Table 3: Summary of results from seven moderate to high quality systematic reviews

Study	Included primary research	Recidivism*	Authors' conclusions
Aos et al., 2006 (Aos et al., 2006) **QA score** Moderate (4/11)	**Included studies:** 18 evaluation studies of adult SOTPs (two used randomly assigned controlled groups; 16 quasi- and non-experimental studies)	**CBT in prison** (five studies, N = 894): fixed-effect weighted mean ES of -0.144 (P = 0.005); fixed-effect weighted mean ES of -0.119 (P = 0.027) for sex offence outcomes (four studies, N = 705); NSS heterogeneity in ES across studies **CBT in the community** (six studies, N = 359): fixed effects weighted mean ES of -0.391 (P = 0.00); fixed effects weighted mean ES of -0.357 (P = 0.001) for sex offence outcomes (five studies, N = 262); NSS heterogeneity in ES across studies **Psychotherapy/counseling** (three studies, N = 313)**:** overall, fixed effect weighted mean ES of 0.134 (P = 0.179; SS heterogeneity in ES across studies (P = 0.038); random effects weighted mean ES of 0.027 (P = 0.892) **Behavioural therapy** (two studies, N = 130): overall, fixed effects weighted mean ES of -0.190 (P = 0.126); NSS heterogeneity in ES across studies **Mixed-treatment in the community** (five studies, N = 724)**:** overall, fixed effects weighted mean ES of -0.176 (P = 0.001); SS heterogeneity in ES across studies (P = 0.015)	"We found that cognitive-behavioural treatments are, on average, effective at reducing recidivism, but other types of sex offender treatment fail to demonstrate significant effects on further criminal behaviour." CBT programs for sex offenders on probation "demonstrated the largest effect observed in our analysis".
Brooks-Gordon et al., 2006 (Brooks-Gordon B et al., 2006) **QA score** Moderate (7/11)	**Included studies:** nine RCTs (*all category B studies, with moderate risk of bias*); only one RCT (conducted in the community by Romero during 1970s) included convicted adult male sex offenders (N = 231, of which 144 were sexual assaulters, 39 exhibitionists, and 48 pedophiles) *and* reported recidivism data over 2 yr or more (10 yr follow-up)	Re-arrest rate for group psychotherapy plus probation (1 hour of group therapy per week for 40 weeks plus one probation visit per month) was NSS increased at 10 yr (14%) compared to standard care (1 report to probation per month plus 1 home visit per month) (7%) (based on data from RCT by Romero)	CBT in groups "increased re-arrest at 10 years." "The re-arrest rate was not statistically significantly increased in the therapy group (14%) compared to the no group therapy control (7%). If there were only a few more arrests in the intervention group, it could be suggested that the therapy was *less* effective than doing nothing to prevent re-arrest." "More well-planned, well-conducted, and well-reported RCTs are needed, over longer periods and addressing important, relevant outcomes".

Study	Included primary research	Recidivism*	Authors' conclusions
Hanson et al., 2002 (Hanson et al., 2002) **QA score** Moderate (5/11)	**Included studies:** 68 recidivism outcome studies (total of 5,078 treated and 4,376 untreated sex offenders) reporting on 43 treatment programs (16 from Canada, 21 from US, five from UK, one from NZ); 23 programs were offered in institutions, 17 in the community, and three in both settings; 40 of 43 were specialized programs for sex offenders; 13 programs reported only on sexual recidivism, five reported only on general recidivism, and 25 reported on both.	**Sexual recidivism** (38 studies, N = 8164): overall, there was a small advantage for treated vs. untreated offenders (OR = 0.81; 95% CI 0.71 to 0.94), with SS heterogeneity across studies (Q = 145.02; df = 37; p < 0.001); ES of "current" treatments for adults (12 studies, N = 2,779) was OR = 0.61(95% CI 0.48 to 0.76), with SS heterogeneity across studies (Q = 21.17; df = 11; P < 0.05); ES of "current" institutional treatments for adults (six studies, N=1771) was OR=0.62; 95% (CI 0.48 to 0.80), with SS heterogeneity across studies (Q=12.31; df=5; P<0.05); ES of "current" community treatments for adults (6 studies, N=1008) was OR=0.57; 95% CI 0.34 to 0.95), with NSS heterogeneity across studies (Q=8.78; df=5; P>0.05) **General (any) recidivism** (31 studies, N = 6075): overall, treated offenders had SS lower rates than untreated offenders (OR = 0.56; 95% CI 0.50 to 0.64), with SS heterogeneity across studies (Q = 120.08; df = 30; P < 0.001); ES of "current" treatments for adults (five studies, N = 1101) was OR=0.59 (95% CI 0.45 to 0.78), with SS heterogeneity across studies (Q = 33.00; df = 4; P < 0.001); ES of "current" community treatments for adults (two studies, N=330) was OR=0.21 (95% CI 0.12 to 0.37) with NSS heterogeneity (Q=0.01; df=1; NSS); ES of "current" institutional treatments for adults (three studies, N=771) was OR=0.82; 95% CI 0.60 to 1.13), with SS heterogeneity across studies (Q=15.76; df=2; P<0.001)	"We believe that the balance of available evidence suggests that current treatments reduce recidivism, but that firm conclusions await more and better research." For adults, "the treatments that appeared effective were recent programs providing some form of cognitive-behavioural treatment". "Further research is needed in order to make reliable distinctions between types of treatment and types of offenders".
Hanson et al., 2009 (Hanson et al., 2009; Hanson RK et al., 2009) **QA score** High (10/11)	**Included studies:** 23 recidivism outcome studies (18 rated as "weak" quality, five as "good" quality;12 from Canada, five from US, three from UK, two from NZ, one from Holland); of 23 SOTPs evaluated, 10 were offered in institutions, 11 in community, and two in both; 19 of 23 studies examined specialized treatment programs for sex offenders.	**Sexual recidivism** (22 studies, N = 6746): in 17 of 22 studies, recidivism rate of treatment group was lower than that of comparison group (P = 0.0085), OR ranged from 0.08 to 2.47, with a fixed-effect weighted mean of 0.77 (95% CI 0.65 to 0.91), SS between-study variability (Q = 47.17, df = 21, P < 0.001), and a random-effect weighted mean of 0.66 (95% CI 0.49 to 0.89); treatment appeared equally effective for adults (OR = 0.71, 95% CI: 0.53 to 0.95, random-effect model; OR = 0.79, 95% CI: 0.67 to 0.94, fixed-effect model) and adolescents (OR = 0.38, 95% CI: 0.10 to 0.41, random-effect model; OR = 0.47, 95% CI: 0.22 to 0.98, fixed-effect model; an analysis of 18 studies including only adults (N=6462) yielded fixed-effect weighted mean of 0.79 (95% CI 0.67 to 0.94) and a random-effect weighted mean of 0.71 (95% CI 0.53 to 0.95) **Violent (including sexual) recidivism** (10 studies, N = 4823): in 6 of 10 studies, recidivism rate for treatment group was lower than that of comparison group (P = 0.377, one-tailed); OR ranged from 0.04 to 1.34 with a fixed-effect weighted mean of 0.92 (95% CI 0.78 to 1.07), SS heterogeneity across the studies (Q = 26.63, df = 9, P < 0.005), and random-effect weighted mean of 0.81 (95% CI 0.58 to 1.14); an analysis of 8 studies including only adults (N=4718) yielded a fixed-effect weighted mean of 0.93 (95% CI 0.79 to 1.09) and a random-effect weighted mean of 0.86 (95% C 0.62 to 1.20) **General (any) recidivism** (13 studies, N = 4801): in 12 of 13 studies, recidivism rate favoured treatment group (P = 0.0017, one-tailed); OR ranged from 0.07 to 1.14 with a fixed-effect mean of 0.75 (95% CI 0.66 to 0.86), SS heterogeneity across studies (Q = 29.82, df = 12, P<0.005), and random-effect weighted mean of 0.61 (95% CI 0.47 to 0.80); treatment appeared more effective for adolescents (OR = 0.24, 95% CI: 0.09 to 0.65, random-effect model; OR = 0.31, 95% CI: 0.17 to 0.56, fixed-effect model) than for adults (OR = 0.71, 95% CI: 0.56 to 0.90, random-effect model; OR = 0.79, 95% CI: 0.69 to 0.90, fixed-effect model); an analysis of 10 studies including only adults (N = 4606) yielded a fixed-effect weighted mean of 0.79 (95% CI 0.69 to 0.90) and a random-effect weighted mean of 0.71 (95% CI 0.56 to 0.90)	"Given the consistency of the current findings with the general offender rehabilitation literature, we believe that the RNR principles should be a major consideration in the design and implementation of treatment programs for sexual offenders." "Cognitive-behavioural treatments are the norm…, and in the current review many of the programs examined also made special efforts to engage sexual offenders in the treatment. Further research is needed concerning how best to apply the risk principle to sexual offenders."

Study	Included primary research	Recidivism*	Authors' conclusions
Polizzi et al., 1999 (Polizzi et al., 1999) **QA score** High (8/11)	**Included studies:** 13 impact evaluation studies; follow-up covered up to 31 yr for prison-based SOT and up to 11 yr for community-based SOT (*follow-up range not clearly identified for all studies)*	**Prison-based SOTPs:** one level 4 study (published in 1995, involving 296 treated high risk sex offenders and 281 untreated matched sex offenders; mean follow-up up to 6 yr) found SS differences between treatment (CBT) and control groups for sex offence reconviction rates (moderate ES: 0.44 to 0.45) and NSS differences for non-sexual reconviction rates (ES = 0.06); other level 4 study (published in 1993, involving treated and untreated 197 child molesters followed-up for up to 31 yr) found NSS differences for sex offence reconviction rates between treated offenders (*treatment not stated)* and those incarcerated prior program inception (ES = 0.8) and between treated and untreated offenders (ES = -0.23) **Non-prison based SOTPs**: two studies (one 1988 level 4 study involving 126 child molesters followed-up for up to 11 yr; one 1991 level 3 study involving 61 exhibitionists followed-up for up to 4 years) using CBT approaches found SS reductions in sexual reconvictions between treated and untreated sex offenders (ES = 0.51 and ES = 0.70, respectively);another level 4 study (RCT reporting preliminary SOTEP results; all subjects followed-up for approximately 5 yr) found NSS differences for sexual re-arrest rates between treated offenders (98 child molesters and adult rapists who completed a program using CBT and RP) and untreated offenders in volunteer (N = 97) and non-volunteer (N = 96) groups (ES = 0.27 and ES = 0.04, respectively); another level 3 study found NSS differences for sexual reconvictions between treatment (program attempting to modify deviant sexual prefences) and control groups (ES = -0.15).	"…non-prison-based sex offender treatment programs using cognitive behavioural treatment methods are effective in reducing the sexual offense recidivism of sex offenders." "Prison-based treatment programs were judged to be promising, but the evidence is not strong enough to support a conclusion that such programs are effective. Too few studies focused on particular types of sex offenders to permit any type of conclusions about the effectiveness of programs for different sex offender typologies." "Future research should address the methodological weaknesses presently found in sex offender research (e.g., small sample sizes, lack of randomization, lack of comparison/control groups, and poor use of control variables to adjust for group differences)."
Schmucker and Losel, 2008 (Schmucker & Losel, 2008; Losel & Schmucker, 2005) **QA score** High (8/11)	**Included studies:** 69 studies (involving 9,512 treated and 12,669 untreated sex offenders; 17 from Canada, 31 from US, eight from UK, eight from German speaking countries, five from other countries); 45 comparisons examined only adult sex offenders; 29 comparisons referred to outpatient treatment; 25 referred to prison setting, 14 referred to hospital setting, and 10 referred to a mixture (outpatient and residential); programs addressing sex-offender-specific treatment evaluated in 64 comparisons; follow-up period ranged from 1 to 10 yrs, and averaged 5.22 yrs; sexual recidivism data reported in 74 comparisons, (nonsexual) violent reoffending data reported for 20 comparisons, and 49 studies presented data on overall recidivism.	**Sexual recidivism** (74 comparisons)**:** overall, average treatment effect was OR = 1.70 (95% CI 1.35-2.13, random-effect model), with SS heterogeneity (Q = 237.14, df = 73, P < 0.001); programs that specifically addressed adult sex offenders (36 comparisons), had a significant ES (OR = 1.43, 95% CI 1.08 to 1.90) Hormonal treatment (six comparisons), showed a higher effect on sexual recidivism (OR = 3.11, 95% CI: 1.39 to 6.95) than any psychological approaches, of which only CBT (35 comparisons) and classical behaviour (seven comparisons) influenced sexual recidivism significantly (OR = 1.46, 95% CI:1.12 to 1.89 and OR = 2.18, 95% CI: 1.20 to 3.97, respectively); other psychosocial approaches showed NSS difference in sexual recidivism rates between treated and untreated offenders (OR = 0.98, 95% CI: 0.51 to 1.89, for insight-oriented treatment; five comparisons; and OR = 0.86, 95% CI: 0.54 to 1.35, for therapeutic community treatment; eight comparisons) **Violent recidivism** (20 comparisons): overall, average treatment effect was OR = 1.90 (95% CI 1.49 to 2.33; random-effect model), with NSS heterogeneity (Q = 19.68, df = 19); recidivism rate of treated offenders was 44% lower than in the control group; *no separate reporting on adult sex offenders* **General (any) recidivism** (49 comparisons): overall, average treatment effect was OR = 1.67 (95% CI 1.33 to 2.08; random-effect model) with SS heterogeneity (Q = 159.80, df = 48, P < 0.001); recidivism rate of treated offenders was 31% lower than in the control group; *no separate reporting on adult sex offenders*	"...our results indicate that sexual offender treatment can significantly reduce recidivism rates. The size of the effect is small to moderate but it is in accord with what we know from the larger research literature on general offender treatment evaluation. However, the evidence is based on studies that mostly apply a weak methodological standard." "Hormonal medication, cognitive-behavioural, and behavioural approaches also revealed a positive effect". "Non-behavioural treatments did not show a significant impact." "Overall, findings are promising but more differentiated evaluations of high quality are needed."

Study	Included primary research	Recidivism*	Authors' conclusions
White et al., 1998 (White et al., 2000) **QA score** High (10/11)	**Included studies:** three RCTs (*all category B studies)* ; only one RCT (conducted in the community by Romero during 1970s) included convicted adult male sex offenders *(*N = 231, of which 144 were sexual assaulters, 39 exhibitionists, and 48 pedophiles) *and* reported recidivism data over 2 yr or more (10 yr follow-up)	**Recidivism:** no significant difference in re-arrest rate for offenders allocated to group psychotherapy plus probation and those receiving standard care (OR = 1.87; 95% CI 0.8 to 4.37) (based on data from RCT conducted by Romero)	"At this state there is no trial-based evidence to strongly support the use of any treatment of sex offenders or those with disorders of sexual preferences." "Considering the widespread use of group therapy, the findings of the largest and longest study in this review must be considered disturbing. That it reports no effects on recidivism over a long period of time may suggest that nondescript group therapy may have to give way to a more focused treatment such as response prevention." "Well conducted and reported randomized controlled trials are essential if the effectiveness and otherwise of antilibidinal treatment, response prevention and group therapy are to be established".

*Only main findings regarding the population, intervention(s) and outcome of interest are summarized
CBT – cognitive behavioural therapy; ES – effect size; N - number of participants; NSS – no(t) statistically significant; OR – odds ratio; NZ – New Zealand; QA - quality assessment using the AMSTAR tool ; RCT- randomized controlled trial; RNR principles –Risk/Need/Responsivity principles; RP – relapse prevention; SOTP – sex offender treatment program; SS – statistically significant; yr – year(s)