Bilaga till rapport
Risk- och behovsbedömning av ungdomar
avseende återfall i våld och annan kriminalitet,
SBU-rapport nr 303/2019

Bilaga 1 Tabeller med beskrivning av de ingående studierna

Appendix/Bilaga 1a Youth Level of Service/Case Management
Inventory (YLS/CMI)

Appendix/Bilaga 1b Studies on Structured Assessment of
Violence Risk in Youth (SAVRY)

Appendix/Bilaga 1c Other methods

Appendix/Bilaga 1d Unstructured clinical assessment

Appendix/Bilaga 1e Qualitative studies

References/Referenser

Appendix/Bilaga 1a Studies on YLS/CMI.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Anderson et al 2016 [1] USA Prospective study 2004–2012	n=1,720 453 girls (26%) 1,267 boys (74%) Mean age girls 14.95 sd=1.31 Mean age boys 14.77 sd=1.48 Hispanic/Latino: 8.5% girls, 8.9% boys African American: 33.9% girls, 37.1% boys Multi-racial: 18% girls, 13.6% boys Other: 1.1% girls, 1.8% boys **Offense history** Number of previous offending (mean) Boys 0.59, sd=1.05 Girls 0.52, sd=0.95 Juvenile and family court system.	YLS/CMI Juvenile court officers trained in administering the YLS/CMI. Each JCO received 32 hours total Assessment at intake Some received interventions during court supervision (family support services, counseling, in-home detention) Total score.	Recidivism New petition to court through court data management system.	24 months from initial YLS/CMI No dropouts.	No ICC **Total score General recidivism (GR) AUC:** All: 0.60 (95% CI, 0.58 to 0.63) Girls: 0.57 (95% CI, 0.51 to 0.62 Boys: 0.62 (95% CI, 0.59 to 0.65) **Recidivism rate GR** Girls: 18 low risk (24.3%) 112 medium risk (39.6%) 38 high risk (40.4%) Boys: 81 low risk (29.2%) 395 medium risk (54%) 155 high risk (61.3%) No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Campbell et al 2014 [2] USA Prospective study 2004–2009	n=217 97 girls (45%) 119 boys (55%) Mean age 14.60 years, sd=1.70 (range=8–17) Less than 5% of the sample was under the age of 12 48% Caucasian 8% African American/Black 30% Latino/Mexican American 14% other **Index crime (current crime)** 36% Retail fraud (e.g. shoplifting) 18% Assault (e.g. domestic disputes) 14% Larceny (e.g. car theft and breaking and entering), 13% Drugs (e.g. possession of marijuana) 19% Other offenses (e.g. disorderly conduct)	YLS/CMI SV Juvenile court officers trained in administering the YLS/CMI. Each JCO received 16 hours total training Assessment at initial contact with court Some adolescents received interventions Total score.	Recidivism Any new petition for a delinquent or adult offense (a petition is a legal document produced by police that lists the charges associated with a given criminal or delinquent act).	24 months following initial contact with the court Dropouts =1.	No ICC **Total score GR AUC** All: 0.67 (95% CI, 0.59 to 0.75) Girls: 0.65 (95% CI, 0.53 to 0.77) Boys: 0.68 (95% CI, 0.58 to 0.79) **Recidivism rate GR** 84 low risk (16%) 81 medium risk (35%) 44 high risk (43%) (Groups dropouts = 8). No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Mostly first-time offenders Juvenile Court system.					
Catchpole et al 2003 [3] Canada Retrospective study with blinded outcome 1998–1999	n=74 11 girls (15 %) 63 boys (85 %) Mean age 16 years, sd=1.3 (range=12.4–18.3) 55.4% White 29.7% Aboriginal 8.1% Asian 5.4% Other ethnical backgrounds **Index crime** Violent offenders 53% had engaged in daily drug or alcohol use at some point in their lives **Psychiatric disorders** Mean number of conduct disorder 6.5, sd=2.8 out of 15	YLS/CMI (& SAVRY- data about SAVRY see Table 1b) Research team, all raters were trained in administering SAVRY and YLS/CMI, no information of received training hours Assessment after discharge No known interventions after discharge Total score.	Recidivism. Criminal records using British Columbia Corrections files.	12 months follow-up after discharge No dropouts.	ICC: total score 0.80 (n=21) **Total score GR AUC** All: 0.74 **Total score violent recidivism (VR) AUC** All: 0.73 21 youth identified as low or medium risk violently reoffended. 30% (14 of 46) in the high or very high-risk group violently reoffended No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analysis.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	37 youth participated in psychiatric treatment program for violent offenders, the other served as controls Two incarcerated settings.					
Chu et al 2015 [4] Singapore Retrospective study with blinded outcome 2004–2008 and 2011–2012.	n=3,264 313 girls (9%) 2,951 boys (91%) Mean age 15.42, sd=1.19 (range= 12–19) 53.6% Chinese 31.9% Malay 9.3% Indian 5.2% Other **Offense history or index crime** Mean number of index offenses 2.61, sd=2.82 (range=1–40) 78.6% nonviolent and nonsexual offenses 31.6% violent offenses	YLS/CMI A research team (two psychologists, one probation officer, five research assistants) trained in administering the YLS/CMI. Each rater received a three-day training in total Assessment at intake Community supervision Total score.	Recidivism Convicted by new offense.	The mean follow-up period was 1,765 days, 4.8 years, sd=521.50 (range=840–2,666 days) from initial court order No dropouts.	ICC were 0.63 for the total score (n=31) **Total score GR AUC** All: 0.64 (95% CI, 62 to 0.66) Girls: 0.67 (95% CI, 0.62 to 0.66) Boys: 0.65 (95% CI, 0.62 to 0.66 **Total score VR AUC** Boys: 0.62 (95% CI, 0.59 to 0.65 **Recidivism rate GR** 64 low risk (14.6%) 886 medium risk (38.6%) 276 high risk (52.5%)	Moderate risk of Bias Narrative analyses Included in meta-analyses Chu was asked about the length of the confidence interval for girls.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	2.1% sexual offenses 1.9% had a prior offense history as indicated on criminal records Probation services branch of the ministry of social and family development Community supervision.				No PPV/NPV.	
Chu et al 2014 [5] Singapore Retrospective with blinded outcome 2004–2011	n=3,264 313 girls (9.6%) 2,951 boys (90.4%) Mean age 15.42, sd=1.17 53.62% Chinese 9.25% Indian 31.92% Malay 5.21% Other background **Index crime** Mean number of offenses: 2.61 sd=2.82 (range=1–40) 31.56% violent offense (e.g., physical	YLS/CMI-SV Two psychologists, one probation officer, and five research assistants Trained in the use of YLS measures via attending a 3-day YLS training workshop, readings, and scoring three case studies for practice Ratings using archival file records Some had received interventions	Recidivism Any type of reoffence that was subsequently charged. All official records, such as breaches to the conditions of probation, or any type of reoffence that was subsequently charged, were coded.	The mean follow-up period was 1,764.5 days sd=521.5 (range=840–2,666) No dropouts.	ICC of 0.51 (n=31) **Total score GR AUC** Entire follow-up All: 0.64 (95% CI, 0.62 to 0.66) Girls: GR 0.59 (95% CI, 0.53 to 0.66) Boys: GR 0.65 (95% CI, 0.63 to 0.67) **Total score VR AUC** Entire follow-up All: 0.61, (95% CI, 58 to 64) AUC values for VR were not reported for the female subgroup given that only 3 (1.0%) girls committed violent	Moderate risk of Bias Narrative analyses

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	assault, rioting, murder, and robbery) 2.11% sexual offense (e.g., indecent exposure, molestation, peeping, rape, and sodomy) 78.52% nonviolent/ nonsexual offense (e.g., theft, fraud, burglary, drug use, and drug trafficking) 1.93% had a prior offense history Probation Services Branch of the Ministry of Social and Family Development and placed on community supervision.	Total score for the YLS/CMI-SV (range=0–8).			offenses during the follow-up period. Boys: 0.62 (95% CI, 0.59 to 0.65) **Total score GR AUC** 1-year follow-up All: 0.64 (95% CI, 0.62 to 0.67) **Total score VR AUC** All: 0.61, (95% CI, 56 to 66) Girls 0.66 (95% CI, 0.58 to 0.74) Boys: 0.64 (95% CI, 0.62 to 0.67) **Recidivism rate GR**: All: 1,228 (37.6%) Girls 95 (30.4%) Boys 1,133 (38.4%) No recidivism rates in relation to the assessed risk level No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Cuervo et al 2015 [6] Spain Prospective study 2008–2010	n=210 48 girls (22.9%) 162 boys (77.1%) Mean age 15.9 years, sd=1.16 79.5% Spanish 10% Romanian or other Eastern European 5.7% South American 4.8% Arab countries **Index crime** Range of youth offenders: from occasionally committing minor crimes, (shoplifting), to serious crimes, such as sexual assaults Juvenile Court system.	YLS/CMI Completed by members of the technical team in the juvenile court Each received training for 2 months, 2 days a week Assessment around 3 to 6 months after charge No information of interventions Total score.	Recidivism Data from disciplinary records in the Juvenile Court of a Spanish province.	24 months from initial YLS/CMI No dropouts (six juveniles from the total sample were in closed-centers and would therefore not be able to recidivate).	No ICC **Total score GR AUC** All: 0.83 (95% CI, 0.77 to 0.89) **Recidivism rate GR** All: 23.3% Girls: 14.3% Boys: 85.7% (six juveniles from the total sample were in closed-centers and would therefore not be able to recidivate) No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.
Cuervo 2017 [7] Spain Prospective study	n=382 Mean age 16.33, sd=1.04 (range=14.27–17.99) 71 girls (18.6%) 311 boys (81.4%)	YLS/CMI:SV Juvenile court technical team made the assessment. Trained for 1 month	Recidivism Any type of charge.	2 years after initial assessment No dropouts.	No ICC **Total score GR AUC** All: 0.78 (95% CI, 0.73 to 0.82) Girls 0.67^{ns} (95% CI, 0.52 to 0.81)	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
2008–2011	78.7% Spanish 8.4% Romanian/Eastern Europe 6.5% South American 6.3% Arab countries **Offense history or index crime** 184 person-related offenses (52.1%) 169 property-related offenses (47.9%) Juvenile court.	Assessed 3–6 months after charging No information of interventions after court Total score.			Boys: 0.78 (95% CI 0.73 to 0.84) **Total score VR AUC** Girls 0.60 [ns] (95% CI, 0.41 to 0.80) Boys: 0.77 (95% CI, 0.69 to 0.86) **Recidivism rate GR**: All: 26.3% Girls: 16.9% Boys: 28.5% No recidivism rates in relation to the assessed risk level No PPV/NPV.	
Hilterman et al 2014 [8] Spain Prospective study	n=105 (345 were invited to participate and 145 interviews were completed before deadline) Mean age 18.4 years, sd=1.2 19 girls (18%)	YLS/CMI (& SAVRY & Unstructured clinical assessment; data about SAVRY see Table 1b, for UCA see Table 1d)	Self-report through a telephone interview of 10 minutes 12 months after the assessment interview	12 months. Dropouts =40	ICC: Total score 0.79, SRR GR 0,66, VR 0.76 (n=13) **Total score GR AUC** All: 0.71 (95% CI, 0.59 to 0.83) **Total score VR AUC**	Moderate risk of Bias Narrative analyses *Not included in the meta-analysis due to some concerns about the final sample*

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
2006–2007	86 boys (82%) 83 Spanish (79%) 2 European (2%) 12 South American (11%) 8 North Africa/Asian (8%) **Offense history** Number of previous offending General 4.7, sd=5.5 Violent 2.3, sd=2.3. Probation setting.	Interviews were conducted by researchers one month prior to end of probation. 9 professionals from the Catalonian juvenile justice system received 74 hours of training during 2 weeks and an extra session three months after training. No intervention after probation Total score and risk categories.	General and violent offending.		All: 0.73 (95% CI, 0.63 to 0.84) **Risk categories GR AUC** All: 0.67 (95% CI, 0.53 to 0.80) **Risk categories VR AUC** All:0.69 (95% CI, 0.58 to 0.79) **Recidivism rate** GR: 81.9% VR: 65.4% No recidivism rates in relation to the assessed risk level No PPV/NPV.	
McGrath et al 2018 [9] Australia Prospective study	n=4,401 720 girls (16.4%) 3,681 boys (83.6%) Mean age 16.56 sd=1.48 1,432 Australian Indigenous (34.3%)	YLS/CMI-AA Assessments done by clinicians as part of the everyday work at the clinic	Recidivism Any re-offense resulting in a court conviction.	12 months after the administration of the YLS/CMI-AA taking into account time in custody. No dropouts.	No ICC **Total score GR AUC** All: 0.69 (95% CI, 0.67 to 0.70) Girls: 0.69 (95% CI, 0.65 to 0.73)	Low risk of Bias Narrative analyses

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
2008–2010	1,916 Non-Indigenous (46%) 821 Australian (19.7%) **Criminal history or index crime** No information Community-based juvenile offenders.	No information of when assessment was conducted No information of interventions after court Total score.			Boys: 0.69 (95% CI, 0.68 to 0.71) **Total score VR AUC** All: 0.67 (95% CI, 0.65 to 0.70) Boys: 0.67 (95% CI, 0.65 to 0.70) Girls: 0.73 (95% CI, 0.66 to 0.79) **Recidivism rate** **General** All: 1,647 (37.4%) Girls: 194 (26.9%) Boys: 1,453 (39.5%) **Violence** All: 410 (9.3%) Girls: 68 (9.4%) Boys: 342 (9.3%) No recidivism rates in relation to the assessed risk level No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Olver et al 2012 [10] Canada Retrospective study with blinded outcome 1996–2004	n=167 Mean age 15.7, sd=1.5 74 girls (44.3%) 93 boys (55.7%) Aboriginal 62.3% White 24.0% Unknown decent 13.8% **Index crime**: Assault (52.1%) Property crimes (38.9%) Weapon related (26.8%) Robbery (23.4%) Threats (11.4%) Sex offences 6.6%) Murder 3.1% 44.9% living in the community 41.3% in custody 13.8% residential status unknown	YLS/CMI Trained assessors researchers (authors), 2 psychologists, 1 social worker. File information from court Unspecified interventions Total score.	Recidivism Any new re-offense conviction from two databases: - CPSP-Corrections Public Safety and Policing - CPIC- Canadian Police Information Centre.	Reconviction after the youth first release to the community Mean time to follow-up 6.8 years, sd=2.9 (range=8 months – 13.3 years) No dropouts	ICC 0.90 (n=25) **Total score GR AUC** All: 0.71 (95% CI, 0.63 to 0.80) **Total score VR AUC** All: 0.75 (95% CI, 0.68 to 0.82). **Recidivism rate** **General** All: 123 (73.9%) **Violence** All: 80 (45.5%) No information of recidivism in relation to risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Health facilities in Saskatchewan All youth had been court adjudicated under the Canadian Youth Criminal Justice Act or the former Young offender act.					
Perrault et al 2017 [11] USA Prospective study 2009–2010	n=359 93 girls (25.9 %) 266 boys (74.1%) mean age 15.52 years, sd=1.60 64.6% White **Offense history or index crime** No information Juvenile Court system.	YLS/CMI (& SAVRY- data about SAVRY see Table 1b) Juvenile court officers trained in administering YLS/CMI Each JPOs received a 2-day training workshop and completed three additional post training practice cases over a 2-month period Assessment were administered post adjudication Unspecified interventions	Recidivism New petition to court (i.e., formal filing of charges).	An average follow-up of 18.29 months sd=3.09 months (range==9.13–25.43 months) No dropouts.	ICC: 0.84 for total score, 0.71 for overall risk ratings (n=61) **Total score GR AUC** All: 0.65 (95% CI, 0.59 to 0.72) **Total score VR AUC** All: 0.57 (95% CI, 0.46 to 0.68) ns. **Risk rating GR AUC** All: 0.63 (95% CI, 0.56 to 0.69) **Risk rating VR AUC** All:0.51 (95% CI, 0.39 to 0.63) ns **Recidivism rate** **General** All: 77 (21.4%)	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
		Total score and risk rating.			**Violence** All: 21 (5.8%) No information of recidivism in relation to risk level No PPV/NPV.	
Rennie et al 2010 [12] England Prospective study No information on when the study was conducted in time	n=135 boys Mean age 14 years, sd=0.93 (range=13–18) 114 White British (84.4%) 21 British Asian, British African/Caribbean and British Oriental (15.5%) **Index crime** 82 violent offences (61%) 30 acquisitive offence (22%) 8 arson (6%) 6 driving offences (4.5%) 2 drug offences (1.5%) 3 charged but not convicted (2%) **Psychiatric disorders**	YLS/CMI Assessed by researchers Three psychology graduate masters out from interviews and archival data Assessment in custody Unspecified intervention Total score and risk rating.	The official database records impending prosecutions, cautions, reprimands, final warnings and convictions Recidivism was classed as any new record on the HOPNC - Home Office Police National Computer.	12 months from release from custody. Dropouts n=111	ICC: 0.95 Total score (n= 10) **Total score GR AUC** Boys: 0.64 (95% CI, 0.52 to 0.75) **Total score VR AUC** Boys: 0.59 (95% CI, 0.48 to 0.70) **Risk Rating GR AUC** Boys: 0.67 (95% CI, 0.56– to 0.78) **Risk Rating VR AUC** Boys: 0.60 (95% CI, 0.49 to 0.71) ns **Recidivism rate** **General** All: 77 (69.4%)	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Adolescents with conduct disorder\n\nLength of sentence mean time 17.49 months, sd=12.14.\n\nCustody setting.				**Violent**\n\nAll: 41 (36.9%)\n\nNo recidivism rates in relation to the assessed risk level\n\nNo PPV/NPV.	
Shepherd et al.\n\n2014\n\n[13]\n\nAustralia\n\nProspective study\n\n2011–2012	n=213\n\n38 girls (17.8%)\n\n175 boys (82.2%)\n\nMean age: 16.84 years sd=1.83 (range 12–21 years).\n\n48% English speaking background\n\n32% Culturally and linguistic diverse\n\n20% Indigenous.\n\n**Index offences**\n\n(main)\n\nAssault 49%, burglary/theft 16%.\n\nProperty damage 6%.\n\n68% of the sample had served a previous sentence and 87% had	YLS/CMI (& SAVRY, data about SAVRY see Table 1b)\n\nResearchers who had received training course in SAVRY, YLS/CMI and PCL:YV\n\nInterviews at intake by justice center staff\n\nAssessment by researchers who had received training course in SAVRY, YLS/CMI and PCL:YV	Recidivism. New offenses from police database.	Six to 18 months\n\nNo dropouts.	ICC: 0.97 total score (n=18)\n\n**Total score GR AUC**\n\nAll: 0.71 (95% CI, CI 0.62 to 0.81)\n\nGirls: 0.65 (95% CI, 0.32 to 0.97) ns\n\nBoys: 0.72 (95% CI, 0.62 to 0.82)\n\n**Total score VR AUC**\n\nAll: 0.66 (95% CI, 0.57 to 0.74).\n\nGirls 0.64 (95% CI, 0.41 to 0.87) ns\n\nBoys: 0.65(95% CI, 0.56 to 0.75).	Moderate risk of Bias\n\nNarrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	previously been charged for a violent offence. Justice centre setting.	No information of which interventions the youths received, they have been sentenced or remanded Total score.			No recidivism rates in relation to the assessed risk level No PPV/NPV.	
Schmidt et al 2016 [14] USA Prospective study 2009–2012	n=185 male non-sexual offenders in final sample (204 sexual offenders not included in the analysis). Mean age 15.83, sd=1.10 (range=12–17 years) 42% Caucasian 11% Aboriginal-Canadian **Offense history or index crime** No information Ontario Ministry of Children and Youth services.	YLS/CMI Probation officers trained in administering the YLS/CMI PO completed the YLS/CMI for each youth mandated by Ontario Youth correctional services Assessment at routine case management protocols Unspecified interventions Total score and professional	Recidivism Ministry database on violent, none-violent, sexual and technical offenses.	Mean follow up time 937 days sd=137 (range=586–1164 days) No dropouts.	No ICC **Total score VR AUC** Boys: 0.70 (95% CI, 0.62 to 78) **Adjusted VR AUC** Boys: 0.60 (95% CI, 0.47 to 74) ns No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
		override (adjusted).				
Schmidt et al 2005 [15] Canada Prospective study 1996–2000	n=107 40 girls (37.4%) 67 boys (62.6%) Mean age 14.6, sd=1.0 (range=12.0–16.8) 31 Canadian native (29.0%) 76 Caucasian (71.0%) **Offense history** 28 girls, (26.2%) 49 boys, (45.5%) Consecutively court referred juvenile offenders.	YLS/CMI Part of standardized assessment procedure conducted by a multi-disciplinary mental health team to assist the court Assessment done in short time before court session Interventions are not specified Total score and risk rating.	The Royal Canadian Military Police (RCMP) national police registry was accessed to obtain each youth's complete criminal records.	Mean time to follow-up 35.8 months, sd=14.9 (range=7–61 months Dropouts = 3.	ICC for subscales (range=0.61–0.85) (n= 29) **Total score GR AUC** All: 0.61, SE=0.06 **Total score VR AUC** All: 0.67, SE=0.06 **Risk rating GR AUC** All: 0.56, SE=0.06 **Risk rating VR AUC** All: 0.65, SE=0.06 For both GR and VR outcome measures across all groups median cut **Recidivism rate** **General** All: 48 (46.3%) Girls: 15 (37.5%) Boys: 34 (51.5%)	Low risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					Violence

All: 30 (28.7%)

Girls: 6 (15.9%)

Boys: 25 (37.9%)

Sensitivity range 56 to 71%

Specificity range 54 to 68%

No PPV/NPV. | |
| Takahashi et al

2013

[16]

Japan

Retrospective study with blinded outcome

2004–2011 | n=389 boys

(405 boys, 16 were excluded due to: 5 still in custody; 8 reached 20 years:3 could not be traced)

Mean age 16.91 years, sd=1.50

Offense history or index crime

No information.

207 Probationary supervision (53.2%)

72 Tentative supervision by family court officer (18.5%) | YLS/CMI

Six psychologists coded the Japanese version for research purpose

Master level psychologists with at least 2-year on-site training in forensic assessment

Coding based on information from interviews and files

Assessment at intake to assist the | Recidivism defined as any readmission into JHC

Data were collected from the national correctional database for juvenile delinquents in Japan. | 6-, 12-, and 18 months follow-up periods.

No dropouts. | No ICC

Total score GR AUC

Boys: 18 months: 0.78 (95% CI, 0.72 to 0.84)

Boys: total time: 0.72 (95% CI, 0.66 to 0.78)

Total score VR AUC

Boys: 18 months: 0.80 (95% CI, 0.71 to 0.88)

Boys total time:

0.70 (95% CI, 0.60 to 0.79)

Recidivism rate

General | Moderate risk of Bias

Narrative analyses

Included in the meta-analyses. |

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	47 Short term Juvenile training school (12.1%) 41 Long term Juvenile training school (10.5%) 2 Support facility (0.5%) 20 Other dispositions (5.2%) Five Juvenile Classification Homes (JHC) in Japan, i.e. juvenile correctional institutions.	decision making for the court hearing Variety of interventions Four levels of risk: low (0–8); medium (9–22); high (23–34) very high 35–42). Total score.			Low: 9.1% Medium 22.9% High: 66.7% **Violence** Low: 1.3% Medium 8.1% High: 16.7% No PPV/NPV.	
Thompson et al 2005 [17] Australia Prospective study 2000–2001	n=174 boys (174 boys were followed for recidivism from a total sample of 290 adolescents) Mean age 16.55 years, sd=1.32 (range=13–20) **Offense history or index crime** No information Community supervision.	YLS/CMI- AA Completed by 44 juvenile justice officers that received training in the instrument Assessment at intake Juveniles received supervision Total score.	Recidivism defined as new convictions recorded in the "Client Information Data System of the New South Wales department of justice".	6 to 32 months (median 17 months) No dropouts.	No ICC **Total score GR AUC** Boys: 0.67 **Recidivism rate** Boys: 70 (40%) had convictions during follow-up No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Thompson and McGrath 2012 [18] Australia Prospective study 2003–2005	n=3,568 560 girls (15.7 %) 3568 boys (84.3%) Age: 16.8% under 15 years 41.3% 15–16 years 42% 17 years and over Mean age for boys 16.51, sd=1.50 was significantly higher than for girls 16.30, sd=1.39 44.3% Australian 29.5% Australian indigenous 21.4% Australian ethnic 4.7% Unknown information **Offense history or index crime** No information Various forms of supervision and custody.	YLS/CMI-AA Juvenile justice officers who received training in the inventory Assessment at intake Youth under various forms of supervision and custody Total score.	Recidivism New conviction from database.	New conviction within one year of the administration of the YLS/CMI-AA No dropouts.	No information of ICC **Total score GR AUC** All: 0.65 (95% CI, 0.63 to 0.67) Girls: 0.64 (95% CI, 0.60 to 0.69) Boys:0.66 (95% CI, 0.64 to 0.68) **Recidivism rate** All: low risk 625 (38.4%), medium risk 903 (58.3%), high risk 281 (71.5%) Girls: low risk 64 (29.4%), medium risk 123 (44.9%) high risk 39 (58.2%) Boys: low risk 561 (39.8%), medium risk 780 (61.2%), high risk 242 (74.2%). No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Upperton and Thompson 2007 [19] Australia Prospective study 2001–2002	n=113 14 girls (36%) 99 boys (64%) Mean age 16.24, sd=1.08 (range=13.54–18.09) **Offense history or index crime** No information Community supervision.	YLS/CMI-AA (& unstructured clinical assessment, see Table 1d) Assessment at intake Community supervision Total score.	Recidivism New criminal conviction subsequent to the date of the risk assessment (to the date of the young person´s 18th birthday) Juvenile justice database.	Length of follow-up for YLS/CMI-AA was the time between date of risk assessment and date of follow-up or the youth´s 18 birthday Mean 16.55 months, sd=6.97 No dropouts.	No ICC **Total score GR AUC** 1–29 months follow-up All: 0.75 (95% CI, 0.66 to 0.84) (15 months follow-up All: 0.83 (95% CI, 0.73 to 0.92) **Recidivism rate** Low risk 27% Medium risk 58% High risk 79% No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses. .
Vaswani and Merona 2014 [20] Scotland Prospective study 2008–2010	n=1,138 assessments The youth were assessed by the social work department (215 excluded from the analysis due to moved out the police force area, incarcerated or incomplete) 218 girls (19%)	YLS/CMI Social workers trained in YLS/CMI for two days Risk total from YLS/CMI and professional	Recidivism Police database (limited to the police force area).	12 months following each YLS/CMI assessment No dropouts.	No ICC **Total score GR AUC** All: 0.72 (95% CI, 0.69 to 0.76) Girls: 0.72 (95% CI, 0.65 to 0.79)	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	920 boys (81%) Mean age 15.8, sd=1.6 (range=8–20) 89% White-Scottish 1.6% Other White 1.3% Mixed 1.5% Pakistani 4.9% Not known **Offense history or index crime** The sample included a wide spectrum of young offenders, from low-level young offenders living in the community to high-risk offenders in secure care or custody Social work department.	override in 14% of the cases No information of when the assessment was conducted Unspecified interventions Total score and summary risk rating SRR (professional override).			Boys: 0.73 (95% CI, 0.69 to 0.77) **Total score VR AUC** (serious violent recidivism) All: 0.68 (95% CI, 0.64 to 0.73) Girls: 0.69 (95% CI, 0.60 to 0.78) Boys: 0.68 (95% CI, 0.63 to 0.73) **Professional override GR AUC:** All: 0.68 (95% CI, 0.65 to 0.72) Girls: 0.68 (95% CI, 0.60 to 0.75) Boys: 0.69 (95% CI, 0.65 to 0.73) **Professional override serious violent recidivism AUC:** All: 0.65 (95% CI, 0.60 to 0.69) Girls: 0.69 (95% CI, 0.58 to 0.79)	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					Boys: 0.64 (95% CI, 0.59 to 0.69) **Recidivism rate:** 838 young people had reoffended (73.6%). Low risk 54% Very high risk 100% No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Viljoen et al 2017 [21] Canada Prospective study	n=156 49 girls (31.4%) 107 boys (68.6%) Mean age 16.41 years, sd=1.14 (range=12–18) 38.5% Caucasian/European 31% Aboriginal 12.8% Asian 7.1% East Indian/Southeast Asian 7.1% Hispanic 4.5% African **Offense history and index crime** Violent offenses 93 (59.6%) Property offense 57 (36.5%) No prior charges 106 (67.9%) Probation setting.	YLS/CMI (& SAVRY- data about SAVRY see Table 1b) Assessments made by research assistants 11 graduated students and 8 undergraduate students received a 2-day training in risk assessment tools Assessment at intake Juveniles on probation Total score and risk rating.	Adult and youth records from the Corrections Network System, British Columbia. Coded as any or violent reoffences charges.	Follow-up period of 24 months No dropouts.	ICC: 0.82 Total score (n=) **Total score GR AUC** All: 0.75 (95% CI, 0.70 to 0.82) **Total score VR AUC** All: 0.72 (95% CI, 0.63 to 0.82) **Risk rating GR AUC:** All: 0.73 (95% CI, 0.66 to 0.80) **Risk rating VR AUC:** All: 0.68 (95% CI, 0.58 to 0.77) No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Villanueva et al. 2019 [22] Spain Prospective study 2012–2017	n=256 59 girls (23 %) 197 boys (77 %) Mean age 15.82, sd=1.05 Two subgroups: 116 Arab-Spanish 14 girls 112 boys Mean age 15.76, sd=1.09 140 Non-Arab–Spanish 45 girls (32 %) 95 boys (68 %) Mean age 15.88 years, sd=1.01 **Offense history or index crime** No information Juvenile Court system.	YLS/CMI Minor of the Youth Offending Team No information of training in the assessment method No information of when the study was conducted No information of interventions after court Total score.	Recidivism Charges filed after the date of the first assessment.	60 months from initial YLS/CMI No dropouts	No ICC. **Total score GR AUC** Arab-Spanish: 0.73 (95% CI, 0.63 to 0.83) Non-Arab–Spanish 0.76 (95% CI, 0.67 to 0.84) **Recidivism rate** No recidivism rates in relation to the assessed risk level True positive: Arab-Spanish: 12 (11.43 %) Non-Arab–Spanish: 19 14.72 %False negative: Arab-Spanish: 21 (20 %) Non-Arab–Spanish: 22 (17.05 %) False positive: Arab-Spanish: 7 (6.66 %) Non-Arab–Spanish: 9 (6.79 %) True negative: Arab-Spanish: 65 (61.90 %)	Low risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					Non-Arab–Spanish: 79 (61.24 %)	

ADAD-units = Units using the method Adolescent Drug Abuse Diagnosis; **AUC** = Area under the curve; **IAU-unit** = Investigation as usual; **ICC** = interclass correlation; **CI** = Confidence interval; **Follow up** = Time after assessment; **GR** = General Recidivism; **Index crime** = current crime; **LSI-SK** = Level of Service Inventory – Saskatchewan Youth Edition; **n** = number; **ns** = non-significant; **PPV/NPV** = The positive/negative predictive value; **SE** = Standard Error; **SRR** = Summary risk rating; **sd** = Standard Deviation; **VR** = Violent Recidivism**; VRS-YV** = Violence Risk Scale–Youth Version; **YLS/CMI-AA** = Australian adaptation

Appendix/bilaga 1b Studies on Structured Assessment of Violence Risk in Youth (SAVRY)

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Catchpole et al 2003 [3] Canada Retrospective study with blinded outcome Archival data 1998–1999	n=74 11 girls (15%) 63 boys (85%) Mean age at index offense 16 years, sd=1.3 (range=12.4–18.3) 55.4% White 29.7% Aboriginal 8.1% Asian 5.4% Other ethnic backgrounds **Index crime** Violent offenders 53% had engaged in daily drug or alcohol use at some point in their lives **Psychiatric disorder**	SAVRY (& YLS/CMI - data about YLS/CMI see Table 1a) Research team, all raters were trained in administering SAVRY and YLS/CMI. No information of received training hours Assessment after discharge No interventions after discharge Total score from SAVRY.	Recidivism Criminal records using British Columbia Corrections files.	12 months follow-up after discharge No dropouts.	ICC: Total score 0.81, SRR 0.77 (n=21) **Total score GR AUC** All: 0.74 **Total score VR AUC** All: 0.73 1 youth of the 17 (5.9) defined as low risk violently reoffended, and 8 of 20 youth (40%) defined as high risk violently reoffended No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Mean number of conduct disorder = 6.5 (sd 2.8) out of 15 37 youth participated in psychiatric treatment program for violent offenders, the other served as controls Two incarcerated settings.					
Childs et al 2014 [23] USA Prospective study 2010–2011	n=177 25% girls 75% boys Mean age: 16 (sd=1.4) 72% black **Index crime** 36% of the sample was on probation for a misdemeanor, 32% for a felony and 32% for a status offense Local probation department.	SAVRY Probation officers trained in administering SAVRY. Each PO received a 2 days training in SAVRY Assessment when youth were released from probation No known interventions after probation	Recidivism Database on new arrests.	The follow-up period was 6 months Dropouts= Fifteen cases were missing arrest information.	No ICC **SRR VR AUC:** All: 0.58 **Recidivism rate** **Violence** low risk 35.8% Medium risk 39.7% High risk 54.9% **Non-violence** Low risk 33.3% Medium risk 41.0%	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
		Summary risk rating (SRR).			High risk 58.8% No PPV/NPV.	
Dolan and Rennie 2008 [24] United Kingdom Prospective study No information of study period	n=99 boys Mean age 16.15 years, sd=0.84 83.8% White 7.1% Asian 7.1% Afro-Caribbean 2% Oriental descent **Offense history or index crime** 64.7% violent offense (assault, sexual offenses, robbery weapon charges), 11.1% burglary 9.9% theft of a motor vehicle 5.0% driving offenses	SAVRY Rated by three psychology master's graduate research assistants who had received formal training Assessment in custody No intervention after discharge Total risk score from SAVRY and summary risk rating (SRR).	Recidivism Offenses were classified as violent versus nonviolent Recidivism data were collected from the HOPNC (Home Office Police National Computer) on each individual This official database records impending prosecutions, cautions, reprimands,	12 months following release from prison Dropouts = 24.	ICC: Risk Total 0.97 Risk Rating 0.88 (n=10) **Total score GR AUC** Boys: 0.69 (95% CI, 0.56 to 0.81) **Total score VR AUC** Boys: 0.64 (95% CI, 0.53 to 0.75) **SRR GR AUC** Boys: 0.69 (95% CI, 0.56 to 0.81) **SRR VR AUC** Boys: 0.64 (95% CI, 0.53 to 0.75) **Recidivism rate** Low risk: 2 (17%)	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	2.0% arson 3.3% breach of an order, 2.0% drug offenses 2.9% had no charge All met criteria for conduct disorder in DSM-IV Released from custody.		final warnings, and convictions.		Medium risk 29 (74%) High risk 39 (81%) No PPV/NPV.	
Gammelgård 2008 [25] Finland Retrospective study with blinded outcome 2 GAP admitted 2005 and 2005 3 CS 2005 AF 2003–2006	n=208 88 girls (42%) 120 boys (58%) Mean age 15.1 (sd 1.4) 11–14 years 66 (32%) 15–18 years 142 (68%) GAP setting (n=51) (girls 36/boys 15) Mean age 15.2 (sd 1.0) **Offense history or index crime**	SAVRY GAP based on file info CS child welfare records completed prior to placement AF collected during routine structured assessment period The researcher, a trained clinical forensic psychologist	Number of violent episodes during time spent in the institution.	All episodes of violence (physical and threats) that was severe enough for personnel to intervene during first 6 months of treatment/residence or until discharge No dropouts.	No ICC **Total score AUC VR** All: 0.71 (95% CI, 0.64 to 79) Girls: 0.72 (95% CI, 0.60 to 0.84) Boys: 0.71 (95% CI, 0.60 to 0.81) **Recidivism rate** All: 48 (23.1%) **Recidivism rate GR** 2 low risk (4.0%)	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
General residential adolescent psychiatry (GAP), correctional schools (CS), or adolescent forensic psychiatry (AFP).	No information **Psychiatric Diagnoses** 27.5% Schizophrenia spectrum 27.5% Disruptive behavioral and personality disorders 45% Other 0% None CS setting n=110 (girls 39/boys 71) Mean age 15.2 (sd 1.4) Mostly taken into care due to severe behavioral or social problems **Psychiatric Diagnoses** 0% Schizophrenia spectrum 57% Disruptive behavioral and personality disorders 12% Other	completed assessments Unspecified interventions during placement Total score.			29 medium risk (29.0%) 40 high risk (67.0%) No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	31% None AF setting n=47 girls 13, boys 34, Mean age 14.6 (sd 1.7) Assessed for challenging behavior or severe psychiatric illness **Psychiatric Diagnoses** 28% Schizophrenia spectrum 49% Disruptive behavioral and personality disorders 23% Other 0% None General residential adolescent psychiatry (GAP), correctional schools (CS), or adolescent forensic psychiatry (AFP).					

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Gammelgård et al 2015 [26] Finland Retrospective study with blinded outcome 2003–2012	n=231 96 girls (42%) 135 boys (58%) 22% had been treated in the GAP unit, 30% in the AFP unit and 48% in the CS unit. Mean age: 15.06, sd=1.53 (range=11–18) **Offense history or index crime** No information **Psychiatric disorders** Of the final sample of 200 cases 45% had a conduct disorder diagnosis, 16%, a psychotic disorder, 25% some other mental diagnosis and 15% no diagnosis. General residential adolescent psychiatry (GAP), correctional schools (CS), or adolescent forensic psychiatry (AFP).	SAVRY All ratings were made by the first author, a clinical psychologist trained in SAVRY Retrospective chart analysis, supplemented with oral data from primary nurses, and prospective follow-up Adolescents received interventions during placement Total score from SAVRY.	Recidivism All registered criminal convictions from the National Crime Register.	Four years Dropouts = 31 (4 boys and 1 girl had died and for 26 cases could not be retrieved from registers).	ICC: total score 0.80, SRR 0.83 (n=21) **Total score GR AUC** All: 0.68 (95% CI, 0.58 to 77) **Total score VR AUC** All: 0.71 (95% CI, 0.60 to 82) **Recidivism rate** 15% of the young people had sustained a non-violent criminal conviction during follow-up, 11% a violent conviction. No information of recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses The corresponding author was contacted to contacted in order to get further information about risk level in relation to recidivism.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Hilterman et al 2014 [8] Spain Prospective study 2006–2007	n=105 (345 were invited to participate and 145 interviews were completed before deadline) 19 girls (18%) 86 boys (82%) Mean age 18.4 years, sd=1.2 83 Spanish (79%) 2 European (2%) 12 South American (11%) 8 North Africa/Asian (8%) **Offense history or index crime** Number of previous offending GR: 4.7, sd=5.5 VR: 2.3, sd=2.3 Probation setting.	SAVRY (& YLS/CMI & Unstructured clinical assessment - data about YLS/CMI see Table 1a, data about UCA see Table 1d) 9 professionals from the Catalonian juvenile justice system 74 hours of training during 2 weeks and an extra session three months after training Interviews were conducted by researchers one month prior to end of probation	Self-report through a telephone interview of 10 minutes 12 months after the assessment interview about both general and violent recidivism.	12 months Drop-outs =40.	ICC: Total score 0.79, SRR GR 0,66, VR 0.76 (n=13) **Total score GR AUC** All: 0.71 (95% CI, 0.59 to 0.84) **Total score VR AUC** All: 0.75 (95% CI, 0.65 to 0.85) **SRR VR AUC** All: 0.70 (95% CI, 0.58 to 0.82) **SRR VR AUC** All: 0.68 (95% CI, 0.57 to 0.79) **Recidivism rate** Any recidivism 81.9% Violent recidivism 65.4% No information of recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses *Not included in the meta-analysis due to some concerns about the final sample*

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
		No interventions after probation Total score and summary risk rating (SRR).				
Lodewijks (a) 2008 [27] Netherlands Retrospective with blinded outcome 2000–2005	n=82 Girls 35 (43%) Boys 47 (57%) Mean age at discharge for girls 17.2, mean age at discharge for boys 17,6 Caucasian Dutch girls 23 (66%) **Psychiatric disorder** (girls) Conduct disorder 14 (40%), Oppositional Defiant disorder 14 (40%), Other Axis I disorders 21 (60%), **Index offense**	SAVRY Master's level psychologists trained in coding SAVRY Coded on file information available before discharge Treatment in juvenile justice facility, variety of interventions Total score and summary risk rating (SRR).	Violence recidivism, data register information on suspects.	Mean follow-up girls 546 days, sd=200 (range=91–877) Mean follow-up boys 504 days, sd=200 (range=93–877) No dropouts.	ICC: Risk total girls 0.82; SRR 0.68; risk total boys 0.86; SRR 0.68 (n=14) **Total score GR AUC** Girls: ns no information Boys: 0. 67 **Total score VR AUC** Girls: 0.84 (SE 0.09) Boys: 0.76 (SE 0.07) **SRR VR AUC** Girls: 0.85 (SE 0.07) Boys: 0.82 (SE .06) **Recidivism rate** **Violence**	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	(Girls) Manslaughter (attempted) 3 (6%) Sexual Violence 2 (4%), Assault (aggravated) 28 (60%) Robbery 14 (30%) Caucasian Dutch boys 27 (57%) **Psychiatric disorder** (boys) Conduct disorder 18 (38%), Oppositional Defiant disorder 23 (49%), Other Axis I disorders 25 (53%), **Index offense** (boys) Manslaughter (attempted) 2 (6%) Sexual Violence 1 (3%), Assault (aggravated) 21 (60%)				Girls: 4 (11%) Boys: 17 (36%) Girls 0 low risk (0%) 2 medium risk (22.0%) 3 high risk (33.0%) Boys: 0 low risk (0%) 4 medium risk (22.0%) 12 high risk (68.0%) No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Robbery 11 (31%) Juvenile justice facility – semi-secure treatment units					
Lodewijks (b) 2008 [28] Netherlands Retrospective study with blinded outcome 1998–2002	n=117 6 girls (5%) 111 boys (95%) Mean age 15.3, sd=1.3, (range=12–18) 48 Caribbean (41%) 27 Mediterranean (23%) 33 Caucasian (28%) 9 Other (8%) **Index crime** All violent offenses Violent property offense 64 (55%)	SAVRY (& Unstructured clinical assessment, data about UCA see Table 1d) Rated on file information Four Master level psychologists trained in coding SAVRY Unspecified interventions during placement Total risk score and summary risk rating (SRR).	Violent recidivism and general recidivism New conviction by court for an offense.	3 years after forensic mental health assessment Time at risk was calculated by adding days where no supervision was for the patient for any reason (i.e. escape, leave etc.) Mandatory treatment group mean follow up time 80 days sd=146 (range=10 to 649) Detention sentenced group mean follow up time 1031 days sd=195 (range=411– 1095).	ICC Total score 0.80, SRR 0.82 (n=50) **Total score VR AUC** All: 0.65 (95% CI, 0.53 to 0.81) **SRR VR AUC** All: 0.71 (95% CI, 0.60 to 0.82) No information of recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Manslaughter and assault (aggravated) 40 (34%) Sexual offense 12 (10%) Arson 1 (1%) Mandatory treatment 77 (66%) Detention 40 (34%) Stay at institution Mandatory mean=1,031 days sd=129 range=593–1,095 Detention mean=76 days sd=74, range=11–358 Juvenile justice institution.					

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Lodewijks (c) 2008 [29] Netherlands Prospective study 2001–2003	n=66 boys Mean age at admission 15.4, sd=1.6 (range=12–18) 62% Caucasian Dutch 17% Surinamese/Antillean 10% Mediterranean 11% Other **Offense history** All had history of violence (70% had official convictions where of 2/3 for violent offenses and 1/3 for non-violent) Juvenile justice treatment facility, semi secure.	Assessed during first 8 weeks of stay, SAVRY coded on basis of all information available at week 8. Master level psychologists trained in coding SAVRY Variety of treatments during placement SAVRY Risk total and Summary risk rating (SRR).	Institutional violence Disruptive behaviour from incident files-physical violence against persons.	From week 8 to discharge Average treatment duration 22 months sd=11 (range=7–23) Dropouts =4 (from original n=70 excluded for staying less than 6 months).	ICC: risk total 0.74, SRR 0.85 (n=16) **Total score VR AUC:** Boys: 0.80 (95% CI, 0.69 to 0.91) **SSR VR AUC** All: 0.86 (95% CI, 0.77 to 0.95) **Recidivism rate** All: 64 (97%) No information of recidivism rates in relation to the assessed risk level. No PPV/NPV.	Low risk of Bias Narrative analyses.
Meyers and Schmidt	n=121	SAVRY	Recidivism either violent or	12 month and 36 months follow up. Most of the	ICC: Total score 0.97, summary risk rating of 0.95 (n=121).	Moderate risk of Bias

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
2008 [30] Canada Retrospective study with blinded outcome No information of study period	41 girls (34%) 80 boys (66%) Mean age 14.90 years, sd=1.40 (range=12–18.50) 69% Caucasian 31% Native Canadian **Offense history or index crime** No information Juvenile Court system and referred to a multidisciplinary mental health team including disciplines of psychology, psychiatry, and social work.	Data collected by a multi-disciplinary mental health team from a children's mental health center SAVRY was coded by the current authors No information of interventions after juvenile court system Total score and summary risk rating from SAVRY.	nonviolent, that resulted in conviction Criminal records from the Royal Canadian Mounted Police (RCMP) national police registry.	offenders (79%) had follow-up periods of 24 months or more The follow-up period to determine recidivism began immediately after disposition If incarceration occurred, time spent in a correctional facility was deducted so that the follow-up period would reflect only time spent in the community Dropouts = 12 (3 limited file information for archival coding of SAVRY and 9 follow-up period was less than 1 year).	**Total score GR AUC** 36-month follow-up All: 0.76, (95% CI, 0.67 to 0.84) **Total score VR AUC** All: 0.77, (95% CI, 0.67 to 0.87) Girls: 0.80, (95% CI, 0.59 to 1.00) Boys: 0.78 (95% CI, 0.68 to 89) **Recidivism rate** 36-month follow-up **Total score GR** All: low risk: 50%, medium risk: 76% Girls: low risk: 22%, medium risk: 36%, high risk 80% Boys: low risk: 20%, medium risk: 59%, high risk: 74% 36-month follow-up **Total score VR**	Narrative analyses Included in meta-analysis.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					All: low risk: 26%, medium risk: 56% Girls: low risk: 0%, medium risk: 9%, high risk 60 % Boys: low risk: 4%, medium risk: 31%, high risk: 57%. No PPV/NPV.	
Ortega-Campos, García-García and Zaldívar-Basurto 2017 [31] Spain Prospective study	n=594 87 girls (14.6%) 507 boys (85.4%) Mean age 15.63 sd=1.08 (range=14–17) Spanish nationals (79%) **Offense history or index crime** No information Juveniles who were charged in a court case.	SAVRY Conducted within the court system No information on who did the ratings and when No information of interventions after the court Total score and summary risk rating (SRR).	Recidivism New charge in the Juvenile Court Data retrieved from databases and followed up.	24 months No dropouts	No ICC **Total score GR AUC** All: 0.74 (95% CI, 0.70 to 0.78) **SRR GR AUC** All: 0.75 (95% CI, 0.71 to 0.79) **Recidivism rate** Any recidivism All: 211 (35.5%) No information of recidivism in relation to risk level	Low risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					No PPV/NPV.	
Penney, Lee and Moretti 2010 [32] Canada Prospective study	n=144 64 girls (44.4%) 80 boys (55.6%) Mean age 15.5, sd=1.5 (range=12–18) 67% Caucasian 23% Aboriginal 10% Other ethnicity **Offense history** Previous entry in the correctional system (53%) Custody centres setting (54%) Mental health assessment centres (44%)	SAVRY Assessed by graduate students who were trained and performed semi-structured interview and file review Assessments done while youth are at the centre/office Unspecified interventions Total score and summary risk rating (SRR).	New reported offence or self-report Register data Violent and non-violent, no data for any recidivism.	24 months after the assessment. No dropouts for register Drop-outs for self-reports n=61	ICC: Total score 0.94, SRR 0.73 (n=19) **Total score VR AUC** Girls: 0.72 (95% CI, 0.57 to 0.88) Boys: 0.69 (95% CI, 0.57 to 0.81) **SRR VR AUC** Girls: 72 (95% CI,.54 to 0.81) Boys: 0.64 (95% CI, 0.51 to 0.77) **Recidivism rate** Non-violent recidivism (register) n=72 (50%) VR n=43 (30%) Non-violent recidivism	Low risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Probation offices (2%).				(self-report) n=54 (65%) Violent recidivism n=39 (47%) No information of recidivism in relation to risk level No PPV/NPV.	
Perrault, Vincent and Guy 2017 [11] USA Prospective study 2009–2010	n=383 105 girls (27.4%) 278 boys (72.6%) Mean age: 15.20 years, sd= 1.48 64.6% White **Offense history or index crim**e No information	SAVRY (& YLS/CMI - data about YLS/CMI see Table 1a) Juvenile court officers trained in administering SAVRY Each JPOs received a 2-day training workshop and completed three additional post	Recidivism New petition to court (i.e., formal filing of charges).	An average follow-up of 18.29 months, sd=3.09 months (range=9.13–25.43 months) Dropouts = 69 (52 youth were excluded because they were not administered SAVRY, 12 were excluded because they were in a placement the entire follow-up period, 5 were excluded because they reoffended prior to their	ICC: 0.71 total risk score, SRR 0.86 (n=80) **Total score GR AUC:** All: 0.62 (95% CI, 0.57 to 0.68) **Total score VR AUC:** All: 0.69 (95% CI, 0.62 to 0.76) **SRR GR AUC** All: 0.58 (95% CI, 0.52 to 0.64) **SRR VR AUC** All: 0.63 (95% CI, 0.55 to 0.70)	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Juvenile Court system.	training practice cases over a 2-month period. Assessment post adjudication No information of interventions Total score and summary risk rating (SRR).		first SAVRY administration).	**Recidivism rate** **General** 145 (37.9%) **Violence** 57 (14.9%) 32.9% (n=51) of low risk youth (n=155) were petitioned for any new offenses, 61.2% (n=30) of high-risk youth (n=49) No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Shepherd et al. 2014 [13] Australia Prospective study 2011–2012	n=213 youths 38 girls (18%) 175 boys (82%) Mean age: 16.84 years sd=1.83 (range 12–21 years). 48% English speaking background 32% Culturally and linguistic diverse 20% Indigenous. Index crime (main) Assault 49%, burglary/theft 16%. Property damage 6%. 68% of the sample had served a previous sentence and 87% had previously been charged for a violent offence	SAVRY (& YLS/CMI - data about YLS/CMI see Table 1a) Interviews at intake by justice center staff Assessment by researchers who had received training course in SAVRY, YLS/CMI and PCL:YV No information of which interventions the youths received, they have been sentenced or remanded Total score and summary risk rating (SRR).	Recidivism New offenses from police database.	Six to 18 months No dropouts.	ICC: total score 0.97, SRR 0.97 (n=28) Total score GR AUC All: 0.71 (95% CI, 0.62 to 0.80) Girls: 0.77 (95% CI, 0.40 to 1.00) ns Boys: 0.70 (95% CI, 0.60 to 0.79) Total score VR AUC All: 0.66 (95% CI, 0.58 to 0.75) Girls: 0.65 (95% CI, 0.42 to 0.89) ns Boys: 0.66 (95% CI, 0.57-0.75) SRR GR AUC All: 0.69 (95% CI, 0.59 to 0.79) Girls: 0.76 (95% CI, 0.49 to 1.00) ns Boys: 0.68 (95% CI, 0.57 to 0.78) SRR VR AUC	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					All: 0.65 (95% CI, 0.56 to 0.73) Girls: 0.69 (95% CI, 0.48 to 0.90) ns Boys: 0.64 (95% CI, 0.54 to 0.73) No recidivism rates in relation to the assessed risk level No PPV/NPV.	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Viljoen JR, et al 2017 [21] Canada Prospective study	n=156 49 girls (31.4%) 107 boys (68.6%) Mean age 16.41 years, sd=1.14 (range=12–18) 38.5% Caucasian/European, 31% Aboriginal 12.8% Asian 7.1% East Indian/Southeast Asian 7.1% Hispanic 4.5% African **Offense history or index crime** No charges prior to the index offense 106 (67.9%) Violent offense 93 (59.6%) Property offense 57 (36.5%) Juveniles on probation.	SAVRY (& YLS/CMI) Assessments made by research assistants 11 graduated students and 8 undergraduate students received a 2-day training in risk assessment tools Total score and summary risk rating (SRR).	Recidivism Adult and youth records from the Corrections Network System, British Columbia, coded as any or violent reoffences charges	Follow-up period of 24 months.	ICC: total score 0.91 (n=32) **Total score GR AUC** All: 0.75 (95% CI, 0.67 to 0.82) **Total score VR AUC** All: 0.71 (95% CI, 0.61 to 0.81) **SRR GR AUC** All: 0.73 (95% CI, 0.66 to 0.80) **SRR VR AUC** All: 0.66 (95% CI, 0.56 to 0.75) No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Viljoen et al 2018 [33] Canada Prospective study 2012 and 2012– 2013	n= 108 (matching two samples with 108 in each out from 280 youth, in total 216 for both SAVRY and YCRNA) 52 girls (24.1%) 164 boys (75.9%) Mean age 17.28, sd=1.32 118 Caucasian (54.1%) 70 Indigenous (32.4%) 5 South Asian (2.3%) 5 Asian (2.3%) 4 Hispanic (1.9%) 3 African or black (1.4%) **Offense history** 107 Previously incarcerated (49.5%) 41 violent offense (39.8%) 42 property offense (40.8%) 12 Violation (11.7%)	SAVRY The YCRNA was used to compare with SAVRY was conducted by Youth Probation Officers (YPO)	Recidivism Any charges or violent charges.	2.27 years, sd=0.42 (range=0.44–3.76). No dropouts.	ICC: 0.70 (n=35) **Total score GR AUC** All: 0.63 (95% CI, 0.52 to 0.73) **Total score VR AUC** All: 0.66 (95% CI, 0.55 to 0.77) **SRR GR AUC** All: 0.59 (95% CI, 0.48 to 0.70) **SRR VR AUC** All: 0.60 (95% CI, 0.47 to 0.72) ns No information of recidivism rate in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Community probation.					
Zhou et al 2017 [34] China Prospective study 2009–2010	n=246 boys Mean age 16.7 years, sd=1.0, (range=15–17 years) **Offense history** Previous contact with the police: 25 (10%) Youth detention centre in Changsha, Hunan province, China.	SAVRY Trained assessors scored SAVRY based on file information and interviews Variety of interventions Total score.	Recidivism New petition to court (i.e., formal filing of charges). Data were taken from local official police records.	An average follow-up of 5 years, sd=3.09 months (range=9.13–25.43) No dropouts.	Cohens kappa > 0.81 for each item (n=no information). **Total score GR AUC** Boys: 0.68 (95% CI, 0.61 to 0.76). No recidivism rates in relation to the assessed risk level No PPV/NPV.	Low risk of Bias Narrative analyses.
Åström et al 2017 [35] Sweden Prospective study	n= 56 132 adolescents in total; 56 from SAVRY-units, 38 from ADAD-units and 38 from units who did assessment without support of a structured method, IAU (339 consecutively admitted adolescents assessed for eligibility, 207 excluded, 152 declined participation, 28 did	SAVRY (and unstructured clinical assessment, see Table 1d) SAVRY assessments by social workers as part of routine practice	Recidivism Self-reported crime, i.e. any reoffending and violent reoffending collected in face-to-face interviews or self-report forms.	Follow-up period 12 months Drop out at 12 months for the whole population: 26 (20%). Drop out (n=26 in total, 14 from SAVRY-units)	Cohens kappa > 0.81 for each item (n=20). **Total score GR AUC** All: 0.80 **Total score VR AUC** All: 0.77 **Total score serious violence AUC**	Moderate risk of Bias Narrative analyses Included in meta-analyses The corresponding author was contacted to contacted in order to get further information about risk

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	not meet inclusion criteria, 16 weren't reached, and 5 agreed to participate but dropped before initiation of the study) Mean age=16.1 years, sd=1.6 (range=12–20) Social services.	Social workers were trained in using SAVRY Assessment at intake A variety of interventions for some of the adolescents Total score and Summary risk raring.			All: 0.81 Any nonviolent crime AUC All: 0.77 **SRR GR AUC** All: 0.69 **SRR less serious violence AUC** All: 0.70 **SRR serious violence AUC** All: 0.80 **Recidivism rate GR** 12 low risk (52.0%) 5 medium risk (83.0%) 8 high risk (89.0%) No PPV/NPV.	level in relation to recidivism.

ADAD-units = Units using the method Adolescent Drug Abuse Diagnosis; **AUC** = Area under the curve; **IAU-unit** = Youth Forensic Psychiatric Services Inpatient Assessment Unit; **ICC** = interclass correlation; **CI** = Confidence interval; **Follow up** = Monitoring a person over time after treatment; **GR** = General Recidivism; **Index crime** = current crime; **LSI-SK** = Level of Service Inventory – Saskatchewan Youth Edition; **n** = number; **ns** = non-significant; **PPV/NPV** = The positive/negative predictive value; **SE** = Standard Error; **SRR** = Summary risk rating; **sd** = Standard Deviation; **VR** = Violent Recidivism; **VRS-YV** = Violence Risk Scale–Youth Version; **YLS/CMI-AA** = Australian adaptation

Appendix/Bilaga 1c. Studies on other methods.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Jones et al 2016 [36] Canada Prospective study 2009–2011	n=464 114 girls (25%) 350 boys (75%) Mean age 16.63 years, sd=1.52 (range=12.5–19.7) 61.2% Caucasian 25.9% Aboriginal 12.9% Other **Index crime** 58.6% had engaged in acts of violence Youth under community supervision.	YASI Post adjudication, predisposition SAVRY Probation officers trained in administering the YASI pre-screen for two days Assessment within 45 days of the youth receiving a community sentence The youth were placed on community supervision Total score and summary risk rating (SRR).	Recidivism. New arrests/charges over 18 months from correctional data, recontact with correctional services.	18 months from YASI pre-screen assessment No dropouts.	No ICC **Risk total GR AUC** All: 0.79 (95% CI, 0.74 to 0.84) Girls: 0.68 (95% CI, 0.56 to 0.80) Boys: 0.82 (95% CI, 0.77 to 0.88) **Risk total VR AUC** All: 0.79 (95% CI, 0.73 to 0.85) Girls: 0.79 (95% CI, 0.68 to 0.90) Boys: 0.79 (95% CI, 0.72 to 0.86) **Recidivism rate** Girls: 6 low risk (9%) 8 medium risk (22.9%)	Moderate risk of Bias Narrative analyses Included in meta- analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					3 high risk (25%) Boys: 3 low risk (3.1%) 28 medium risk (17.6%) 49 high risk (52.1%) No PPV/NPV.	
Luong 2011 [37] Canada, Saskatchewan Retrospective study with blinded outcome 2004–2005	n=192 Mean age at first conviction 14.84 (sd=1.61) and index sentencing 15.78 (sd=1.47) 51 girls (26.6%) 141 boys (73.4%) 69 Non-Aboriginal (35.9%) 123 Aboriginal (64.1%) **Offense history** 53.6% Prior convictions Probation office.	LSI-SK Saskatchewan Youth Edition LSI-SK rated in regular practice prospectively for the adolescent A need-classification assessment was done by researcher Youth during supervision Total score.	Recidivism Any new conviction during post-assessment and follow up period.	Follow-up: From date when community sentence commenced to a fixed point in time For those who did not reoffend end date was 18 years or end of sentence (the latest) Mean length of follow-up 673.38 days, sd=295.95 (range=80–1,380 days) No dropouts.	No ICC **Total score GR AUC** All: 0.730 (95% CI, 0.66 to 0.80) Girls: 0.74 (95% CI, 0.59 to 0.88) Boys: 0.73 (95% CI, 0.64 to 0.81) **Recidivism rate** All: 62.5% No recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of Bias Narrative analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Stockdale, Olver and Wong 2014 [38] Canada Retrospective study with blinded outcome 2006–2010	n=147 71 girls (48%) 76 boys (52%) Mean age, 16.2, sd=1.4 (range=12–19) 62.6% Aboriginal 25.2% Non-Aboriginal 12.2% Unknown **Offense history and index crime** Average number of criminal convictions compromising the index sentence was 4.2, sd=3.5 61.4% had one or more criminal convictions, 37.2% at least one previous for violence **Index crime** 57.8% Assault	VRS-YV Research team of two persons Training in VRS-YV File information 44.2% of the youth were referred to individual or group treatment, 41.4% were living in community at the time the received services, 42.1% were in custody, unknown 16.6% during assessment Total score.	Recidivism Data base of any convictions.	The mean follow-up period in the community was 7.21 years, sd=2.85 (range=2.75–13.28) after release from custodial setting or probation Drop-outs n=2–26.	ICC: risk total 0.90 (n=23) **Total score GR AUC** All: 0.73 (95% CI, 0.64 to 0.82) Girls: AUC 0.64 (95% CI, 0.51 to 0.77) Boys: 0.84 (95% CI, 0.74 to 0.94) **Total score VR AUC** All: 0.77 (95% CI; 0.70, to 0.85). Girls: AUC 0.66 (95% CI, 0.53 to 0.78) Boys: 0.88 (95% CI, 0.81 to 0.95) **Recidivism rate** **General** 44.4% low risk 66.7% medium risk 89.8% high risk **Violence**	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	37.4% Property crimes 25.9% Weapon-related offences 24.5% Robbery 11.6% Threats 6.8% Sex offenses 4.1% Murder or manslaughter Juvenile court and/or treatment referred youth.				8.3% low risk 45% medium risk 71.4% high risk No PPV/NPV.	
van der Put et al. 2014 [39] The Netherlands Prospective study	n=520 99 girls (19%) 421 boys (81%) Mean age15.58, sd=0.84 (range=12–18) 286 Dutch background (55%) 234 Non-Dutch background (45%) **Offense history**	Washington State Juvenile Court Pre-Screen Assessment (WSJCA) Probation officers received training in the instrument WSJCA pre-screen were completed by probation officers during intake Unspecified interventions Total score.	Recidivism The occurrence of one or more multiple adjudications/ convictions. Total score,	24 months after assessment No dropouts.	ICC: 0.98 (n=18) **Total score GR AUC** All: 0.63 (95% CI, 0.58 to 0.67) Girls: 0.64 (95% CI, 0.52 to 0.75) Boys: 0.61 (95% CI, 0.55 to 0.66) **Recidivism rate** Total group 55% 35% girls	Moderate risk of Bias Narrative analyses Included in meta-analyses.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Total number of felony referrals: 27 none (5%) 181 one (35%) 124 two (24%) 188 three or more (36%) Juvenile probation service.				59% boys Low risk (32%) medium risk (58%) high risk (65%) Risk ratings: 21% low risk; 41% medium risk; 38% high risk. Sensitivity: Very high and high: 0.15 (95% CI, 0.12 to 0.20) High and medium: 0.57 (95% CI, 0.52 to 0.63) Medium and low 0.82 (95% CI, 0.77 to 0.86) Low and very low: 0.97 (95% CI, 0.94 to 0.98) Specificity: Very high and high: 0.98 (95% CI, 0.95 to 0.99) High and medium: 0.79 (95% CI, 0.73 to 0.83) Medium and low 0.48 (95% CI, 0.42 to 0.55)	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
					Low and very low: 0.21 (95% CI, 0.16 to 0.26) Positive predictive power (PPP): Very high and high: 0.90 (95% CI, 0.78 to 0.96) High and medium: 0.77 (95% CI, 0.71 to 0.82) Medium and low 0.66 (95% CI,0.61 to 0.71) Low and very low: 0.60 (95% CI, 0.55 to 0.64) Negative predictive power (NPP): Very high and high: 0.49 (95% CI, 0.44 to 0.53) High and medium: 0.60 (95% CI, 0.55 to 0.65) Medium and low 0.69 (95% CI, 0.61 to 0.75) Low and very low: 0.83 (95% CI, 0.71 to 0.90).	

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Zhang 2016 [40] China Prospective study 2010–2013	n=112 boys Mean age 16.98, sd=0.83 (range=16–18) **Index crime** 101 committed a violent crime, 11 a non-violent crime Social services.	LSI-R Six professional social workers were responsible for administration of the LSI-R Training in LSI-R and motivational interviewing The assessors were trained in LSI-R Assessment at intake before counselling or other services Total score.	Recidivism New offense or re-arrest, official data.	Mean follow-up was 24.5 months, sd= 13.73 No dropouts.	No ICC **Total score GR AUC** Boys: 0.73 **Recidivism rate** **General** Low risk (0 of 112) Medium (7 of 112) High risk (11 of 112) No PPV/NPV.	Moderate risk of Bias Narrative analyses Included in meta-analyses.

ADAD-units = Units using the method Adolescent Drug Abuse Diagnosis; **AUC** = Area under the curve; **IAU-unit** = Youth Forensic Psychiatric Services Inpatient Assessment Unit; **ICC** = Interclass correlation; **CI** = Confidence interval; **Follow up** = Monitoring a person over time after treatment; **GR** = General Recidivism; **Index crime** = current crime; **LSI-SK** = Level of Service Inventory – Saskatchewan Youth Edition; **n** = number; **ns** = non-significant; **PPV/NPV** = The positive/negative predictive value; **SE** = Standard Error; **SRR** = Summary risk rating; **sd** = Standard Deviation; **VR** = Violent Recidivism; **VRS-YV** = Violence Risk Scale–Youth Version; **YLS/CMI-AA** = Australian adaptation

Appendix/Bilaga 1d. Unstructured clinical assessment

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Hilterman et al 2014 [8] Spain Prospective study 2006–2007	n=105 (345 were invited to participate and 145 interviews were completed before deadline) Mean age 18.4 years, sd=1.2 19 (18%) girls 86 (82%) boys 83 (79%) Spanish 2 (2%) European 12 (11%) South American 8 (8%) North Africa/Asian **Offense history** Number of previous offending Any n=4.7, sd=5.5 Violent n=2.3, sd=2.3 Probation setting.	Unstructured clinical assessment (also YLS/CMI, see Table 1a, and SAVRY Table 1b) Probation officers rate the juvenile`s risk (without an assessment method) once the probation ended, used a three-point scale; low, moderate or high No intervention after probation Total score.	Self-report through a 10 minutes telephone interview 12 months after the assessment interview; any and violent offending	12 months follow-up Dropouts =40	No ICC **Total score GR AUC** All: 0.61 (95% CI, 0.44 to 0.72) ns **Total score VR AUC** All: 0.61 (95% CI, 0.51 to 0.75) **Recidivism rate** Any recidivism 81.9% Violent recidivism 65.4% No PPV/NPV.	Moderate risk of bias The studies using unstructured clinical assessment are not included in any syntheses. The reason is that they are quite different from one another.

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
Lodewijks (b) 2008 [28] Netherlands Retrospective with blinded outcome 1998–2002	n=117 6 girls (5%) 111 boys (95%) Mean age 15.3, sd=1.3, (range=12–18) 48 (41%) Caribbean 27 (23%) Mediterranean 33 (28%) Caucasian 9 (8%) Other **Index crime** All violent offenses 64 (55%), violent property offense 40 (34%) manslaughter and (aggravated) assault 12 (10%) Sexual offense 1 (1%) Arson Sentence: 77 (66%) mandatory treatment	Unstructured clinical assessment (and SAVRY, see Table 1a). Rated on file information UCA was based on a review of the concluding comments of the forensic mental health assessment reports by an experienced forensic psychologist. Unspecified interventions and detention Total score.	Violent recidivism and general recidivism - new conviction by court for an offense.	3 years after forensic mental health assessment Time at risk was calculated by adding days where no supervision was for the patient for any reason (i.e. escape, leave etc.) Mandatory treatment group mean follow up time 80 days sd=146 (range=10 to 649) Detention sentenced group mean follow up time 1031 days, sd=195, (range=411–1,095).	No ICC **Total score VR AUC** All: 0.45ns (95% CI, 0.34 to 0.60) No information of recidivism rates in relation to the assessed risk level No PPV/NPV.	Moderate risk of bias The studies using unstructured clinical assessment are not included in any syntheses. The reason is that they are quite different from one another

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	40 (34%) detention Stay at institution Mandatory mean=1,031 days sd=129 range=593–1095 Detention mean=76 days sd=74 (range=11–358) Juvenile justice institution.					
Mori, Takahashi and Kroner 2017 [41] Japan Prospective study design 2004–2008	n=299 boys Mean age 16.99 years, sd=1.54 (range=13 to 19) **Offense history or index crime** No information Juvenile classification home. Released on probation 93.3% Other 6.7%	Unstructured clinical assessment Risk estimate represented by placement recommendation Juvenile classification home psychologist performed assessment Assessed before released to community for research purpose	Recidivism, general, violent and non-violent.	6–24 months after assessment Mean 548.5 days, sd=320.7 days.	No ICC **Total score GR AUC** All: 0.56 (95% CI, 0.48 to 0.65) **Total score VR AUC** All: 0.55 (95% CI, 0,41 to 0.69) **Recidivism rate** GR 18.7% VR 6%	Moderate risk of bias The studies using unstructured clinical assessment are not included in any syntheses. The reason is that they are quite different from one another

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
		Probation included guidance and support Intervention according to recommendation *Recommendation* Community 77.3% Institution short term 12.4% Institution long term 10.4%.				
Upperton and Thompson 2007 [19] Australia Prospective study 2001–2002	n=100 young persons assessed with an unstructured clinical assessment (risk estimation scale) 14 girls 14 (14 %) 86 boys 86 (86%) Mean age 15.73, sd=1.10 (range=12.64–17.68) **Offense history** No information	Unstructured clinical assessment (and YLS/CMI-AA, see Table 1a). Juvenile justice officers assessed youth during community supervision. Risk estimation scale from the	Recidivism. New criminal conviction subsequent to the date of the risk assessment (to the date of the young person´s 18th birthday). Juvenile justice database.	Length of follow-up was the time between date of risk assessment and date of follow-up or the youth´s 18 birthday. Length of follow-up for the UCA was 17.42 months, sd= 4.96 No dropouts.	**GR AUC** 5–25 months follow-up All: 0.70 (95% CI, 0.60 to 0.80) (n=100) 15 months follow-up (n=64 boys) Boys: 0.73 (95% CI, 0.61 to 0.86) **Recidivism rate**	Moderate risk of bias The studies using unstructured clinical assessment are not included in any syntheses. The reason is that they are quite different from one another

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	Community supervision.	unstructured assessment No information of the interventions during the community supervision Total score.			low risk 21% medium risk 50%, high risk 69% (3–15 months) n=100 No PPV/NPV.	
Åström et al 2017 [35] Sweden Prospective study	n=38 (339 consecutively admitted adolescents assessed for eligibility, 207 excluded, 152 declined participation, 28 did not meet inclusion criteria, 16 weren't reached, and 5 agreed to participate but dropped out before initiation of the study Final sample comprised 132 adolescents. 56 from SAVRY-units, 38 from ADAD-units and 38 from units who did assessment without support of a structured method, IAU. 32 girls	Unstructured clinical assessment (and SAVRY, see Table 1b) Social workers doing assessment as part of routine practice Assessment at intake A variety of interventions for some of the adolescents Risk total from an index of risk	Recidivism Self-reported crime, i.e. any reoffending and violent reoffending collected in face-to-face interviews or self-report forms.	Follow-up period 12 months Drop out at 12 months n= 8 from IAU-units.	Cohens kappa > 0.81 for each item, n=.20 IAU (n=30) Any crime: AUC=0.71 ns Any violent crime: AUC=0.69 ns Any serious violence: AUC=0.69 ns Any nonviolent crime AUC= 0.51 ns No information of recidivism rates in relation to the assessed risk level	Moderate risk of bias The studies using unstructured clinical assessment are not included in any syntheses. The reason is that they are quite different from one another

First author Year Reference Country Study design	Population Setting	Index test assessor, assessment etc.	Reference test	Follow up Drop out	Results	Risk of Bias Comments
	100 boys Mean age=16.1 years, sd=1.6 (range=12–20) Thirteen social service units working with adolescents in Stockholm county.	factors included in the investigation. .			No PPV/NPV.	

ADAD-units = Units using the method Adolescent Drug Abuse Diagnosis; **AUC** = Area under the curve; **CI** = Confidence interval; **Follow up** = Time after assessment GR= General recidivism**; IAU-unit** = Investigation as usual; **ICC** = interclass correlation; **Index crime** = current crime; **LSI-SK** = Level of Service Inventory – Saskatchewan Youth Edition; **n** = number; **ns** = non-significant; **PPV/NPV** = The positive/negative predictive value; **SE** = Standard Error; **SRR** = Summary risk rating; **sd** = Standard Deviation; **VR** = Violent Recidivism**; VRS-YV** = Violence Risk Scale–Youth Version; **YLS/CMI-AA** = Australian adaptation

Appendix/Bilaga 1e Qualitative studies.

First author Year Country	Aim and method	Population Setting	Results (themes)
Guy et al 2014 [42] USA Moderate risk of Bias	This study investigates JPOs' expectations of and experiences using the YLS/CMI and SAVRY for case planning with probationers. First, we examined JPOs' broad perceptions about the usefulness and difficulties of the instruments. Next, we investigated JPOs' experiences using the instruments with respect to (1) rating specific items and (2) making overall ratings about risk level. Third, among SAVRY users only, we investigated the degree to which JPOs reported rating the items and making a SRR in a manner consistent with the SPJ model's concepts of manifestation, relevance, and linearity.	Six probation offices 71 Juvenile probation officers, JPOs, across the six probation offices. JPOs on average were 35.49 (sd 9.7) years old, men (52.1%, n=37), and Caucasian (63.2%, n =43; African American: 33.8%, n=23; Other: 2.9%, n=2), data were missing for three JPOs). Most had a bachelor's degree (75.8%, n=50) and a few had a master's degree (24.2%, n=16; data were missing for five JPOs). YLS/CMI users had significantly more years of experience working with juvenile justice-involved youth (mean=14.3, sd =10.0) than SAVRY users (mean=9.72, sd =.15); t (130) 2.74, p .007; d.48).	Overall, the majority of users of both instruments perceived them to be 'somewhat' or 'very' helpful for making recommendations about disposition, services, and level of supervision across both follow-up periods. **Perceived Helpfulness of the Risk Instruments** YLS/CMI: The most frequently identified theme was use of the instrument to "back up" their opinions about risk level and recommendations regarding services and level of supervision, which they believed they would have reached using only their professional experience. In some cases, YLS/CMI results were valued only if they supported the JPO's opinion. Other, less frequently, identified themes related to the perceived helpfulness of the instrument included more comprehensive gathering of risk-related information, the "user friendly" aspects associated with having the YLS/CMI items and scoring guidelines incorporated into an electronic data management system, and the consistency across

First author Year Country	Aim and method	Population Setting	Results (themes)
	Eight trained researchers interviewed JPOs three times about their case management practices and experiences supervising probationers: prior to implementation of and training on the risk assessment instrument, three months after implementation, and 10 months after implementation. Only data from the two post-implementation interviews are reported here, and subsequently are referred to as the first and second interviews, respectively. JPOs were queried regarding how challenging it was to make the SRR (for SAVRY users) or the final risk estimate that could lead to a professional override (for YLS/CMI users). They also were asked to describe any factors they believed could make that process easier. In the		probation offices for assessing risk for reoffending using the same criteria. SAVRY: - Emphasis on professional judgment (as a positive). - Enhanced data collection. - Increased knowledge about risk factors. Other minor themes observed related to positive aspects of SAVRY included the promotion of objectivity and transparency in the risk assessment process, having a research based procedure "back up" their professional opinion and recommendations, the utility of SAVRY for tracking changes in risk over time, ease of communication between professionals trained in the same instrument (e.g., speaking the "same language"), and increased ability to "pinpoint" the most critical criminogenic needs to be targeted for treatment. **Perceived Difficulties of the Instruments** Amongst both YLS/CMI and SAVRY users, the most frequently reported disadvantage was the increased length of time required to complete the pre-dispositional report (into which the instruments' 'results' were incorporated). *YLS/CMI users*. Many JPOs cited the redundancy between the information gathering and decision-making practices they were using

First author Year Country	Aim and method	Population Setting	Results (themes)
	final interview, SAVRY users were queried regarding the ways in which they used the instrument within the framework of the SPJ model. They were asked to describe the process they followed when making the SRR and to answer specific (and face valid) questions to assess –in a rudimentary manner –the degree to which they understood assessment practices consistent with the SPJ model.

Most interviews were conducted over the phone (some in person) and all were audiotaped and transcribed. Qualitative data were coded using a content analysis approach through the use of verbatim interview transcripts to uncover common themes. The content analysis comprised several steps. First, two researchers read 10 randomly | | prior to YLS/CMI implementation and the practices put into place with the YLS/CMI.

SAVRY users. The majority of SAVRY users expressed a preference for an instrument that incorporated professional judgement, but a few expressed an inclination toward using an instrument that assigned a risk level automatically. For a minority of SAVRY users, this preference was rooted in their desire to have a more structured instrument that provided immunity against negative outcomes. Other SAVRY users voiced concern that individual differences in JPOs' attitudes, orientation towards retribution, or tolerance for risk taking could affect the way in which the SRR is assigned.

Some SAVRY users expressed a desire to reduce the perceived subjectivity associated with assigning the SRR. An unexpected finding that emerged suggested concern about misusing the flexibility of the SPJ approach to avoid additional work (because supervision requirements were tied to risk level by policy). A few JPOs indicated SAVRY would be more helpful to less experienced JPOs.

Experiences Rating Instruments' Items

YLS/CMI-users Few JPOs reported finding specific items difficult to rate at the second interview (nine of 25, 36%). Some responses suggested frustration with the dichotomous item ratings.

SAVRY users. At the second interview, 25 of 44 JPOs (57%) reported finding one or more items difficult to rate. |

First author Year Country	Aim and method	Population Setting	Results (themes)
	selected transcripts of interviews with SAVRY users and developed a set of initial themes. Following this initial step, 35 themes were generated that reflected a detailed breakdown of JPOs' satisfaction with and use of SAVRY in the field. Next, a more parsimonious set of second order themes was developed (comprising 19 themes).		**Experiences Making Overall Risk Ratings** *YLS/CMI users* Approximately one quarter of YLS/CMI users (8 of 28, 29%) reported having never applied a professional override, despite having wanted to do so. Of those who had, most found making the override to be relatively easy. *SAVRY-users* Among the minority of JPOs who described the process of selecting the SRR as being difficult at the first interview *Process for generating the SRR* **Post-hoc Themes Identified** *YLS/CMI users*. The most prevalent theme was frustration associated with lack of buy-in from judges and attorneys, and the consequent lack of impact on case planning and risk management activities. *SAVRY users*. A theme emerged related to need for training in interviewing skills. Many JPOs indicated they used the semi-structured interview guide as an inflexible series of questions, all of which had to be asked. Several JPOs expressed frustration, which they attributed toward SAVRY, that the information obtained from separate interviews with the youth and parent at times was discrepant. Some JPOs expressed concern that more time was devoted to the assessment process at the expense of time supervising youth in the field. Other SAVRY users suggested that risk assessment procedures could be improved by the creation of an intake unit.

First author Year Country	Aim and method	Population Setting	Results (themes)
Vincent et al 2012 [43] USA Importance of Implementation Moderate risk of Bias	To examine (a) attitudes toward rehabilitation, (b) perceptions of the likelihood of youth reoffending, and (c) the factors considered in case management decisions. JPOs were also asked about the anticipated benefits and barriers to implementation of a tool, and subsequently asked about the actual benefits and barriers after they had been using the tool in their day-to-day practice. A mixed-methods approach was used to code the qualitative data obtained from these interviews. There were four steps.	Eighty-eight JPOs and 23 administrators (N _ 111) completed at least one of three waves of interviews. Self-report questionnaires were administered. Every administrator and JPO at each site were interviewed at least once. The sample was 53.2% boys, 66.7% White and 31.4% African American, and averaged 38.91 years of age (sd _ 10.67). Most participants had a bachelor's degree (74.5%) and 24.5% had a master's degree. The median years of experience working with JJ-involved youth was nine (sd _ 10 years). An additional 13 JPOs were located in a NE unit that had not yet implemented the RNA tool (NE Control), and therefore served as controls, making a total of 126 participants. Controls did not differ from other participants on basic demographic characteristics.	**Benefits of Risk Assessment** During pre-implementation interviews, these questions were phrased as anticipated benefits or barriers because JPOs had not yet been exposed to SAVRY or YLS/CMI. For benefits, the most common themes were guiding the JPOs in various areas of decision-making; these did not change much over time. Some unanticipated benefits JPOs mentioned were availability of the interview guides and feeling that the tool enhanced their credibility. **Barriers to Use of Risk Assessment** With respect to barriers, most issues participants anticipated prior to implementation were not identified as barriers once JPOs began using the tools. For example, resistance to change and feeling devalued by the tool were responses that both decreased in frequency. The most commonly reported barrier, however, was the amount of time it took to complete the assessments, and this remained high over time. Judge or attorney buy-in (significantly more common in NE) and finding the tools hard to rate (significantly more common in S) were frequently identified barriers that participants did not anticipate initially. **Some quantitative data** After asking nonleading, open-ended questions about decision-making, JPOs were asked directly if they used SAVRY or YLS/CMI in these decisions.

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First author Year Country	Aim and method	Population Setting	Results (themes)
			JPOs were significantly more likely to report using RNA tools for all three types of decisions. Specifically, reported use of RNA tools increased from 27.7% to 77.2% (0.59) for disposition recommendations, from 23.5% to 80.4% (0.62) for service referrals, and from 52.8% to 90.2% (0.66) for use in supervision levels. Each difference was statistically significant at the p .01 level and represented large effect sizes.

JPOs = The Division's Juvenile Probation Officers; **SPJ = structured professional judgement**

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