-up after completion of treatment (Keeling, Rose, & Beech, 2006b; O'Conner, 1996; Rea, Dixon, & Zettle, 2014). Six articles used multiple case study designs with baseline, post-treatment, and follow-up assessments (Craig et al., 2006; Lindsay, Marshall, Neilson, Quinn, & Smith, 1998; Lindsay, Neilson, Morrison, & Smith, 1998; Lindsay, Olley, Baillie, & Smith, 1999; Rose, Jenkins, O'Connor, Jones, & Felce, 2002; Sakdalan & Collier, 2012), and one multiple case study design was included with no follow-up assessment (Singh et al., 2011). Finally, three studies employed quasi-experimental designs (Keeling, Rose, & Beech, 2007; Lindsay, Michie, Steptoe, Moore, & Haut, 2011; Michie & Lindsay, 2012). Michie and Lindsay (2012) designed a study consisting of two groups of sex offenders with IDD. One group received CBT alone and another received CBT plus an additional victim empathy component. Lindsay, Michie, Steptoe, Moore, & Haut (2011) compared the effects of treatment on a group of sex offenders with IDD convicted of sex offenses against women and another group convicted of sex offenses against children. Finally, out of all the studies, only one quasi-experimental study compared the effects of an adapted treatment for sex offenders with IDD to the effects of a mainstream CBT for a population of sex offenders without IDD. No randomized controlled trials were identified.

Sample characteristics—Overall, the sample size across all 18 studies ranged from 4 (Lindsay, Neilson et al., 1998) to 46 (Murphy et al., 2010) and the age of participants spanned from adolescence to the mid-50s. The IQ of the study participants ranged from the upper 50s to the low 80s with most studies falling between 65 and 75. Significant heterogeneity existed across the index offenses represented by the samples in the studies. Three studies examined the effects of treatment on samples of sex offenders convicted of the same index offenses (Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay et al., 2011). The samples of the remaining 15 studies were heterogeneous and represented a mixture of many different types of problematic sexual behaviors. Treatment programs for sex offenders with IDD were implemented in a variety of settings and nations including prisons, hospitals, assisted living arrangements, and private homes in the United Kingdom, the United States, New Zealand, and Australia. Twelve studies were conducted in the United Kingdom (Craig et al., 2006; Craig et al., 2012; Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay et al., 2011; Lindsay et al., 1999; Lindsay & Smith, 1998; Michie & Lindsay, 2012; Murphy et al., 2007; Murphy et al., 2010; Rose et al., 2002; Rose et al., 2012), three studies were conducted in Australia (Keeling et al., 2006b, 2007; O'Connor, 1996), two in the United States (Rea et al., 2014; Singh et al., 2011), and one in New Zealand (Sakdalan & Collier, 2012).

Treatment Procedures

Cognitive-behavioral therapy—Thirteen studies evaluated purely CBT interventions (Craig et al., 2006; Craig et al., 2012; Keeling et al., 2006b, 2007; Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay et al., 2011; Lindsay et al., 1999; Lindsay & Smith, 1998; Murphy et al., 2007; Murphy et al., 2010; Rose et al., 2002; Rose et al., 2012). Treatment procedures were largely standardized and provided weekly group sessions ranging from 2 to 2.5 hr in length. Topics included sex education, confidentiality, pathways into offending, legal details around offending, motivation to offend, cognitive distortions, victim empathy, relapse prevention, cycle of offending, sexual fantasy, masturbation, assertiveness, listening skills, stimulus avoidance, and appropriate sexual relationships. The method of treatment delivery consisted of role-plays, watching videos, occasional quizzes, didactic presentations, group exercises, games, and group discussions. Excluding multiple case studies, the mean length of treatment for all studies using CBT was 13.5 months (range = 4–36 months). Concepts were modified to account for cognitive impairments by reducing the amount of didactic time spent teaching, increasing the number of games, reducing the time of sessions, allowing for and encouraging questions, incorporating living skills and healthy relationship training, simplifying concepts, and adding more information into sex education (Craig et al., 2006; Craig et al., 2012; Keeling et al., 2006, 2007; Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998). Evaluation studies were conducted in community or prison settings. For interventions in community settings, participants were from a variety of living arrangements including assisted living situations and private homes with families. Many participants were either on probation or some form of 24-hr supervision. For some studies, the samples represented a mixture of different living arrangements and levels of supervision.

Table 2 synthesizes post-treatment results, follow-up results as well as strengths and limitations for every study in the systematic review. Studies using CBT suggest that significant treatment gains were observed at follow-up on knowledge, attitudes, cognitive, and behavioral measures. For instance, Murphy et al. (2007) and Murphy et al. (2010) observed significant increases in positive sexual attitudes and knowledge as measured on the Sexual Attitudes and Knowledge Scale (SAKS; Langdon, Maxted, Murphy, & Group, 2007). Using another measure, Rose et al. (2002) identified an increase in sexual knowledge on the Sexual Behavior and the Law (SBL) scale. In addition to the SBL scale and SAKS, significant gains were found in reducing attitudes in favor of sex offending and changing cognitive distortions that rationalize sex offending on the Questionnaire on Attitudes Consistent with Sex Offending scale (QACSO; Broxholme & Lindsay, 2003; Lindsay, Carson, & Whitefield, 2000) in 6 studies (Craig et al., 2012; Keeling et al., 2007; Lindsay et al., 2011; Murphy et al., 2007; Murphy et al., 2010; Rose et al., 2012). Lindsay and Smith (1998) found a reduction in attitudes consistent with indecent exposure on a scale designed by the study authors. Multiple case studies support these findings, showing reductions in attitudes consistent with exhibitionism (Lindsay, Neilson, et al., 1998), attitudes consistent with sex offending against children among adult men (Lindsay, Marshall, et al., 1998), and attitudes consistent with sex offending among a sample of adolescent boys with IDD (Lindsay et al., 1999). Contrary to several other studies, Rose et al. (2002) did not observe a significant change in attitudes as measured by the QACSO, which could potentially be attributed to the short, 16 weeks, duration of treatment. Significant improvements in victim empathy were identified in five out of six CBT studies that used the Victim Empathy Scale (VES/QVES; Beckett & Fisher, 1994; Craig et al., 2012; Keeling et al., 2006b, 2007; Murphy et al., 2007; Murphy et al., 2010). Overall, the change in empathy was not significant in the study by Rose et al. In addition to pure CBT interventions, Michie and Lindsay (2012) found that participants who received an additional victim empathy component scored higher on the Interpersonal Reactivity Index (Davis, 1980) than a control group of sex offenders with IDD receiving only a standard regimen of CBT. The increase in victim empathy was sustained at 3-, 6- and 9-month follow-up.

Out of the 13 CBT studies, 7 studies collected only behavioral assessments at follow-up (Craig et al., 2006; Craig et al., 2012; Keeling et al., 2007; Lindsay et al., 2011; Lindsay et al., 1999; Murphy et al., 2007; Rose et al., 2012), 5 studies collected both cognitive and behavioral assessments (Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay & Smith, 1998; Murphy et al., 2010; Rose et al., 2002), and 1 performed no follow-up assessment (Keeling et al., 2006b). Methods of measuring behavioral outcomes consisted of official reports from legal reconviction, and information from police officers, mental health workers, and probation officers. No further sexually abusive behavior was documented during the follow-up period for 7 out of the 12 studies that collected behavioral data (Craig et al., 2006; Craig et al., 2012; Keeling et al., 2007; Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay et al., 1999; Rose et al., 2002). The greatest rates of problematic sexual behaviors were found in studies that collected data from both official and unofficial sources (Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Lindsay et al., 2011; Murphy et al., 2010; Murphy et al., 2013; Rose et al., 2002). The follow-up period coupled with official and unofficial recidivism data in the study by Murphy

et al. (2010) and the follow-up by Heaton and Murphy (2013) detected behavioral recidivism in nearly a third (32%) of the sample.

Out of the five studies that collected follow-up data on cognitive change, three studies found that for some sex offenders with IDD attitudes consistent with sex offending and cognitive distortions approached pre-intervention levels (Lindsay, Marshall, et al., 1998; Lindsay, Neilson, et al., 1998; Rose et al., 2002). In the study by Rose et al. (2002), attitudes in favor of offending on the QACSO and internal locus of control on the Nowicki–Strickland (NS; Nowicki, 1976) scale approached preintervention levels. Findings by Lindsay and Smith (1998) suggest that cognitive changes could be a function of the duration of treatment. Cognitive changes for sex offenders who underwent a 2-year treatment program were sustained during follow-up as opposed to a diminishing effect of treatment in the group receiving treatment for 1-year (Lindsay & Smith, 1998). A more recent treatment evaluation by Murphy et al. (2010) coupled with a follow-up on participants by Heaton and Murphy (2013) found that gains in attitude change were sustained over a 44-month period of follow-up.

Problem solving therapy—One study evaluated the use of problem solving therapy (PST) to treat sex offenders with IDD in Australia (O’Conner, 1996). The PST intervention consisted of a combination of weekly individual (1 hr) and group (2 hr) sessions and spanned the duration of probation, ranging from 7 to 24 months. The sample of 13 men resided in community residential units, boarding houses, secure forensic units, and in the general community. PST builds upon concepts from applied behavioral analysis to identify links in chains of behavior. In the study by O’Connor (1996), behavior chain analysis identified contingencies that maintained sexually abusive behavior, inhibited healthy relationships, and increased the likelihood of substance abuse. Once these contingencies were identified, participants engaged in a discourse around solving whatever potential problems might arise in many different scenarios where sexual abuse could occur. Similar to relapse prevention, participants were taught to anticipate and plan for as many different scenarios that could lead to recidivism as possible (O’Conner, 1996). Participants were encouraged to identify and share issues surrounding sexual deviancy that may arise in between sessions. Overall, participants reduced minimization and denial, increased knowledge of the consequences of sex offending, and increased coping skills. Clinical observation revealed an increase in internal locus of control, and participants were afforded more community access and required less intensive supervision following the treatment. No follow-up assessments were collected from participants.

Dialectical behavioral therapy—One study integrated CBT and dialectical behavioral therapy (DBT) to provide a treatment program to sex offenders with IDD. Sakdalan and Collier (2012) evaluated an integrated, CBT/DBT treatment program provided to three sex offenders with IDD residing in community and forensic secure facilities in New Zealand. Treatment consisted of 2-hr weekly group sessions with 1-hr weekly individual psychotherapy that lasted for 7 months. CBT was coupled with an adapted DBT component titled *Wise Mind–Risky Mind*. Participants exhibited reduced scores in Sexual Violence Risk (SVR; Boer, Frize, Pappas, Morrissey, & Lindsay, 2010), an increase in sexual knowledge

on the Assessment of Sexual Knowledge scale (Langdon et al., 2007) and the Sex Offender Self-Appraisal Scale (SOSAS; Bray & Forshaw, 1996), a decrease in attitudes in favor of sex offending on the QACSO (Broxholme & Lindsay, 2003; Lindsay et al., 2000), and an increase in victim empathy on the VES (Beckett & Fisher, 1994). Cognitive gains and reductions in problematic sexual behaviors according to program staff were sustained a full year after treatment. Without a comparison group, it is not possible to parse out the added benefit of providing DBT in addition to CBT in maintaining behavioral and cognitive change over time.

Mindfulness—Singh et al. (2011) provided a mindfulness intervention to three intellectually disabled sex offenders in a secure forensic treatment facility in the United States. Treatment consisted of 1-hr weekly mindfulness training and practice sessions that lasted a year. Homework assignments included a log to record sexual arousal and incidents in which mindfulness was practiced. The mindfulness skills that were taught consisted of *meditation to the soles of the feet* and *mindful observation of thoughts*. All three participants reported that mindfulness practice was more effective than relying on their own preexisting self-control methods and reported a reduction in deviant sexual arousal at the end of treatment. No follow-up assessments were collected on participants following the mindfulness intervention.

Relapse prevention—One study evaluated a 3-month, relapse prevention treatment program consisting of 1-hr weekly sessions delivered to 10 participants (Rea et al., 2014). Companions accompanied subjects out of the secure treatment setting into the community to evaluate the generalization of relapse prevention skills that were learned in the weekly sessions. Groups focused on the development of individualized relapse prevention plans consisting of 11 clinically relevant alternatives to behaviors associated with an increased risk of offending, including contact with potential victims and rules for behavior in certain contexts (e.g., bathrooms). Participants were evaluated on how frequently they generalized clinically relevant behaviors learned in treatment to the community. Behaviors with high generalization consisted of avoiding physical contact with potential victims and avoiding looking at potential victims. Partial generalization was achieved for looking in the other direction, avoiding potential victims in close proximity, avoiding looking at potential victims from a distance, and keeping distance and selecting routes of travel that would contact with potential victims. Poor generalization occurred for the skill of avoiding locations where potential victims congregate. No follow-up was performed.

Discussion

The studies included in this systematic review provide a foundation for understanding what works in implementing interventions for sex offenders with IDD. CBT interventions are the most widely investigated treatment modality and exhibit promising results in reducing the risk of recidivism among sex offenders with IDD. These findings are tempered, however, by the severe lack of empirical inquiry into other treatment modalities. The positive results provided by studies on relapse prevention, problem solving, mindfulness, and DBT justify larger, integrated, and more rigorous treatment evaluations in the future. Nonetheless, studies examining sex offender treatment for persons with IDD are riddled with shortcomings that

require immediate attention in order to move the field of sex offender treatment forward in a positive direction. Five areas of concern are illuminated in the following sections.

Study Design

Small sample sizes lacking comparison groups severely limited the capacity to generalize findings from treatment evaluations to all sex offenders with IDD. A majority of the studies were multiple case or single treatment group designs. The only study with a mainstream sex offender comparison group by Keeling et al. (2007) suffered from several flaws. Most notably, the intervention was not identical between comparison groups. The mainstream sex offender group received a traditional CBT intervention and the special needs group received an intervention that was modified to account for cognitive impairment. Another severe limitation is that follow-up only occurred on the special needs group. Out of all the studies, none used a randomized controlled trial design or adopted an intent-to-treat analysis, and very few reported data on either attrition or loss to follow-up. In addition to limitations in the design and sample size of studies, a wide variation in the length of interventions raises questions about the optimal dose of treatment to incite positive behavior change. For instance, the range in duration for the CBT interventions was from 4 to 36 months. It is not possible to compare results across studies with such divergent doses of treatment. These study design problems complicate the accumulation of evidence-based practices for the effective treatment of this population.

Treatment Settings

None of the studies, sampling from a combination of community, prison custodial, and secure hospital settings, accounted for the potential impact of treatment settings on the effective delivery of treatment. While it may not be feasible given internal agency and referral requirements to conduct separate research studies for different settings, it is possible to present data that permit analysis of how the therapeutic environment of the setting impacted implementation and key treatment outcomes. One potential method of quantifying the effect of the milieu in multiple setting treatment evaluations consists of research studies with sufficient sample size to have comparison groups of sex offenders with IDD in prison custodial, forensic hospitals, and community environments receiving the same standardized treatment and follow-up period. Interventions within secure settings such as prisons and hospitals suggest promising results during the treatment time, but it is inconclusive if these programs have a positive effect following completion because many lacked follow-up assessments. It is imperative that future studies in secure settings incorporate follow-up assessments of how skills learned during the treatment are generalized to the community settings. One cogent recommendation that emerges from this systematic review is to connect cognitive follow-up assessments with ongoing treatment sessions beyond the initial period of the intervention. For sex offenders with IDD whose attitudes and cognitive distortions approach pre-intervention levels, “booster sessions” may serve a preventative function against further recidivism.

It is important to mention that the core philosophy behind any cognitive-behavioral skills-based treatment is diametrically opposed to treating offenders in a prison context. Offenders must have ample opportunity to practice and generalize skills, for contingency management,

for stimulus aversion, and for relapse prevention plans in real-world contexts. Nonetheless, treatment providers are left to balance needs of rehabilitation and contributions by psychological science with the security concerns imposed by the general public and society. These concerns are a function of national, state, and local jurisdictional considerations. Clinicians and social scientists must operate within the confines of legal restrictions even though the most promising setting for delivering treatment and managing risk for most sex offenders is close supervision in the community.

Disclosure

The failure to disclose important information plagued the studies included in this analysis. Information was not disclosed on treatment procedures or content of concurrent or supplemental interventions that might have occurred alongside any of the treatment evaluations. In addition to concurrent treatments, it is unclear how the interventions discussed in this analysis were modified or adapted to specifically address the treatment needs of sex offenders with IDD. It is insufficient for studies to state that adaptations to meet the needs of sex offenders with IDD mirrored prior empirical evaluation studies (i.e., Rose et al., 2012). For cognitive-behavioral interventions in particular, concepts of victim empathy, sex education, attitudes in favor of offending, and cognitive distortions are essential components to mainstream sex offender treatment programs, yet, for most studies, it was unclear how this content was modified to treat sex offenders with IDD. A rigorous treatment evaluation study hinges upon clear disclosure and explanation of all treatment procedures and alterations to existing treatment modalities to adapt to the needs of specific populations. It is ethical and prudent to provide an adequate empirical explanation for the reasons that justify treating a subset of an offending population separately and the exact ways in which standard treatment is modified to deliver care. These programs are denoted “specialized,” yet, in practice, insufficient information is disclosed regarding how treatment programs were augmented to account for cognitive impairments. Finally, there are no studies comparing the impact of adapted to nonadapted treatments on reducing recidivism among sex offenders with IDD. Without rigorous comparison studies, no empirical justification exists, suggesting that traditional treatments would not work with this population.

Severity of Intellectual Disability

Every sample consisted of only higher functioning respondents with mild–moderate severity at the expense of including a representative sample of sex offenders with IDD. One must remain cognizant of the heterogeneous nature of persons with intellectual disabilities and autism spectrum disorders. Many of the studies evaluate treatments on samples whose mean IQ falls within the diagnostic range of “borderline IDD” (IQ between 71 and 85) or “mild” (IQ between 55 and 70). Thus, it is not possible to draw any conclusions regarding the efficacy of treatments for sex offenders with IDD whose impairments are greater than mild–moderate in severity. In addition, these studies relied predominantly upon IQ tests to measure intellect. IQ and referral from an outside agency were the most common methods of gaining entry into clinical studies. The measurement of IQ provided by the Wechsler Adult Intelligence Scale (WAIS) and the Wechsler Intelligence Scale for Children (WISC) is a limited indication of cognitive functioning that could be enriched through inclusion of other tests namely the Vineland Adaptive Behavior Scale (VABS; Sparrow, Balla, & Cicchetti,

1984) or the British Picture Vocabulary Scale (BPVS-II; Dunn, Dunn, Whetton, & Burley, 1997). Multiple measurements shed insight into other aspects of cognitive impairment such as communication and adaptive functioning that are not necessarily illuminated by verbal, performance, and full scale IQ scales on the WAIS and WISC (Wechsler, 1997). In addition to multiple measures of cognitive functioning, clinical assessments and collateral information from primary therapists, counselors, and other mental health professionals are an essential component of ascertaining a true picture of the deficits imposed by intellectual disability. Details from clinical assessments were not disclosed in any of the studies.

Measurement of Recidivism

Finally, inconsistencies in the measurement of behavioral outcomes were widespread in this systematic review of treatments for sex offenders with IDD. Four studies provided no information on the source of reconviction data, and several additional studies relied entirely on official reconviction data to measure behavioral outcomes. The most sophisticated measurement of behavioral outcomes consisted of routine case conferences involving social service providers, probation officers, and other formal human service workers. Not a single study mentioned the use of family information as a source of follow-up data. Overreliance upon measurement of recidivism using official legal sanctions and unofficial reports from treatment providers may overlook more elusive acts of violence that are only apparent to family members, close friends, and intimate partners.

In addition to limitations in data on behavioral outcomes, wide variation in the length of post-treatment follow-up biases interpretation of treatment gains in sex education, attitudinal change, cognitive distortions, and sexual recidivism over time. Studies that employed longer follow-up periods facilitated detection of greater rates of recidivism. Conversely, shorter windows of follow-up distorted treatment findings and introduced bias into empirical analysis. This is confirmed in a follow-up study conducted by Lindsay et al. (2002) that found reoffending rates climbed from 4% after 1 year to 21% after 4 years. The studies reviewed in this analysis appear to mirror the rise in recidivism highlighted by Lindsay et al. (2002). In the studies reviewed for this analysis, four studies whose follow-up window was restricted to 16 months or less found no recidivism (Craig et al., 2006; Craig et al., 2012; Keeling et al., 2007; Rose et al., 2002). Conversely, 23.3% of participants recidivated in the study that followed respondents for 36 months (Lindsay et al., 2011). Similarly, the studies by Murphy et al. (2010) and Heaton and Murphy (2013) found recidivism increased from 3 out of 46 participants after 6 months to 11 out of 36 participants after 44 months of followup. It is uncertain how sex offenders with IDD will fare after much longer periods. After 20 years, it is estimated that rates of recidivism in the general sex offending population will approach 30% to 40% (Hanson, Morton, & Harris, 2003). This rate may be much higher for sex offenders with IDD. While the sample sizes of these studies are too low to render firm conclusions, wide discrepancies in recidivism rates appear to depend upon the length of follow-up. Effectiveness could be a function of the window of follow-up rather than the treatment itself.

Conclusion

Several recommendations emerge from the following analysis. Social scientists must be more thorough in describing study procedures. This includes collecting and disclosing data on clinical assessments to enrich an understanding of the degree of impairment of study participants. Moreover, future studies would benefit from a clearer explication of how treatment modalities were modified to account for sex offenders with IDD. Researchers must take every measure to standardize knowledge, attitude, and behavioral outcome measurement instruments across studies and against multiple populations. The design of future treatment studies must hardwire relapse prevention and maintenance therapy to ensure skills are generalized and gains are maintained over time. More implementation studies, stakeholder analyses, and process evaluations are in order that incorporate the perspectives of program staff. The demands imposed upon treatment providers to maintain an effective therapeutic environment when working with such a challenging population remain absent from empirical analyses. Studies must evaluate the impact of staff burnout and institutional culture on treatment outcomes. More work is needed to better conceptualize recidivism and problem sexual behaviors in this population. Few studies measured unofficial recidivism and those that did failed to specify the behaviors that constitute more subtle forms of sexual recidivism. Future studies must gather as much collateral information from multiple domains when assessing recidivism. Of equal importance, wide variance in follow-up times renders firm conclusions surrounding treatment efficacy problematic. Longer periods of follow-up detect greater rates of recidivism. Shorter periods restrict the window of opportunity for detection, thus introducing a bias into studies that claim reductions in recidivism after a short post-treatment period. Every effort must be made to issue reports summarizing recidivism as frequently as possible along a wide follow-up period.

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Figure 1.

PRISMA flow diagram for study selection.

Note. PRISMA = Preferred Reporting of Items for Systematic Reviews and Meta-Analyses.

Table 1

Study Design, Characteristics of Sample, and Treatment Procedures.

Authors	Design	Sample characteristics (age, IQ, setting, index offense)	Treatment procedures/content
Craig, Stringer, and Moss (2006)	Pre-post multiple case study with follow-up	<i>N</i> = 6 (all men); age/IQ WAIS-III/setting/index offense: S1 20/66/assisted residential home/indecent exposure, sexual assault with adults; S2 25/73/assisted residential home/sexual behavior with children; S3 37/<70/assisted residential home/sexual behavior with children; S4 19/80/assisted residential home/indecent photos of children; S5 22/71/private home with family/sexual behavior with children; S6 17/75/private home with family/inappropriate sexual behavior with children; (IQ range = 66–80) All subjects received 24-community supervision in United Kingdom	CBT for 7 months in 2-hr weekly group sessions with discussion videos, quizzes, drawings, pictures, and role-plays covering sex education, legal issues, challenging cognitive distortions, victim empathy, relapse prevention, cycle of offending, sexual fantasy and masturbation. <i>Adapted for IDD</i> complex language minimized concepts pictorially, material covered at a slower pace and frequent repetition of concepts
Craig, Stringer, and Sanders (2012)	Pre-post no comparison group with follow-up	<i>N</i> = 14 (all men); mean age 35 (range = 18–60); mean IQ WAIS-III 73.64 (range = 67–79); 38% autism ^a ; mean VABS (years) overall 14.01, communication 11.29, socialization 14.71 years, living skills 16.03; mean BPVS (years) 14.12; risk Level (RRASOR): 14.3% low risk, 57.2% medium risk, 28.6% high risk 93%; (13) sexual contact with child 7% (1) convicted of rape of adult; community in United Kingdom	CBT for 14 months in 2-hr weekly group sessions with discussions, videos, quizzes, drawings, role-plays, pictures and games covering sex education, legal issues, cognitive distortions, victim empathy, relapse prevention, cycle of offending, sexual fantasy and masturbation. <i>Adapted for IDD</i> content simplified, drama-therapy techniques introduced, symbols used and number of written tasks reduced
Keeling et al. (2006b)	Pre-post no comparison group with no follow-up	<i>N</i> = 18 (all men); mean age 35.22 (range = 25–46); mean IQ (WAIS-III) 71.78; 50% (9) child sex offense, 33% (6) rape of adult; 11% (2) both adult and child; prison in Australia	CBT for 12 months in 2.5-hr group sessions four times a week. Delivery of content was unspecified. Topics covered were communication, problem solving, decision-making, sex education, disclosure, victim empathy, emotions, sexual self-regulation, cognitive distortions, life time patterns of offending, relationships, offense cycle, goal setting, old me/new me and relapse prevention. <i>Adapted for IDD</i> duration reduced from 3 to 2.5 hr, length extended from 8 to 10 months to 12 months, number of days reduced from 5 to 4 days a week, drama-therapy techniques, used Old Me/New Me model and fewer written tasks and materials
Keeling, Rose, and Beech (2007)	Pre-post with comparison group and follow-up	<i>N</i> = 22 (all men) in two groups <i>n</i> = 11 each (G1/G2); G1 (special needs group): mean age 37.83 (25–46); mean IQ (WAIS-III) 71.0 (63–83; 4 with TBI); G1 (mainstream group): mean age (years) 45.73 (23–67), IQ (not measured) G1 and G2: 5 child, 4 adult, 2 child and sex offenses; prison in Australia	CBT using same treatment program and adaptation for sex offenders with IDD detailed in a prior study by Keeling et al. (2006, see above)
Lindsay, Neilson, Morrison, and Smith (1998)	Pre-post multiple case study with follow-up	<i>N</i> = 4 (all men); age/IQ (WAIS-R): S1 25/65; S2 29/71; S3 31/68; S4 40/64; (IQ range = 64–71) exhibitionism; community (probation) in the United Kingdom	CBT for total time on probation (varied) in 2.5-hr weekly group sessions with discussions, visual presentations using slides, analysis of scenarios covering denial of offense, denial of intent, accepting responsibility, confidentiality, harm to victim, victim empathy, stimulus avoidance, challenging cognitive distortions, psychoeducation of behaviors consistent with offending. <i>Adapted for IDD</i> concepts around taking responsibility for offense simplified
Lindsay, Marshall, Neilson, Quinn, and Smith (1998)	Pre-post multiple case study with follow-up	<i>N</i> = 6 (all men); age/IQ (WAIS-R): S1 28/68; S2 24/65; S3 29/71; S4 29/67; S5 29/66; S6 52/62 (IQ range = 62–71); all sex offenses with children	CBT for time on probation (varied) in 2.5-hr weekly group sessions with discussions, visual presentations using slides, analysis of scenarios that covered denial of the offense, denial of intent, accepting responsibility, confidentiality, victim empathy, relapse prevention, consequences of

Authors	Design	Sample characteristics (age, IQ, setting, index offense)	Treatment procedures/content
		community (probation) in United Kingdom	reoffending. <i>Adapted for IDD</i> concepts around responsibility for offense simplified, more pictures incorporated
Lindsay and Smith (1998)	Pre-post no comparison group with follow-up	$N = 14$ in two groups (all men) G1 (1 year probation); G2 (2 years probation); G1 $n = 7$; mean age 35.7; mean IQ (WAIS-R) 67.7; 3 sex offense against children, 4 indecent exposure; G2 $n = 7$; mean age 32.8; mean IQ 69.2; 5 sex offense against children, 2 indecent exposure; community (probation) in United Kingdom	CBT for 12 months G1/24 months G2 in 2.5-hr weekly group sessions with group discussions, visual presentations using slides, analysis of scenarios, that covered denial, responsibility for the offense, denial of intent, victim empathy/ victim awareness, challenging, problem solving, cognitive distortions and confidentiality
Lindsay, Olley, Baillie, and Smith (1999)	Pre-post multiple case study with follow-up	$N = 4$ (all male adolescents); age/IQ (WAIS-R/WISC-R)/index offense: S1 17/73/public masturbation; S2 15/66/sex offenses against boys ages 7–11; S3 18/75/indecent exposure, sexual assault 12-year-old girl; S4 15/68/sexual assault/rape IQ (range = 68–75); 3 probation/1 in residential in United Kingdom	CBT for 12 months in 2.5-hr weekly group sessions with role-plays, group discussions, and visual presentations that covered denial (of offense, intent, responsibility, harm to victim), cognitive change strategies, challenging cognitive distortions through Socratic questioning and cognitive dissonance, problem solving, and behavior analysis
Lindsay et al. (2011)	Pre-post comparison group with follow-up	$N = 30$ two groups (G1 and G2; all men) $n = 15$ each; G1 mean age 32.7; mean IQ ^a 65.4; sex offenses against women; G2 mean age 36.4; mean IQ 63.2; sex offenses against children; community in United Kingdom	CBT for 36 months in 2-hr. weekly group sessions. Undisclosed how content was delivered. Topics covered denial, pathways into offending, cognitive distortions, childhood abuse, victim awareness, interpersonal style, relapse prevention, and adaptive engagement with society
Michie and Lindsay (2012)	Pre-post comparison group with follow-up	$N = 20$ Treatment (T) and Control (C) Groups (all men) $n = 10$ each; T: (CBT + Victim Empathy) mean age 36.4 (25–57); mean IQ ^b 66.2; 2 indecent assault, 1 indecent exposure, 3 lewd behavior, 4 stalking; C: (CBT) mean age 34.2 (19–58); mean IQ ^b 65.8; 1 attempted rape, 4 indecent exposure, 1 lewd behavior, 3 sexual assault, 3 stalking; community in the United Kingdom	CBT+ 2-month victim empathy component in 2-hr group sessions that met 6 times for 8 weeks. Undisclosed how content was delivered, undisclosed duration of CBT component. Topics covered confidentiality, responsibility for the offense, cognitive distortions, victim empathy, and review events leading up to sexual behaviors for the CBT component, and the consequences of sex offending for the victim empathy component
Murphy, et al., (2007)	Pre-post no comparison group with follow-up	$N = 8$ (all men; 15 men in treatment, 8 consented to participate); mean age (years) 38.8; mean IQ (WAIS-III) 67 (range = 52–83); sexual assault indecent exposure; rape/attempted rape/stalking; 2 in secure hospital, 2 in adult placement, 2 in community with family, 1 private home in the United Kingdom	CBT for 12 months in 2-hr weekly group sessions. Undisclosed how content was delivered. Topics covered sex education, appropriate dress, relationships, legal sexual behaviors, coping skills, age of consent, relapse prevention, the cycle of offending cognitive distortions, victim empathy and relapse prevention
Murphy et al. (2010); Heaton and Murphy (2013)	Pre-post no comparison group with follow-up	$N = 46$ (all men); mean age 35.3; mean IQ (WAIS-III) 68 (range = 52–83); mean BPVS 10.9 years; VABS 10.1 years; 9 autistic; 71% of victims were female 60% of victims children; (overlap due to multiple offenses); 33% group homes, 10% own homes, 3% adult placement, 8% secure setting in United Kingdom	CBT for 12 months in 2-hr weekly group sessions. Undisclosed how content was delivered. Topics included sex education, human relationships, cognitive distortions, victim empathy, discussion of four steps to sexually abusive behavior (SBA): (a) contemplation of SBA, (b) generating excuses condoning SBA, (c) planning access to victim, and (d) perpetration of SBA and relapse prevention
O'Connor (1996)	Pre-post no comparison group no follow-up	$N = 13$ (all men); mean age 28, (range = 17–43); IQ ^b : mild intellectual disability; 3 sex offenses against women, 5 against female children, 4 against male children, 2 against male and female children; community residential units (3), boarding house (1) secure forensic units (6), community (3) in Australia	PS for 7–24 months in 1-hr individual, and 2-hr group sessions weekly plus community access outings lasting up to several hours. During community outing to predetermined location, realistic and aversive images of the consequences of sex offending were presented, instructed to use aversive images to counteract the influence of deviant sexual fantasies in process of covert sensitization and stimulus control. Topics included relapse prevention, applied behavior analysis, masturbation to nondeviant stimuli, identifying contingencies maintaining

Authors	Design	Sample characteristics (age, IQ, setting, index offense)	Treatment procedures/content
Rea, Dixon, and Zettle (2014)	Pre-post no comparison group no follow-up	<i>N</i> = 10 (all men); mean age 23.8 (range = 18–28); mean IQ (WAIS-III) 63.1 (40–78); 4 child molestation only, 3 child molestation/forced contact with women, 1 child molestation/bestiality, 1 child molestation/indecent exposure/forced sexual contact with women, 1 child molestation, indecent exposure, obscene phone calls; predetermined community outing provided to residents of a secure hospital for sex offenders in United States	behavior, obstacles to healthy interpersonal relationships, and temptation to turn to substances RP for 3 months in 1-hr “probe” sessions multiple times a week (unspecified) in which “companions” accompanied subjects out of secure setting into the community to assess generalization of individualized relapse prevention plans with 11 clinically relevant behaviors. Plans focused on minimizing contact with potential victims, and following rules for behavior in certain contexts (i.e., bathrooms). Participants completed pre- and post-trip activity logs throughout treatment
Rose, Jenkins, O’Connor, Jones, and Felce (2002)	Pre-post multiple case study with follow-up	<i>N</i> = 5 (all men); age/IQ (WAIS-R)/setting/index offense: S1 34/57/group home/inappropriate sexual behavior with children and adults; S2 37/Asperger’s Syndrome/ private residence/inappropriate sexual behavior with adult; S3 43/68/private residence/ inappropriate sexual behavior with children and adults; S4 29/54/private residence/sexual assault; S5 17/66/ private residence with family/sexual offense against a child in United Kingdom	CBT for 4 months in 2-hr weekly group therapy sessions that involved discussions, role-plays, interactive exercises, flip-charts, videos, and formal and didactic teaching, covering sex education, identification of emotions, victim empathy, legal issues, the cycle of offending, appropriate masturbation, stimulus avoidance, and relapse prevention
Rose, Rose, Hawkins, and Anderson (2012)	Pre-post no comparison group with follow-up	<i>N</i> = 12 (all men), mean age 39.5 (range = 20–65); mean IQ (WAIS-III) 58 (range = 49–70); 3 sex offenses against children, 9 sex offenses against adult women; community in the United Kingdom	CBT for 10 months in 2-hr weekly group therapy sessions provided by therapists who were already engaged with the clients that involved designing “keeping safe plans,” and engaging in role-plays, modeling, and group discussions. Topics covered sex education relationships, emotional recognition, motivation to offend, offense cycle, anger management, cognitive distortions, victim empathy, alternatives to offending, and relapse prevention. <i>Adapted for IDD</i> speech and language therapist provided assistance in adapting materials, facilitated some sessions
Sakdalan and Collier (2012)	Pre-post multiple case study with follow-up	<i>N</i> = 3 (all men); age (years)/IQ ^b / setting: S1: mid-30s/mild-moderate/ forensic IDD secure facility/sexual assault of adult female; S2: mid-20s/ mild/forensic secure facility/sexual assault of children; S3: mid-30s/mild/ community secure facility/sexual assault of children in New Zealand	CBT and DBT for 7 months in 2-hr weekly group session plus 1-hr weekly individual session to reinforce group work covering sex education, victim/general empathy, relapse prevention, and cognitive distortions. DBT skills included coping skills of distress tolerance and emotional regulation. Therapists integrated dialectics of “Wise Mind–Risky Mind” to help manage recidivism and validate participants.
Singh et al. (2011)	Pre-post multiple case study with no follow-up	<i>N</i> = 3 (all men); age/mean IQ ^b 58; S1 34/mild IDD ^b /sexual assault of child; S2 23/sexual assault of a child; S3 25/ incest and rape of child; forensic mental health facility in the United States	Mindfulness therapy between 35 and 40 weeks for 30 to 60 min that included practice sessions, homework assignments, mindfulness log to record incidents of sexual arousal where internal self-control methods were used, and then when mindfulness was practiced. Treatment occurred in four phases: (a) <i>baseline</i> involving selection and self-rating of arousal on stimulus materials; (b) <i>self-control</i> involving selection of reducing arousal, and the practice of two mindfulness exercises; (c) <i>meditation on the soles of the feet</i> ; and (d) <i>mindful observation of thoughts</i> . <i>Adapted for IDD</i> simplification of how concepts of deviant sexual arousal were explained

Note. WAIS-III = Wechsler Adult Intelligence Scale–III (Wechsler, 1997); TBI = traumatic brain injury; CBT = cognitive-behavioral therapy; IDD = intellectual and developmental disabilities; VABS = Vineland Adaptive Behavior Scale (Sparrow, Balla, & Cicchetti, 1984); RRASOR = Rapid Risk Assessment for Sex Offense Recidivism (Hanson, 1997); WISC-R = Wechsler Intelligence Scale for Children–Revised; BPVS-II = British Picture Vocabulary Scale (Dunn, Dunn, Whetton, & Burley, 1997); PS = problem solving; RP = relapse prevention; DBT = dialectical behavioral therapy; ABA = Applied Behavioral Analysis.

^a Autism assessment using the diagnostic criteria (Howlin, 1997).

$b_{\text{Unspecified measure.}}$

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Table 2

Summary of Therapeutic Outcomes and Overall Study Quality.

Authors	Pre- and post-treatment	Follow-up	Overall study quality
Craig, Stringer, and Moss (2006)	Cognitive: increase in adaptive socialization on CRI; no change on cognitive distortions, denial, accountability, victim empathy, or sexual knowledge on MSI; no change on coping or problem solving skills on VABS. Behavioral: no sexual charges or reconviction for any of the participants at study completion based on official records.	12 months Cognitive: not specified Behavioral: no sexual reconviction	<i>Strengths</i> disclosure of how treatment program was adapted treat sex offenders with IDD. <i>Limitations</i> short follow-up period, small sample, no comparison group, only official reports of sexual reoffending and no cognitive follow-up assessments.
Craig, Stringer, and Sanders (2012)	Cognitive: decline in attitudes and cognitive distortions consistent with sex offending on the QACSO; no change on knowledge about sexual matters, anatomy and relationships on the SAKS; increase in victim empathy on the VES; no change on attitudes rationalizing and justifying sex offending behavior on the SOSAS.	6 months (8 men), 12 months (6 men) Cognitive: not measured Behavioral: no new legal actions or reports of problem sexual behaviors from probation and police officers	<i>Strengths</i> disclosure of how treatment was adapted to treat sex offenders with IDD, multiple methods of assessing cognitive impairment, inclusion of participants with autism. <i>Limitations</i> higher functioning sample, small sample size, no control group, short follow-up period, not all subjects followed for same amount of time, and no cognitive assessment collected at follow-up.
Keeling et al. (2006b)	Cognitive: increase in victim empathy with large effect size on QVES; decrease in attitudes in favor of sex offending on QACSO (high effect size) with the largest effect in reducing attitudes in favor of voyeurism, exhibitionism, rape, and dating abuse; improvement in self-control; decrease in scores measuring self-control on the SCRS. No changes in loneliness on UCLA-R, criminal attitudes on the CSS, experiences of intimacy on the MSIS or cognitive distortions associated with sex offenses involving children on the M-ABCS.	None	<i>Strengths</i> detailed description of how program was adapted for sex offenders with IDD. <i>Limitations</i> higher functioning sample, no control group, high attrition, no followup, small sample size, mostly borderline intellectual functioning sample, no intent to treat analysis, no measurement of behavioral outcomes, and 11 out of 18 subjects completed and no intent to treat analysis.
Keeling, Rose, and Beech (2007)	Cognitive changes: increase in victim empathy on the QVES and an increase in the preoccupation subscale on the RSQ for the special needs group when repeated without covariate of social desirability (PDS). Fewer sex offenders with special needs made progress with treatment than mainstream sex offenders on all cognitive outcomes except the SIS and the RSQ preoccupied subscale.	16 months (average) on special needs group only Cognitive: not measured Behavioral: no sexual reconviction	<i>Strengths</i> comparison of mainstream sex offenders to sex offenders with IDD and measurement of social desirability bias. <i>Limitations</i> no follow-up for mainstream sex offenders, no cognitive assessments at follow-up, no behavioral assessments during treatment, small sample size, short follow-up period, and no specification of source of behavioral outcomes, and did not incorporate generalizing skills from prison to community.
Lindsay, Neilson, Morrison, and Smith (1998)	Cognitive: reduction in attitudes toward exhibitionism for all four participants.	6–6.5 years after conviction Cognitive: attitudes trended toward pre-baseline scores during follow-up assessments for three out of four participants. Behavioral: no sexual official reconviction	<i>Strengths</i> qualitative analysis on cases of exhibitionism among sex offenders with IDD, long follow-up period, and specification of how program was modified for IDD. <i>Limitations</i> varying follow-up period, no cognitive assessments collected at followup, and small sample size.
Lindsay, Marshall, Neilson, Quinn, and Smith (1998)	Cognitive: decline on attitudes consistent with sex offending with children for all six participants.	3.5–5 years after conviction Cognitive: gradual increase in attitudes consistent with sex offending with children for one participant during follow-up. Behavioral: no official sexual reconviction	<i>Strengths</i> qualitative analysis on cases of child sex abuse among sex offenders with IDD, long follow-up period, and specification of how program was modified for sex offenders with IDD. <i>Limitations</i> inconsistent follow-up time, varying length of treatment, multiple case study design, and limited use of psychometric instruments.
Lindsay and Smith (1998)	Cognitive: G1 (1-year probation) scored higher on attitudes consistent with sex	2 years	<i>Strengths</i> comparison groups with different lengths of community supervision, lower

Authors	Pre- and post-treatment	Follow-up	Overall study quality
	offending against children and indecent exposure than G2; G2 (2-year probation) greater improvement in reducing attitudes consistent with sex offending against children and indecent exposure than G1. Behavioral: not specified	Cognitive: (G1, $n = 5$, G2, $n = 6$) discrepancy in scores between G1 and G2 widened. Behavioral: G1: 2 recidivated officially, 2 suspected of abuse; G2: no sexual reoffending	functioning sample, and measurement of behavior using mental health staff. <i>Limitations</i> small sample size, no behavioral outcomes specified during treatment period, no specification of how treatment was modified for sex offenders with IDD, follow-up assessments not on all participants.
Lindsay, Olley, Baillie, and Smith (1999)	Cognitive: decrease in attitudes toward sex offending against children during the first 6 months and increase in sexual knowledge on the scales designed by the authors.	3–4 years after offense Cognitive: not measured Behavioral: no accusation of further offending	<i>Strengths</i> sample of adolescent sex offenders with IDD and longer follow-up period. <i>Limitations</i> multiple case study design and no specification of how treatment was modified for sex offenders with IDD.
Lindsay et al. (2011)	Cognitive: G1: reduction in attitudes consistent with sex offending on subscales of QACSO except male–male rape; G2: reduction in attitudes consistent with sex offending on all subscales of QACSO and post-treatment were comparable to scores obtained from nonoffenders.	3 years Cognitive: not specified Behavioral: 23.3% reoffended. G1: 3 attempted sexual assault. G2: 4 talked to children	<i>Strengths</i> long follow-up period, aggregated sex offenders by offense type, lower functioning sample of IDD with sex offenders, and measurement of behavior through case conferences with criminal justice and social work practitioners. <i>Limitations</i> no follow-up cognitive assessments and small sample size.
Michie and Lindsay (2012)	Cognitive: higher victim empathy score on IRI in treatment group than control group.	3, 6, and 9 months Cognitive: increase in victim empathy on IRI between pre-treatment and 6 month follow-up and between pre-treatment and 9-month follow-up. Behavioral: not measured	<i>Strengths</i> comparison group, long followup period, assessments at follow-up for changes in cognitive measures. <i>Limitations</i> no specification of how treatment was adapted to sex offenders with IDD, no measurement of behavior during treatment or follow-up, and no specification of duration of sessions and length of treatment or treatment procedures of CBT.
Murphy, Powell, Guzman, and Hays (2007)	Cognitive: increase in sexual knowledge on SAKS and increase in victim empathy on VES-A; no change on cognitive distortions on SOSAS or QACSO. Behavioral: one participant sexually abusive during group sessions	6 months Cognitive: not specified Behavioral: no legal convictions for sex offenses but 3 out of 8 were sexually abusive	<i>Limitations</i> short follow-up period, small sample size, 8 participants lost due to refusal to consent or moving out of the area, no specification of how treatment was adapted to sex offenders with IDD, small sample size, and no assessments performed at follow-up for cognitive measures.
Murphy et al. (2010); Heaton and Murphy (2013)	Cognitive: increase in sexual knowledge on the SAKS, increase in victim empathy on the VES-A, and decrease in cognitive distortions on the QACSO and SOSAS. Behavioral: 3 men engaged in public masturbation, stalking, indecent exposure, and other inappropriate sexual behaviors between pre and post-treatment	6 months (Murphy et al., 2010) and 44 months (Heaton & Murphy, 2013) Cognitive: increase in sexual knowledge on SAKS and decrease in cognitive distortions on QACSO between baseline and follow-up maintained at 6 and 44 months. Behavioral: 3 sexually abusive at 6 months and 32% sexually abusive behaviors (2 reconvictions) at 44 months	<i>Strengths</i> large sample size, multisite and multigroup treatment evaluation. <i>Limitations</i> short follow-up period, follow-up not performed on entire sample, not specified how treatment was modified for sex offenders with IDD, 3 did not finish treatment no intent to treat analysis, follow-up on 34 out of 46 in total sample
O'Connor (1996)	Cognitive: reduction in minimization and denial, increase in knowledge, increase in coping skills, based on clinical observation and assessment on internal locus and external locus of control scales designed by authors. Behavioral: less supervision was required for 4 study participants, 9 were granted increased community access, 5 increased community residential living, 4 completed the intervention, 2 entered the community to live independent, 2 reoffended, and 1 admitted to sex offending behaviors based on official	None	<i>Strengths</i> incorporated community access outings to generalize skills learned in treatment groups and useful for sustaining treatment in community. <i>Limitations</i> No control group, no followup, no use of standardized assessment instruments, varying length of treatment, did not specify how concepts for problem solving intervention were adapted to sex offenders with IDD

Authors	Pre- and post-treatment	Follow-up	Overall study quality
Rea, Dixon, and Zettle (2014)	reconviction and unofficial reports from mental health workers. Cognitive: not measured Behavioral: high generalization (9–10 participants behaved correctly) consisted of staying with staff, avoiding talking to potential victims, and avoiding physical contact with potential victims; partial generalization (3–8 participants behaved correctly) consisted of looking in the other direction, avoiding potential victims in close proximity, avoiding looking at potential victims in sight from a distance, keeping distance, and selecting routes of travel that avoid contact with potential victims; and low/no generalization consisted of (2–0 participants behaved correctly) avoiding locations where potential victims congregate.	None	<i>Strengths</i> incorporated community visits, individualized relapse prevention plans catered to each participant using clinically relevant relapse behavior, and useful for sustaining treatment in community. <i>Limitations</i> small sample size, no control group, no follow-up, no cognitive assessments during treatment or followup, not specified how treatment was adapted to sex offenders with IDD
Rose, Jenkins, O'Connor, Jones, and Felce (2002)	Cognitive: overall, the only significant change occurred on the NS scale indicating an increase in external locus of control post-intervention. Individually, decrease in attitudes consistent with sex offending for 3 participants on QACSO; increase in sexual knowledge for 3 participants on SBL; increase in external locus of control for 4 participants on NS scale. Victim empathy increased for a majority of participants on VES but was insignificant overall. Behavioral: no sex offending	3/6 months Cognitive: attitudes in favor of offending rose to preintervention levels, and locus of control shifted to more external orientation Behavioral: no sex offending	<i>Limitations</i> multiple case study design, short follow-up, small sample size, 1 participant did not complete QACSO, 1 participant not assessed at 6 months
Rose, Rose, Hawkins, and Anderson (2012)	Cognitive: decrease in attitudes in favor of offending for 10 participants on QACSO; increase in internal locus of control for 1 participant on NS; increase in knowledge for 7 participants on SSKAAT-R. Behavioral: 1 reoffended and left treatment	18 months Cognitive: not measured Behavioral: 1 committed a sex offense based on monitoring by mental health staff and 3 moved into lower supervision	<i>Strengths</i> provided results on low functioning sample. <i>Limitations</i> not all respondents completed all measures, small sample size, short follow-up period, no intent-to-treat analysis, 12/16 men completed treatment, and no cognitive measurements during follow-up.
Sakdalan and Collier (2012)	Cognitive: an increase in sexual knowledge on ASK, decrease in attitudes in support of sex offending on QACSO, an increase in victim empathy on VES, and a decrease in cognitive distortions regarding sex offending on SOSAS. Behavioral: reduction in sexual abuse and general aggression based on staff clinical reports, and decrease in risk of sexual recidivism on SVR-20.	1 year Cognitive: gains endured through the 1-year follow-up for most participants. Behavioral: reduction in problematic sexual behaviors according to program staff	<i>Strengths</i> only study to present an integrated DBT-CBT treatment module, results promising for enduring distressing feelings associated with confronting disclosing sex offending behaviors. <i>Limitations</i> small sample size, no behavioral measurement during treatment or follow-up period, no comparison group.
Singh et al. (2011)	Reduction of deviant self-rated sexual arousal observed in daily logs. Mindfulness was more effective at controlling deviant sexual arousal than other self-control methods.	None	<i>Strengths</i> promising and simple new treatment for deviant sexual arousal. <i>Limitations</i> small sample size, pilot study, no behavioral measurement (e.g., masturbation, or sexual assault on staff), no follow-up, no psychometric instruments to assess self-control after mindfulness intervention.

Note. CRI = Coping Response Inventory (Moos, 1993); MSI = Multiphasic Sex Inventory (Nichols & Molinder, 1984); VABS = Vineland Adaptive Behavior Scale (Sparrow, Balla, & Cicchetti, 1984); IDD = intellectual and developmental disabilities; QACSO = Questionnaire on Attitudes Consistent With Sex Offending (Broxholme & Lindsay, 2003; Lindsay, Carson, & Whitefield, 2000); SAKS = Sexual Attitudes and Knowledge Assessment Scale (Langdon, Maxted, Murphy, & Group, 2007); VES = Victim Empathy Scale (Beckett & Fisher, 1994); SOSAS = Sex Offenses Self-Appraisal Scale (Bray & Fors haw, 1996); QVES = Victim Empathy Distortion Scale (Beckett & Fisher, 1994); SCRS = Self-Control Rating Scale (Kendall & Wilcox, 1979); UCLA-R = UCLA Loneliness Scale-Revised (Russell, 1996); CSS = Criminal Sentiments Scale (Gendreau, Grant, Leipziger, & Collins, 1979); MSIS = The Miller Social Intimacy Scale (Miller & Lefcourt, 1982); M-ABCS = Modified Abel and Becker Cognition Scale (Kolton, Boer, & Boer, 2001); RSQ = Relationship Scales Questionnaire (Griffin & Bartholomew, 1994); PDS = Paulhaus Deception Scale; SIS = Social Intimacy Scale (Miller & Lefcourt, 1982); IRI = Interpersonal Reactivity Index (Davis, 1980); NS = Nowicki–

Strickland Scale (Nowicki, 1976); SBL scale = Sexual Behavior and the Law scale (Rose, Jenkins, O'Connor, Jones, & Felce, 2002); SSKAAT-R = Socio-Sexual Knowledge and Attitudes Assessment-Revised (Griffiths & Lunsky, 2003); ASK = Assessment of Sexual Knowledge (Butler, Leighton, & Galea, 2003); SVR = Sexual Violence Risk-20 (Boer, Frize, Pappas, Morrissey, & Lindsay, 2010); DBT = dialectical behavioral therapy; CBT = cognitive-behavioral therapies.

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