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SERIOUS AND VIOLENT OFFENDING: PSYCHOLOGICAL RISK FACTORS AND TREATMENT EFFECTIVENESS

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**Karolinska
Institutet**

Stockholm 2021

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Published by Karolinska Institutet.

Printed by Universitetservice US-AB, 2021

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ISBN 978-91-8016-254-8

Serious and violent offending: Psychological risk factors and treatment effectiveness

THESIS FOR DOCTORAL DEGREE (Ph.D.)

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This thesis will be defended in public at CPF, Norra Stationsgatan 69, 6th floor, Stockholm, 90-salen, June 4, 2021 at 10.00 AM

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SVENSK SAMMANFATTNING

Våldsbrottslighet orsakar stora lidanden och kostnader för individer och samhälle och psykologiska insatser inriktade på förändringsbara riskfaktorer hos våldsbrottsförövare kan minska brottsåterfallen.

Det övergripande syftet med avhandlingen är att studera kognitiva förvrängningar, moralutveckling och empati hos institutionsplacerade antisociala ungdomar. Samt undersöka om behandlingsprogram inriktade på liknande riskfaktorer minskar återfall bland personer dömda för allvarliga (vålds)brott.

I den **första delstudien** undersökte vi om antisociala ungdomar placerade på Statens institutionsstyrelses (SiS) behandlingshem skiljer sig från icke-placerade beträffande tre psykologiska faktorer möjliga att arbeta med i kognitiv beteendeterapi (KBT). Totalt 58 (29 manliga och 29 kvinnliga) antisociala ungdomar placerade på behandlingshem och 58 individuellt matchade icke-placerade skolungdomar (medelålder 15,7 år) självrapporterade antisociala kognitiva förvrängningar, moraliskt resonerande och empati. Antisociala kognitiva förvrängningar och mindre mogna moraliska bedömningar föreföll påtagligt vanligare hos antisociala unga på ungdomshem än hos skolungdomar. Däremot fann vi inga meningsfulla skillnader i självrapporterad empati.

I den **andra delstudien** undersökte vi om individuell KBT-behandling inriktad på förbättrad problemlösning, kognitiv självkontroll och återfallsprevention förebygger brottsåterfall för unga våldsbrottsdömda dömda till slutna ungdomsvård (LSU). I en randomiserad kontrollerad studie (RCT) lottades unga våldsbrottsdömda män (medelålder 17,7 år) med LSU-vård i ≥ 6 månader på SiS-institution till sedvanlig behandling på institution plus individualiserad KBT (iCBT)(n=38) eller till enbart sedvanlig institutionsbehandling (n=43). Grupperna jämfördes beträffande återfall i våldsbrott resp. något brott i BRÅs Lagföringsregister efter frigivning. Vi jämförde även aggressiva uppförandestörningssymtom enligt DSM-5. Vi fann inga meningsfulla skillnader i brottsåterfall 12 eller 24 månader efter frigivning för de som fått iCBT plus sedvanlig institutionsbehandling jämfört med dem som enbart fått sedvanlig institutionsbehandling. Vi fann heller inga skillnader i aggressiva DSM-5-symtom vid 12-månadersuppföljning.

I den **tredje delstudien** undersöktes effekten av Aggression Replacement Training (ART), en gruppbaserad KBT-behandling för minskad aggressivitet och återfallsrisk bland (vålds)brottsdömda. Det var en kontrollerad observationsstudie av återfall i våldsbrott resp. något brott enligt Lagföringsregistret för alla 1,124 vuxna klienter som påbörjat ART inom Kriminalvården 2003–2009 och 3,372 matchade (1:3) kontrollpersoner som inte påbörjat ART (medelålder 25,7 år). Så kallad propensity score matchning användes för långtgående statistisk kontroll av uppmätta bakgrundsskillnader (t.ex. sociodemografiska faktorer, kriminell bakgrund, psykiatrisk sjuklighet och substansmissbruk). Med Coxregression beräknades eventuella skillnader i brottsåterfall. Vi fann ingen meningsfull minskning av återfall i våldsbrott resp. något nytt brott för de som påbörjat ART i Kriminalvården jämfört med matchade kontroller som inte gjort det.

Avhandlingen antyder att antisociala kognitiva förvrängningar utmärker SiS-placerade antisociala ungdomar och kan vara meningsfulla att påverka med återfallsförebyggande psykologisk behandling. Dock kunde inte tillägg av en individualiserad KBT-insats (iCBT) till sedvanlig behandling på SiS' ungdomshem resp. gruppbaserad ART för unga vuxna i Kriminalvården meningsfullt minska brottsåterfall. Tydligare fokus på implementering, säkerställande av att psykologisk behandling ges med hög kvalitet och integrering med andra insatser kan behövas för effektivare återfallsförebyggande insatser för allvarligt kriminella individer.

ABSTRACT

Background: Violent crime causes extensive suffering and costs to individuals and societies and is a major global health issue. Prevention of violence should occur at several levels, and effective psychological interventions targeting changeable risk factors among violent offenders might reduce recidivism.

Aims: First, to investigate if antisocial youth in residential treatment differ from matched general population comparison subjects on three individual psychological factors possible to address in cognitive behavioral therapy (CBT); antisocial cognitive distortions, empathy, and moral reasoning (Study I). Second, to test if an individual CBT module targeting problem-solving, cognitive self-control, and relapse prevention in serious, young violent offenders in residential treatment would add to the effect of treatment as usual (TAU)(Study II). Third, to assess the effectiveness of Aggression Replacement Training (ART), a CBT intervention aimed at reducing aggression and preventing recidivism, among adult offenders in the Swedish Prison and Probation Service (SPPS)(Study III).

Methods: We administered self-report questionnaires to 58 (29 male and 29 female) antisocial youth (mean age 15.7 years) in residential treatment and 58 individually matched, non-institutionalized school youth (Study I). Further, in a five-site, randomized controlled trial (RCT), serious, violent male offenders in residential treatment (mean age 17.7 years) were allocated to either TAU plus individualized CBT (iCBT) (n=38) or to TAU only (n=43). The groups were compared on violent and general reconvictions according to the National Crime Register 12 and 24 months after release, aggressive symptoms at 12 months, and changes in self-reported aggression-related measures from inclusion to release (Study II). Finally, we conducted a controlled observational study comparing reconviction rates (National Crime Register) among all 1,124 young adult offenders in prison, on parole or probation within the SPPS that began group-based ART during 2003–2009 with 3,372 control subjects who did not (mean age 25.7 years). Propensity score matching was used to adjust extensively for baseline differences (e.g., sociodemographic variables, criminal history, psychiatric morbidity, and substance misuse) and effect sizes were obtained from Cox regression models (Study III).

Results: Antisocial cognitive distortions and less mature moral judgment were more common (moderate to large effects) in antisocial youth in residential treatment than among matched comparison youth. In contrast, we found no differences in self-reported empathy (Study I). Further, intent-to-treat analyses found no meaningful differences between iCBT+TAU vs. TAU only in violent or general reconviction rates among serious young violent offenders at 12- or 24-month follow-ups or self-reported aggressive DSM-5 symptoms at 12 months (Study II). Finally, intent-to-treat analyses suggested no meaningful differences in violent or general reconviction rates for adult offenders beginning ART within the SPPS compared to controls that did not start ART (Study III).

Conclusions: Antisocial cognitive distortions characterize antisocial youth in residential treatment and may constitute targets for recidivism-reducing psychological interventions. However, neither the addition of an individualized CBT intervention (iCBT) to TAU nor ART, a group-based CBT intervention, managed to decrease meaningfully reoffending among serious, violent youth in residential care or adult criminal offenders in prisons and probation, respectively. Stronger focus on implementation issues and treatment fidelity might help improve recidivism-reducing efforts with serious, violent individuals in these settings.

LIST OF SCIENTIFIC PAPERS

- I. **Lardén, M.**, Melin, L., Holst, U., & Långström, N. (2006). Moral judgement, cognitive distortions and empathy in incarcerated delinquent and community control adolescents. *Psychology, Crime & Law*, 12, 453–462.
- II. **Lardén, M.**, Högström, J., & Långström, N. (2021). Effectiveness of an individual cognitive-behavioral intervention for serious, young male violent offenders: Randomized controlled study with 24-month follow-up. *Submitted manuscript*.
- III. **Lardén, M.**, Nordén, E., Forsman, M., & Långström, N. (2018). Effectiveness of aggression replacement training in reducing criminal recidivism among convicted adult offenders. *Criminal Behaviour and Mental Health*, 28, 476–491.

CONTENTS

1	Introduction	1
1.1	A personal perspective	1
1.2	Improving treatment program effects	1
2	Background.....	3
2.1	Interpersonal violence	3
2.2	Antisocial behavior in general	3
2.3	Briefly on related criminal law	4
2.4	Offender treatment.....	5
2.4.1	Systematic reviews of offender treatment effects	5
2.4.2	The Risk, Need and Responsivity principles.....	7
2.4.3	Structured risk and need assessment	9
2.4.4	Self-serving antisocial cognitive distortions as a needs factor	10
2.4.5	Psychopathy as a needs factor	11
3	Research aims	13
4	Materials and methods	18
4.1	Design, participants and procedures	18
4.1.1	Settings	18
4.1.2	Study I.....	18
4.1.3	Study II	18
4.1.4	Study III.....	19
4.2	Measures	19
4.2.1	Self-report questionnaires	19
4.2.2	Expert ratings	20
4.2.3	Registered criminal reoffending	21
4.3	Statistical analyses	22
4.3.1	Study I.....	22
4.3.2	Study II	22
4.3.3	Study III.....	22
4.4	Ethical considerations.....	23
4.4.1	Study I.....	23
4.4.2	Study II	24
4.4.3	Study III.....	24
5	Results.....	27
5.1	Study I.....	27
5.2	Study II	27
5.3	Study III	27
6	Discussion.....	29
6.1	Summary of studies	29
6.2	General discussion.....	30
6.3	Limitations	31
7	Conclusions	33
8	Implications and future directions	35
9	Acknowledgements	37
10	References	39

LIST OF ABBREVIATIONS

ART	Aggression Replacement Training
ANOVA	Analysis of variance
BRÅ	Brottsförebyggande rådet; National Council of Crime Prevention
CD	Conduct Disorder; uppförandestörning
CU	Callous–unemotional
CBT	Cognitive behavioral therapy
DSM-5	Diagnostic and Statistical Manual of Mental disorders, 5 th edition
HR	Hazard ratio
HSFR	Humanistisk–samhällsvetenskapliga forskningsrådet
iCBT	Individual(ized) cognitive behavior therapy
ICC	Intraclass correlation coefficient
LSU	Lag (1998:603) om verkställighet av sluten ungdomsvård; Closed Institutional Youth Care Act
LVU	Lag (1990:52) med särskilda bestämmelser om vård av unga; Care of Young Persons (Special Provisions) Act
OR	Odds ratio
PCL–R	Psychopathy Checklist–Revised
PCL:SV	Psychopathy Checklist: Screening Version, a briefer version of the PCL–R
RCT	Randomized controlled trial
RNR	Risk, Need and Responsivity principles
SAVRY	The Structured Assessment of Violence Risk in Youth
SiS	Statens institutionsstyrelse; National Board of Institutional Care
SPPS	Swedish Prison and Probation Service; Kriminalvården
WHO	World Health Organization

1 INTRODUCTION

1.1 A PERSONAL PERSPECTIVE

I started working with serious young offenders at Sundbo residential treatment home as a newly board-certified psychologist in 1996, at the dawning of the “*What Works*” movement (cf. McGuire, 2013). Cognitive behavior therapy (CBT) was steadily gaining support as a psychological treatment and clinical psychologists Bengt Daleflod (1993) and Tore Andreassen (2003) published reviews of the literature regarding residential care of young offenders. In 1993, a new government agency: the National Board of Institutional Care (Statens institutionsstyrelse, or SiS) took over the responsibility for compulsory residential care for youth with antisocial behavior and other psychosocial problems. Fortunately, SiS professionals were also interested in the new ideas. Among the introduced methods was Arnold Goldstein and colleagues’ *Aggression Replacement Training* (ART; Goldstein, Glick & Gibbs, 1998), then considered one of the most promising interventions for young offenders. In my own work, I faced the challenges of motivating and engaging young offenders in psychological treatment aimed at reducing the risk of criminal recidivism. This prompted me to start reading field-specific professional and scientific literature and engage in psychological research together with Professor Lennart Melin at Uppsala University’s Department of Psychology. I tried to summarize my understanding of the theory and empirical knowledge on the development and treatment of antisocial behavior in youth, which resulted in the book *Från brott till genombrott: Kognitiv beteendeterapi för tonåringar med psykosociala problem* (Lardén, 2003). The book contains the rationale and clinical guidelines for treatment with individualized cognitive behavioral therapy (iCBT) tested in Study II.

I was registered as a PhD student at Karolinska institutet in 2004 and spent the following years running the multi-site randomized controlled trial (RCT) in Study II. Since 2008, I work as Head of the Swedish Prison and Probation Service’s (SPPS) unit for the ca fifteen psychological treatment programs currently provided to reduce offender risk of recidivism and substance misuse. In this role, I lead the exciting but usually lengthy processes of program introduction (including an accreditation procedure with external professionals), quality assurance and occasional shutdowns.

1.2 IMPROVING TREATMENT PROGRAM EFFECTS

I also have the privilege to lead the organization of dozens of professionals conducting extensive training activities for psychological treatment program providers/therapists throughout the SPPS. Since treatment programs are usually delivered by staff without formal psychotherapy training, programs need to be based on detailed manuals to secure treatment quality or integrity. Another advantage with standardized and manualized programs is that they improve possibilities to systematically evaluate program integrity and effects.

On the other hand, a major drawback with detailed program manuals has been that treatment providers tend to focus too much on teaching the content of the materials and might be less responsive to the individual learning processes of participating offenders. Further, it is usually more difficult to adapt manualized program content to offenders' individual needs and conditions, particularly for treatment providers with less skills and experience.

These manualized CBT programs, usually *multimodal* by including several different components like ART does, appear to reduce reoffending only with modest effects at best. Following suggestions from contemporary research and current trends in other countries, the SPPS uses two main strategies to address the limited effects. First, a stronger focus on identifying and responding to the client's *individual criminogenic needs* (causal risk and needs factors related to recidivism) and learning conditions and, second, on providing *more and better training for treatment providers*.

The first strategy involves delivery of more programs on a one-to-one basis. Techniques from Motivational Interviewing (Miller & Rollnick, 1991) have been integrated with CBT techniques to enhance providers' therapeutic skills and support them to be more responsive to individual clients' criminogenic needs both in group-based and individual programs. During the first decade of the millennium, the widely used RNR principles were repeatedly critiqued. Desistance theory stressed that offenders might need more emphasis on using their individual strengths and resources, include their social network to enable prosocial identification (Maruna & LeBel, 2003; McNeill, 2006) and induce hope about a prosocial life (McNeill, 2012). On a similar note, Ward and colleagues proposed the "*Good Lives Model*" (Ward & Brown, 2006; Laws & Ward, 2011). Ideas and methods from *Acceptance and Commitment Therapy* (ACT; Hayes, 2004), focusing on mindfulness, acceptance, and values to help the client to handle the challenges of establishing a prosocial life provided additional inspiration on how to desist from crime. Recently, another so-called *third wave* CBT intervention; *Dialectical Behavior Therapy* (DBT; Linehan, 1993) has been introduced in violent offender treatment programs. This model addresses emotional dysregulation and is used primarily for serious and violent offenders with multiple psychiatric or substance use diagnoses. Convicted offenders are also supported to establish longer-term relationships with non-criminal friends and associates that may function as non-professional, prosocial role models. Increased weight on what person you want to become and what you want to leave behind is another important principle from third wave behavioral therapies.

2 BACKGROUND

2.1 INTERPERSONAL VIOLENCE

Violence has been a major problem throughout the history of mankind and damages health, social and financial situations of individuals and societies alike. In the psychological literature, a narrow definition of (physical) violence is aggression with the goal of extreme physical harm, such as injury or death, while aggression is defined as any behavior intended to harm others (cf. Bushman et al., 2016). Interpersonal violence can be defined (WHO, 2014) as violence that occurs between family members, acquaintances or strangers, and is distinguished from self-directed violence (like suicide and self-mutilation) and collective violence (instrumental violence committed by larger groups like terrorists, or by nations at war).

Research confirms the notion of violent crime as a major societal problem. For example, the World Health Organization (WHO) reports that homicide is the third most common cause of death globally for 15 to 44-year-old men. Also, according to the annual Swedish Crime Survey (National Council for Crime Prevention, BRÅ, 2020) with a representative, randomly selected sample of 16 to 84-year-old respondents from the general population, 3.6% of 73,813 subjects reported having been victims of physical assault in 2019. Among these, 0.7% reported being victims of serious assault with injuries demanding medical care. Some 9.2% had been exposed to illegal threats, 5.6% to sexual crime, and 1.5% to robberies in 2019. In the United States, 1.1% of individuals above age 12 reported being a victim of a violent crime in 2019 (Morgan & Truman, 2020). Based on similar figures, also limited reductions in violent crime would be important to reduce human suffering and costs.

2.2 ANTISOCIAL BEHAVIOR IN GENERAL

Antisociality usually means that a person shows a pattern of externalizing behavior that violates the rights of others and is contrary to the laws and norms of society. Antisocial adults very often began with antisocial or norm-breaking misconduct as children, but most youth with conduct disordered- or antisocial behavior do not grow up to become antisocial adults. Most people commit a criminal act at some point in their lives, usually before age 30, but only a small proportion of all individuals commit most crimes (Bergman & Andershed, 2009; Farrington, Ttofi & Coid, 2009) both in adolescence and adulthood (Frisell et al., 2011; Falk et al., 2014; Martinez et al., 2017).

In a highly influential paper, Moffitt (1993) proposed a dual taxonomy for the development of antisocial behavior: life-course persistent (LCP) vs. adolescence-limited (AL). The former was characterized by high levels of aggression and antisocial behavior from childhood to adulthood, and the latter would be marked by nonaggressive antisocial behaviors limited to adolescence. Neuropsychological vulnerabilities in combination with environmental criminogenic risk factors are posited to drive the life-course persistent developmental trajectory while the adolescence-limited trajectory supposedly stems from boundary-testing

rebelliousness between late childhood and adult life. Fairchild and colleagues (2013) conducted a comprehensive review of 61 studies of life-course and/or adolescence-limited antisociality published 1993—2013. They found support for life-course antisociality as a neuropsychological disorder caused by interaction between individual vulnerabilities and exposure to environmental risk factors. But contrary to the taxonomy, the authors also found support for neuropsychological deficits regarding emotional processing in the adolescence-limited type and both courses were associated with callous—unemotional (CU) traits. Fairchild and colleagues (2013) concluded that Moffitt’s taxonomy needs revision since the difference between the two developmental courses seem quantitative, rather than qualitative. Similarly, in a review of 55 longitudinal studies Jolliffe and colleagues (2017) found four that addressed if risk factors differed for the two developmental courses; data indicated that life-course persistent offenders tended to have higher numbers and magnitudes of risk factors.

Callous–unemotional (CU) traits are associated with persistent offending from childhood to adolescence. These traits include low empathy, interpersonal callousness, restricted affective and emotional expressions (Frick, Kimonis, Dandreaux, & Farrell, 2003; Frick & Nigg, 2012). Research indicates that children and adolescents with severe conduct problems and CU traits are at additionally increased risk of serious antisocial behaviors or persistent offending (Frick et al., 2014). Callous-unemotional traits are core symptoms of the psychopathy construct, discussed below.

2.3 BRIEFLY ON RELATED CRIMINAL LAW

The current Swedish Criminal Code (Brottsbalken: SFS 1962:700) has been in force since 1965. The Criminal Code explicitly (Government Offices of Sweden, 2021) introduced a penalty regulation based on *individual prevention*, which is the idea that the sanction through treatment, deterrence, or incapacitation should reduce recidivism at the individual level. Particularly prominent was the idea of *treatment* and other active promotion of lawbreakers’ prosocial inclusion in society (cf. Jerre & Tham, 2010). However, the idea of individual prevention was also criticized because it led to differences before the law and difficulties to make reliable predictions of reintegration on the individual level. Further, the principles of sentencing in the Criminal Code were reformed in 1989 (SOU, 1986:15). The reform made it clear that the starting point for sentencing is how serious and reprehensible the committed crime is. Several changes have since been implemented to further emphasize the principles of *proportionality* between crime and punishment, *equal treatment*, *consistency*, and *predictability* (SOU 2017:61). Today’s sanction system according to the Criminal Code is mainly based on these principles.

The Closed Institutional Youth Care Act was introduced in 1999. It intends to follow the UN Convention on the Rights of the Child, which states that alternatives to prison should be available for persons under the age of 18. The rationale is that prison sentences are associated with risks of criminal identification and could harm youth development. The sentence is to be served in a specially approved unit; that is residential care within the National Board of Institutional Care (SiS) (Pettersson, 2010; Nordén, 2015).

2.4 OFFENDER TREATMENT

Research on the effectiveness of treatment efforts for both youth and adult offenders has a long history (cf. Kirby, 1954). Offender treatment aimed at reducing criminal recidivism on the individual level could be medical/pharmacological (e.g., Chang et al., 2016), psychological, or psychosocial. The present thesis focusses on psychological treatment to reduce violent recidivism.

2.4.1 Systematic reviews of offender treatment effects

2.4.1.1 Adults

In a systematic review of the effectiveness of interventions for adult male offenders, Jolliffe and Farrington (2009) concluded that these interventions usually are successful. Their review included 12 primary studies from 1993–2009 with a total of 2,750 male offenders. The authors found considerable variability across studies (effect sizes ranging from $d=-0.12$ to 0.72) and a significant weighted mean effect size between $d=0.14$ and $d=0.18$ corresponding to a reduction of reoffending with 7–9%. In other words, assuming a 50% reoffending rate in the controls, males that received these interventions would have a 41–43% reoffending rate.

A more recent meta-analytic review of the efficacy of psychological treatments for violent offenders in reducing community recidivism or intra-institutional misconduct (Papalia et al., 2019) included 27 primary studies with 7,062 participants from forensic mental health or correctional settings (psychiatric out- and inpatient care, prisons, or correctional community supervision in the form of probation or parole). Nineteen studies examining reoffending were included in a meta-analysis. The results indicated that treated offenders had a 10% lower risk of violent reoffending compared to controls (pooled OR=0.69; 95% CI: 0.57-0.83) and an 11% reduction regarding general/non-violent recidivism (pooled OR=0.65; 95% CI: 0.57-0.75). Assuming a 50% reoffending rate among controls, clients that received these interventions would have a 39-40% reoffending rate. Included studies addressing effectiveness on intra-institutional misconduct found no treatment effect on that outcome.

2.4.1.2 Youth

In a systematic review and meta-analysis, Koehler and colleagues (2013) examined the effects on reoffending of European rehabilitation programs for offenders under 25 years of age. They included 25 studies encompassing 7,940 offenders with a mean age of 17.9 years. The overall result suggested a marginal effect favoring treatment (OR=1.34, $p<.05$, $d=0.16$). The authors sorted treatments into three categories: CBT and behavioral, intensive supervision and deterrence, and non-behavioral treatments, respectively. The results favored CBT and behavioral interventions (OR=1.73, $p<.0001$). Treatment that adhered to the RNR principles yielded the largest effect sizes (OR=1.90, $p<.01$).

In a systematic review including 17,038 youth, de Swart and colleagues (2012) examined the effects of residential or institution-based youth services on criminal and other behavior problems or improved prosocial skills. Results were sorted in four categories: evidence-based

treatment in institutions, institutional care as usual, evidence-based non-institutional treatment, and non-institutional care as usual. The authors found a small effect ($d=0.36$) favoring evidence-based institutional treatment over institutional care as usual, but no other differences. The authors concluded that evidence-based institutional youth care could be equally effective as non-institutional care, and that using evidence-based interventions within institutions would improve treatment effectiveness. When analyzing effectiveness by type of intervention using multiple regression analysis, they found CBT to have a moderate effect ($d=0.50$), while the other two intervention types, skills training and care as usual, had no effect.

2.4.1.3 *Treatment effect moderation in youth*

Specifically for young offenders, Lipsey (2009) conducted a meta-analysis including 548 study samples of 12 to 21-year-olds (mean age at intervention=15.5 years) receiving any kind of intervention to reduce the risk of future offending (delinquency). Using a random effects multiple regression analysis, he examined if four major categories of moderator variables: a) study method characteristics, b) youth characteristics, c) juvenile justice supervision level, and d) “treatment philosophy” influenced effect sizes. The three factors that correlated the strongest with treatment effectiveness were therapeutic philosophy, targeting higher risk youth offenders and implementation quality.

Therapeutic philosophy meant focusing on rehabilitation rather than punishment and control and was analyzed by categorizing interventions into surveillance, deterrence, discipline, restorative, counseling, skill building, and multiple services. The latter four of these were considered therapeutic. *Targeting higher risk offenders* was studied using categories of recidivism risk and aggressive history. *Quality of implementation* was a composite variable of two correlated dimensions: reported implementation problems (like high dropout rates and high staff turnover) and an estimate of how involved the researcher was in the delivery of the intervention.

2.4.1.4 *Effective intervention components*

In a well-cited systematic review including 58 primary studies, Lipsey, Landenberger and Wilson (2007) examined which intervention contents that were associated with more effective CBT programs for juvenile or adult criminal offenders, treated in prisons, institutions, on probation, parole or in aftercare. Studies that only included special populations, like sexual or drug-related crime offenders, were not included. The authors used random effects multiple regression analyses to examine treatment elements associated with effect sizes. Anger management training and interpersonal problem-solving training were associated with larger effects while victim impact and behavior modification components were associated with smaller effects.

Jolliffe and Farrington (2009) found that interventions that focused on cognitive skills and anger management, taught relapse prevention, used role play, and provided homework between sessions appeared more effective than those that did not include such content. There

was also evidence that certain features of intervention content were more effective than others. Treatments that included empathy training or moral training, as well as those that included basic education (like reading and writing) appeared less effective than treatments without these components.

Hoogsteder and colleagues (2015) conducted a meta-analysis of six studies (13 effect sizes) suggesting that interventions with *individualized CBT components* might be more effective in reducing severe aggressive behavior in youth compared to treatment-as-usual (TAU) with no CBT components ($d=1.14$). These authors concluded that the addition of individually tailored interventions based on the RNR principles (Bonta & Andrews, 2017) to group interventions might improve outcome for aggressive adolescents.

Papalia and colleagues (2019) identified role-play activities and relapse prevention as specific treatments components associated with larger effects on violent recidivism than treatments without these components. Use of offender homework, interpersonal skills training, and anger control were also associated with larger effects. Treatments that included components teaching basic life skills (e.g., reading, writing, mathematic skills, health education or skills to organize daily living) were less effective in reducing recidivism.

In summary, findings from these systematic reviews are largely consistent with the well-supported *risk, need, and responsivity* framework, consisting of three core principles to guide correctional, antisocial youth-, and forensic service providers on how to prioritize services, what these services should focus on, and how they should be delivered to clients (Andrews & Bonta, 2017).

2.4.2 The Risk, Need and Responsivity principles

For several decades, researchers Don Andrews, James Bonta and Robert Hoge at Carleton University in Ottawa, Canada worked on finding if there are general principles that characterize effective interventions for offenders. Guided by their general theory of criminal behavior they analyzed available empirical research, and summarized findings in three principles of effective interventions to reduce reoffending: the risk, need, and responsivity principles (RNR) (Andrews, Bonta & Hoge, 1990; Bonta & Andrews, 2017). See also Table 1.

Table 1: The Risk, Need and Responsivity principles.
<p>The Risk principle</p> <p>Prioritize interventions to offenders with increased risk of criminal recidivism.</p>
<p>The Need principle</p> <p>Focus on the individual's criminogenic needs, that is identified causal risk factors that can be changed, and if they are changed in a desired way the risk of reoffending will decrease.</p>
<p>The Responsivity principle</p> <p>Use techniques and methods from social learning theory and cognitive behavioral therapy and consider the client's specific conditions as well as the context in which the treatment is conducted.</p>

2.4.2.1 *The Risk principle*

A risk factor is defined as a characteristic, event, process or relationship that increases the probability or risk of a certain outcome, in this context criminal behavior (Andershed et al., 2020). Using the concepts of risk and risk assessment, it is important to clarify what kind of risk we are dealing with in each specific case. In the RNR framework, risk refers to the risk of recidivism in criminal behavior and is easiest to understand quantitatively. That is, the more risk factors the client has, the greater the risk of repeated offending. Antisociality and criminal lifestyles are usually characterized by a constellation or pattern of risk factors, rather than one single factor. The more risk factors an individual has, the higher the risk of repeated offending. Higher risk offenders have a greater need for treatment, but on the other hand, also more room for improvement. To follow the risk principle, it is important that *a structured risk and needs assessment* precedes an intervention to ensure that higher risk offenders are prioritized for risk-reducing interventions.

2.4.2.2 *The Needs principle*

The needs principle indicates that interventions should target evidence-supported risk factors present in a specific offender to reduce the risk of recidivism. Such dynamic or potentially changeable risk factors are also known as criminogenic needs. Examples of dynamic risk factors for repeat offending are procriminal attitudes and peer associations, substance misuse and poor self-management skills. By definition, high and medium-risk clients have several dynamic risk factors that require intervention, and multimodal interventions that address several criminogenic needs are therefore preferred. Criminogenic needs are supposed to be links in the causal processes behind offending. Hence, if these dynamic risk factors are changed in desired directions (usually reduced), this should lead to lower rates of recidivism.

2.4.2.3 *The Responsivity principle*

The responsivity principle informs on how interventions should be designed and delivered. In general, treatment based on CBT and social learning theory is recommended. Cognitive behavioral treatment of violent offenders aims to promote intra- and interpersonal skills that increase individuals' ability to establish and retain a prosocial way of living. By learning and training adaptive coping skills, offenders might be better equipped to desist from crime (Kassinove & Toohey, 2014). The use of active methods such as role play and homework assignments to enhance the learning of new skills in CBT is compatible with many offenders' learning styles and the responsivity principle. The use of CBT-based interventions with antisocial and violent clients is supported in the literature (de Swart et al., 2012; Koehler et al., 2013; Papalia et al., 2019), but treatment must be delivered in a way that makes sense to the individual client. Therefore, *specific responsivity* is about considering each offender's conditions and circumstances. These include gender, age, cultural background, cognitive functioning and skills, psychiatric disorders and substance misuse, and subject motivation for change. Adherence to the responsivity principle requires that treatment providers or facilitators be aware of biological, psychological and social conditions that affect the ability to learn new cognitive and behavioral skills. And make sure that learning takes place in an environment that allows the offender to learn and practice these new skills (Bourgon & Bonta, 2014).

The RNR model is widely accepted and has been supported by research (e.g., Koehler et al., 2013; Polaschek, 2012). The need principle is supported by systematic reviews that suggest that treatment content targeting dynamic risk factors, like anger management and challenging cognitive distortions are more effective in reducing reoffending (Joliffe & Farrington, 2009; Papalia et al., 2019). However, there is an ongoing debate on whether changes in dynamic risk factors are associated with reduced recidivism risk (Baglivio, 2018) or not (Heffernan, Wegerhoff & Ward, 2019). Throughout the years the responsivity principle has changed main focus from general learning models and client characteristics to creating environments that optimize chances to engage in treatment and learn new interpersonal skills, challenge antisocial cognitive distortions etc. (Bourgon & Bonta, 2014).

2.4.3 Structured risk and need assessment

Offender assessments according to the RNR principles should be based on structured risk and need assessments and consider strengths and conditions. Andrews and Bonta (2010) describe four generations of approaches to risk assessments for future violence. The *first generation* is the professional judgment approach, where the clinician, based on his/her professional experience and without the support of a formal checklist, decides on the risk of future offending. The *second generation* is the actuarial assessment approach, strictly based on checklists of static historical risk factors. The *third generation* is the structured professional judgment approach, on which many structured risk and need assessment tools used today are based. This approach focuses on checklists of both unchangeable static and dynamic risk factors; the latter are potentially changeable and possible targets for interventions. The

assessor uses these checklists to formulate a summary risk rating, based on the number and combination of present risk factors and the assessor’s clinical judgment of possible case-specific circumstances. Finally, the *fourth generation* constitutes the attempt to incorporate risk and need assessment within a case management approach to guide interventions and other risk management strategies to prevent reoffending.

Although the use of structured methods seems to perform better than unstructured clinical judgments, most reviews suggest that various instruments or generations all tend to predict violence (Skeem & Monahan, 2011; Koh et al., 2020; Viljoen et al., 2021). An exception is a systematic review and metaregression analysis by Singh, Grann and Fazel (2011), based on 68 studies comprising 25,980 participants. This study revealed variations in the predictive validity of commonly used risk assessment instruments and that measures designed for more specific populations, like youth violence risk, were more accurate in predicting future offending.

2.4.4 Self-serving antisocial cognitive distortions as a needs factor

Pro-criminal attitudes and beliefs are linked to repeated offending (Banse et al., 2013; Bonta & Andrews, 2017), and one of the most common targets for interventions to reduce recidivism risk (Polaschek et al., 2010). Thoughts that serve to neutralize or justify a person’s own criminal behavior have been described by several authors (Sykes & Matza, 1957; Bandura, 1986; Walters, 1995). One attempt to categorize these distorted cognitions were made by Gibbs, Potter & Goldstein (1995) in a four-category typological model of self-serving cognitive distortions (see Table 2). The term *self-serving* is used to describe these cognitive distortions tendency to disengage the person from moral responsibility by inhibiting negative affective states associated with causing harm to others (Barriga et al., 2000).

Table 2. Gibbs & Potter’s typology of antisocial cognitive distortions.
Self-centered: The individual gives his own views, values, expectations, needs, immediate feelings and desires such a status that other people’s legitimate views etc. are hardly or not at all noticed.
Blaming others: The individual incorrectly attributes blame, also for his/her own behavior, to external sources for example another person or group
Minimizing / mislabeling: The individual claims that antisocial behavior does not cause any real harm, that the behavior is acceptable or even desirable, or refers to others in derogatory or dehumanizing terms.
Assuming the worst: The individual unjustifiably attributes hostile intentions to others, assumes that the worst that can happen in a certain situation will happen, or claims that one’s own behavior is incorrigible.

A consistently *self-centered* (egocentric) perspective is assumed to be the primary cognitive distortion. Self-centering means that the individual assumes that his/her own wishes and

needs are much more important than those of other people. He may not even be able to or bother to think about what others think and feel in different situations. Self-centered can also mean that the individual only focuses on what he/she wants to do now and not on how the behavior will affect him/her or others in the long run.

The other three categories are called secondary and are considered to serve to maintain the self-centered perspective and thus protect the client's worldview from cognitive dissonance. *Blaming others or something else* means that the client incorrectly places the blame for his own deceptive behavior outside of himself.

Minimizing/mislabeled, means attitudes inferring that criminal acts do not cause any major harm (trivialize) or are even acceptable or desirable. *Assuming the worst* means that the individual unjustifiably attributes other hostile intentions, assumes that the worst that can happen in a situation will inevitably happen, or claims that one's own behavior is incorrigible.

In a meta-analysis of 71 studies with 20,685 participants, Helmond and colleagues (2015) found medium-to-large effect sizes ($d=0.70$) for the association between antisocial cognitions and externalizing behaviors, while interventions aimed to reduce cognitive distortions had a small effect ($d=0.27$). In another systematic review, Bowes and McMurrin (2013) found only five studies that explored cognitions involved in *physical violence*. They concluded that there is a considerable knowledge gap and need for much more research on cognitions supporting violence.

2.4.5 Psychopathy as a needs factor

Psychopathy and psychopathic personality traits increase the risk of persistent criminality. Egocentricity, superficial emotional experiences, poor empathy, lack of guilt, and manipulation are distinctive psychopathic personality traits (Hare, 1991). It is often believed that clients with psychopathic personality traits would be more likely to seek treatment in prison to manipulate themselves out of the justice system as quickly as possible. However, this has not been confirmed in empirical studies (Schrader, Tangney & Stuewig, 2018). It has also been discussed if these clients would be treatable at all. However, most research suggests that also clients with many psychopathic traits may benefit from evidence-based psychological treatment (Caldwell et al., 2006; Polaschek & Daly, 2013).

Studies suggest that children and youth with many callous and unemotional (CU) traits are a treatment challenge as they often do not respond positively to typical treatments administered in mental health or juvenile justice settings. However, importantly, recent research indicates that children and adolescents higher on CU traits are not “untreatable” but can improve with intensive treatment (Frick et al., 2014). Specifically, intensive interventions tailored to individual emotional, cognitive, and motivational styles might reduce both behavior problem severity and level of CU traits (Kimonis et al., 2014). It remains an important task to continue developing and testing new and innovative treatments for children and adolescents with severe conduct problems and many CU traits.

3 RESEARCH AIMS

The aim of this thesis was to assess cognitive distortions, moral reasoning, and empathy in young criminal offenders and investigate if treatment programs addressing similar dynamic risk factors would reduce recidivism among serious and violent offenders.

The specific aims of the included studies were:

Study I

The aim of Study I was to investigate if young offenders in residential treatment had more cognitive distortions, less developed moral reasoning, and reduced empathy compared to individually matched youth not in residential care. These three characteristics are literature-based risk factors for criminal behavior and possible targets for recidivism-reducing treatment.

Study II

With Study II, we intended to study if addition of an individual CBT-intervention based on problem-solving training, cognitive self-control, and relapse prevention improved recidivism reduction over ordinary treatment curricula in residential treatment facilities for serious, violent young offenders.

Study III

In Study III, we aimed to test the effectiveness of Aggression Replacement Training (ART), a group-based intervention initially designed for youth would reduce reoffending among adult offenders in prison or on probation.

See Table 3 for an overview of the three included studies.

Table 3. Overview of the three studies included in this thesis.

Study	Design	Population	Setting	Measures	Outcome	Follow-up	Results and conclusion
<p>Study I: Lardén, Melin, Holst & Långström 2006</p>	<p>Cross-sectional study comparing youth in residential care vs. control youth in ordinary schools.</p>	<p>58 antisocial youth (29 female + 29 male) and 58 individually matched control youth (mean age = 15.7 years).</p>	<p>Specially approved residential youth homes run by the National Board of Institutional Care (SiS) vs. senior level elementary and upper secondary schools.</p>	<p>Sociomoral Reflections Measure–Short Form (SRM–SF)</p> <p>“How I Think” (HIT) for self-serving antisocial cognitions</p> <p>Index of Empathy for Children and Adolescents (EI)</p> <p>All three self-report measures were completed by antisocial youth individually or in small groups surveilled by a research assistant</p> <p>Control youth completed self-report forms in full class under supervision of research assistant.</p>	<p>Not applicable</p>	<p>Not applicable</p>	<p>Antisocial youth self-reported more antisocial cognitive distortions and less mature moral judgments (moderate to large effects) than matched controls. We found no difference in self-reported empathy.</p> <p>Antisocial cognitive distortions appeared related to antisocial behavior and may be important targets for intervention, while empathy could be less meaningful to address directly in treatment.</p>

Table 3. Overview of the three studies included in this thesis.

Study	Design	Population	Setting	Measures	Outcome	Follow-up	Results and conclusion
<p>Study II:</p> <p>Lardén, Högström & Långström 2021</p>	<p>Randomized controlled trial on the effectiveness of iCBT + TAU vs. TAU only.</p>	<p>Eighty-one serious, violent male youth (mean age = 17.7 years) convicted to 6+ months closed institutional youth care with 4-6 months left of sentence.</p> <p>Among 115 eligible male youth, 82 (71%) agreed to participate.</p> <p>38 were randomized to iCBT + TAU and 43 to TAU only.</p>	<p>Specially approved residential homes for serious young offenders convicted according to LSU.</p>	<p><i>Pre- and posttreatment self-report measures:</i></p> <p>The Youth Self-Report (YSR)</p> <p>Reactive and proactive aggression scale</p> <p>“How I Think” (HIT)</p> <p>Sociomoral Reflections Measure –Short Form (SRM-SF)</p> <p>Self-report instruments were completed individually by youth.</p> <p><i>Expert ratings:</i></p> <p>Structured Assessment of Violence Risk in Youth (SAVRY)</p> <p>Psychopathy Checklist: Screening Version (PCL:SV)</p>	<p>New convictions in National Crime Register.</p> <p><i>Violent reconvictions:</i> homicide, (aggravated) assault, violence against an officer, (aggravated) robbery, and aggravated arson.</p> <p><i>Any reconviction:</i> All offences according to the Swedish Penal Code and Narcotics Act</p> <p>Aggressive behavior based on unweighted summary of 7 DSM-5 aggressive CD-symptoms.</p>	<p>Of those randomized to iCBT + TAU, 23 dropped out before treatment was completed.</p> <p>72/81 youth provided post-treatment data.</p> <p>64/81 male youth had data regarding aggressive DSM-5 CD symptoms at 12-month follow-up.</p> <p>There were no youth dropouts (0/81) for registered reconvictions.</p>	<p>Intent-to-treat analyses suggested non-significant but slightly higher violent reconviction rates among iCBT+TAU-subjects at 12 and 24 months after release, and for the remaining follow-up period. No effects were found for any reconvictions.</p> <p>No difference in aggressive CD symptoms at 12-month follow-up.</p> <p>We observed small-to-large, within-group reductions in self-report measures during treatment for both groups but no between-group differences.</p> <p>Although underpowered and suffering from a considerable dropout rate, this study suggested that individual CBT had no added effect over TAU in preventing reoffending.</p>

Table 3. Overview of the three studies included in this thesis.

Study	Design	Population	Setting	Measures	Outcome	Follow-up	Results and conclusion
<p>Study III: Lardén, Nordén, Forsman & Långström 2018</p>	<p>Observational (non-randomized) matched cohort study of the effectiveness of ART using propensity score-matched comparison subjects.</p>	<p>1,124 offenders that began ART in the SPSS 2003–2009 (mean age = 25.7 years) were included in the treatment group.</p> <p>3,372 comparison subjects (3 per treated offender) were selected from the 106,706 SPPS offenders not treated by ART in 2003–2009.</p>	<p>Prison or probation offices of the SPPS.</p>	<p>Not applicable</p>	<p>New convictions in the National Crime Register.</p> <p><i>Violent reconvictions:</i></p> <p>homicide, (aggravated) assault, violence against an officer, (aggravated) robbery, and aggravated arson, illegal threats, intimidation</p> <p><i>Any reconviction:</i></p> <p>All offences according to the Swedish Penal Code and Narcotics Act</p>	<p>Overall, 379 (34%) of those who began ART dropped out before treatment completion.</p>	<p>Intent-to-treat analyses suggested similar 12-month violent (HR=1.02, ns) and general reconviction rates (HR=0.97, ns) for both groups.</p> <p>Per-protocol analyses revealed marginal decreases in recidivism among completers for general reconvictions (HR=0.87, p<0.05) and for violent reconvictions (HR=0.95, ns).</p> <p>I conclude that ART was not effective in preventing reoffending among serious, convicted young adult offenders.</p>

4 MATERIALS AND METHODS

4.1 DESIGN, PARTICIPANTS AND PROCEDURES

4.1.1 Settings

The Swedish Prison and Probation Service (SPPS; Kriminalvården) and the National Board of Institutional Care (Statens institutionsstyrelse; SiS) are two independent government agencies that implement sentences and involuntary care of violent offenders in Sweden. The SPPS is part of the Swedish legal system and nationally responsible for all remand prisons, prisons, and probation offices. SiS provides compulsory residential care under the terms of the Care of Young Persons (Special Provisions) Act (LVU) for youth with criminal behavior, substance abuse and psychosocial problems. Youth who commit a serious crime, usually (aggravated) robbery or assault, homicide, or rape between the age of criminal responsibility (15 years) but before adult age (18+ years) might be convicted by court according to the Closed Institutional Youth Care Act (LSU).

4.1.2 Study I

Within a matched crosssectional design, we used self-report questionnaires to investigate if antisocial youth in residential care and matched comparison youth not in residential care (mean age=15.7 years, SD=1.4), differed regarding antisocial cognitive distortions, empathy, and moral reasoning. Antisocial youth were recruited from acute or assessment units at nine different residential care units run by SiS. Included youth had recently been incarcerated under the Care of Young Persons Act (LVU). The 58 antisocial participants were 29 males (mean age=15.4 years, SD=1.4), and 29 females (mean age=16.0 years, SD=1.4). The managers of each institution selected participants among all youth in residential care apart from those who did not speak or read Swedish well enough, eligible youth were then approached for possible inclusion. Self-report questionnaires were administered by the same research assistant individually or in small groups depending on the daily routines at each institution.

For comparison subjects, we approached the headmasters of eight elementary and upper-level secondary schools; four elementary and one secondary upper-level schools agreed to participate. Teachers informed their classes about the study and administered forms for parental consent. Self-report questionnaires were administered in full class by the same research assistant and filled out individually by each student. From these five schools, we included 209 (87% participation rate) male and female youth, all of which completed the self-report measures. We selected 58 control youth among these that were individually matched 1:1 to controls on age, gender, ethnicity, and socio-economic position.

4.1.3 Study II

We used an experimental, randomized controlled trial (RCT) design to assess if addition of a 15-session, individually administered CBT intervention (iCBT) to treatment-as-usual (TAU)

would decrease reoffending among serious, young offenders sentenced according to the Closed Institutional Secure Youth Care Act (LSU). As only a handful of female youth were sentenced yearly to LSU and there was no adapted placement for them within the National Board of Institutional Care, we only included male youth across five participating institutions. According to a power analysis, we would need 88 participants for our study. Hence, we approached 115 male youth, all convicted to ≥ 6 months of LSU care for a non-sexual, violent crime and who had 4–6 months left of their sentence. Participants also had to be able to speak or read Swedish well enough for a well-informed consent and completion of study-related tasks. Among the 115 eligible male youth, 82 agreed to participate in the study (71.3% participation rate).

4.1.4 Study III

In Study III, we used an observational, matched cohort design to investigate the effectiveness of the widely used group-based Aggression Replacement Training (ART) program, developed for youth but adapted for use with adult offenders in the Swedish Prison and Probation Service (SPPS). A total of 1,124 convicted offenders began ART 2003–2005 in the SPPS, and all these were included in the study. SPPS offender data were linked to a variety of national registers as part of a larger, ethically approved, national register linkage. Therefore, we were able to use propensity score matching to mimic a randomized study and carefully select a well-matched comparison group of 3,372 offenders of (matched 1:3) from 106,706 convicted offenders that served sentences in the SPPS 2003–2009 that were not treated with ART.

4.2 MEASURES

4.2.1 Self-report questionnaires

Self-report questionnaires were used in Study I and II to tap cognitions, emotions and behaviors related to violent offending.

Study I only: *The Index of Empathy for Children and Adolescents* (EI; Bryant, 1982) is a 22-item self-report questionnaire measuring the subject's degree of empathy with statements such as "I get upset when I see an animal being hurt". We modified the dichotomous "False" or "True" response alternative originally used by Bryant by choosing a five-point Likert format (1=*absolutely false* to 5=*absolutely true*); usually considered more appropriate for adolescents (e.g., Cohen & Strayer, 1996). The EI has previously shown satisfactory reliability and convergent validity with other empathy measures (Cohen & Strayer, 1996). For example, Cronbach's alpha was 0.79 both in Study I and in Bryant's investigation (Bryant, 1982).

Study I and II: *Sociomoral Reflections Measure–Short Form* (SRM–SF; Gibbs, Basinger & Fuller, 1992) is a so-called production measure of moral reasoning that contains 11 brief contextual statements relating to the constructs of affiliation (two items), contract (three items), law (one item), legal justice (one item), life (two items), property (one item), and truth

(one item). For each item, the respondent is supposed to evaluate and justify the importance of making a specific decision or behaving in a certain manner. The respondent's justifications are scored by a trained rater to achieve a stage of moral judgment maturity according to the SRM—SF manual. The Swedish version exhibited good interrater reliability (ICC=.82) in Study I. For Study II, we obtained good internal consistency ($\alpha=.79$) and excellent interrater reliability for total scores (ICC=.91).

"*How I Think*" (HIT; Barriga & Gibbs, 1996) is a 54-item self-report questionnaire constructed to measure self-serving cognitive distortions according to the Gibbs typology (2003). It contains 39 items tapping attitudes or beliefs related to antisocial behavior, 8 items to control anomalous responses and another 7 items are positive fillers. Subjects respond on a six-point Likert scale (from 1, *I agree strongly* to 6, *I disagree strongly*) where high scores indicate more cognitive distortions. Internal consistency expressed as Cronbach's α was .96 in Study I and .96 for the original English version (Barriga & Gibbs, 1996).

Study II only: The *Youth Self-Report* (YSR; Achenbach & Rescorla, 2001) is a 111-item self-report questionnaire for 11 to 18-year-olds that dimensionally taps emotional and behavioral problems. Youth respond about the past six months on a 3-point scale (0=*not true*, 1=*somewhat or sometimes true* and 2=*very true or often true*). The DSM-oriented oppositional defiant- and conduct problems subscales were used for pre- to post-treatment comparisons.

The 21-item *Reactive and proactive aggression* scale (Brown et al., 1996) addresses two subtypes of aggressive behavior. An example item is "*Threatens others*" Respondents endorse items on 3-point Likert-type scale (0=*never*, 1=*sometimes* or 2=*often*) and items are added in a linear and unweighted fashion to subscale summary scores. The zero-order correlation between the 10-item proactive and 6-item reactive aggression subscales was high in the original version ($r=.70$). Internal consistency was also substantial ($\alpha=.94$ and .92, respectively). We used total score, and proactive and reactive aggression subscales for pre- to posttreatment comparisons.

4.2.2 Expert ratings

Expert ratings were used in Study II.

The *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel & Forth, 2006) is a structured risk and needs assessment decision support based on the structured clinical judgement model with 24 risk factors (10 historical, 6 social/contextual, 8 individual) and six protective factors related to violent offending. Risk factors are coded *low*, *moderate* or *high*, while protective factors are coded as *absent* or *present*. Following the coding of all risk and protective factors, the rater provides a structured summary judgment of the assessed person's risk of committing violent crime in the future based on his/her number and constellation of risk and protective factors. For research purposes, we coded risk factors (*low*=0, *moderate*=1, *high*=2) and protective factors (*absent*=0, *present*=1) and linearly summed the ratings of the 24 historical, social/contextual, and individual risk factors,

resulting in total SAVRY risk scores ranging from 0 to 48. Interrater reliability for the 24-item summary risk score was an excellent $ICC_{(2,1)}=.92$.

The *Psychopathy Checklist: Screening Version* (PCL:SV; Hart, Cox & Hare, 1995) is an adaption of the more comprehensive and time-consuming original Psychopathy Checklist-Revised (PCL-R; Hare, 1999) to screen for psychopathy. The PCL:SV is validated for use with individuals from age 16 and consists of 12 items based on the 20-item PCL-R. Items are scored 0, 1 or 2. A score of 0 means that the assessed person does not fit the criteria for that item, and 2 that the person fits the criteria, persistently manifested in many life situations. A score of 1 suggests there is not enough information to score 0 or 2, or that the person has not continually exhibited these criteria (Brazil & Forth, 2016). Inter-rater reliability for PCL:SV total scores in Study II was a good $ICC_{(2,1)}=.81$.

Aggressive behavior at 12-month follow-up was measured as a symptom summary score of the seven aggression-related symptoms of DSM-5 (American Psychiatric Association, 2013) Conduct Disorder (CD). Scoring was done based on structured questions in follow-up telephone interviews with each participant's social service case manager, the youth himself, or both. When both sources were available ($n=43$), we used the highest reported value. An attempt to mask treatment modality (iCBT + TAU vs TAU only) was done by explicitly instructing youth at the beginning of the follow-up interview to not talk about their treatment experience before release. Interview responses were provided on a 5-point scale (*never, 1-2 times, 3-5 times, 6-10 times and 10 times*) regarding the past 12 months (i.e., from the end of treatment to the day of the interview). We recoded answers into a 3-point scale: (0=*never*, 1=*1-2 times*, 2= ≥ 3 *times*) resulting in a possible score of 0-16. Aggressive CD symptom data were provided by 64 of the 81 participants (79%). Ten iCBT participants and seven TAU only controls were unavailable for this outcome.

4.2.3 Registered criminal reoffending

In **Study II**, we also addressed registered criminal reoffending during follow-up leading to a criminal conviction in lower court registered in the National Crime Register held by the Swedish National Council for Crime Prevention (BRÅ). Data for this outcome were obtained for all participants until December 31, 2008.

Study III: The National Crime Register provided reconviction data from lower courts up to December 31, 2009.

Overall, ca 13% of lower court verdicts in Sweden are appealed to higher court, sometimes followed by an altered sanction but rarely by full acquittal. Hence, effectively, this is a comprehensive measure of recidivism leading to a new criminal conviction.

Following prior research (e.g., Chang, Lichtenstein, Långström, Larsson, & Fazel, 2016), violent recidivism included homicide, assault, robbery, illegal threats, threats/violence against an officer, arson, gross violation of a woman's/person's integrity, intimidation, and illegal

coercion. Aggravated and attempted versions of such offences were also included whenever applicable.

For sensitivity analyses, we also used data from the National Register of Persons Suspected of Offences (Misstankeregistret at BRÅ), reflecting prosecutor-determined reasonable suspicions of having committed a criminal offence (that may lead to a later conviction).

4.3 STATISTICAL ANALYSES

4.3.1 Study I

As the SRM—SF included coding of free text answers by a trained rater, we used the single rater intraclass correlation coefficient ($ICC_{(2,1)}$, Shrout & Fleiss, 1979) to examine interrater reliability based on assessments by two independent raters of a random subset of 22 SRM—SF youth measurements. Two-way (group \times gender) analyses of variance (ANOVA) was used to investigate potential differences between antisocial youth in residential care vs. matched youth from schools, and differences between male and female youth. Associations between self-report measures were analyzed with Pearson's zero-order correlation coefficients (r) and partial correlations.

4.3.2 Study II

Intraclass correlation coefficients ($ICC_{(2,1)}$) were computed to estimate interrater reliability based on assessments of 22 to 25 SRM—SF, SAVRY and PCL:SV ratings by two independent raters. Mixed-effects (group \times time) ANOVA was used with group (iCBT + TAU vs. TAU only) entered as a fixed effect and time (pre- vs. post-measurement) as a random effect in a repeated measures design. For registered criminal recidivism during the entire follow-up period, we used Cox regression modelling with five empirically plausible covariates (age, urban residence, migrant status, antisocial cognitions, and SAVRY protective factors) with baseline differences of $d > 0.20$. Effect sizes were expressed as Cohen's d 's computed with the Practical Meta-Analysis Effect Size Calculator (Wilson, 2001).

4.3.3 Study III

4.3.3.1 Matching

In general, matching (used also in Study I) attempts to reduce imbalance in the distribution of baseline confounders between treated and control subjects. Such imbalances are otherwise likely to bias observations and lead to incorrect interpretations of possible effects.

Specifically, *propensity score matching* attempts to reduce imbalance in baseline covariates through imitating a completely randomized controlled trial (Austin, 2011; Williamson, Morley, Lucas, & Carpenter, 2012). However, if used carelessly (King & Nielsen, 2015), the assumed strength of propensity score matching may become a weakness even compared to other matching methods.

For Study III, we first used a multiple imputation method with full conditional specification to manage missing covariate data (van Buuren, 2007), reportedly the most reliable method for managing missing data. Hence, we created five new data sets from original data and missing values were replaced by the probable value for each variable based on all non-missing covariates and outcome variables.

After imputation, we used propensity score matching to reduce the impact of selection bias. Prior merging of national longitudinal registers and SPPS offender data allowed for propensity score matching to thoroughly control for baseline differences (e.g., socio-demography, criminal history, psychiatric disorder, and substance abuse as well as parental history of mental illness and criminality) between ART starters and comparison offenders.

Briefly, the propensity score mirrors the probability of being assigned to a particular treatment given a set of observed covariates. Initially, we identified theoretically relevant covariates from the empirical literature on criminality risk factors. Second, to be included in propensity score calculation, covariates had to exhibit statistically significant ($p < .05$) correlations with both ART participation and either of the two recidivism outcomes. For each of the five imputed data sets, we calculated a propensity score for every individual based on covariate values and computed an average propensity score across all five data sets. Finally, we individually matched ART participants with comparison offenders having a similar propensity score; or similar likelihood of being an ART participant although, in reality, comparison offenders were not.

For increased comparability, we only accepted differences between ART participants and controls with Cohen's $d \leq 0.10$ per covariate. To retain statistical power while creating as equal groups as possible, it was optimal to match three comparison subjects to each ART participant according to the nearest-neighbor principle.

Matching was done separately for the total treatment group, completers, and dropouts, respectively (Study III: Tables A1–A3), and absolute recidivism rates within 1 year were calculated. To estimate relative recidivism risks during the entire follow-up and simultaneously account for varying time-at-risk, we used Cox regression modelling stratified on *matched constellations* (with one ART participant and three corresponding controls). A so-called robust sandwich estimator made standard errors less vulnerable to model misspecification.

Analyses in Study I and II were done with concurrent versions of SPSS/IBM statistical software. For Study III, statistical analyses were run in SAS.

4.4 ETHICAL CONSIDERATIONS

4.4.1 Study I

Data collection for **Study I** was carried out at Uppsala University in accordance with the ethical principles of the then Humanities and Social Sciences Research Council (HSFR). A

formal request later sent to the regional ethics committee of Karolinska institutet if this was acceptable received a positive answer. Upon a renewed direct inquiry in 2019, the Director of research studies at CNS, KI, judged that this was sufficient. Important ethical standpoints included not collecting names, personal identification numbers, or data on criminal behavior and that consent from guardians (head of department or parent, respectively) should be obtained. No reward was offered for participation.

Following discussion with the Research and Development unit of the National Board of Institutional care, we decided that each head of included residential institutions rather than a research team member should choose which youth that should be asked to participate in the study by their own staff. The research assistant informed those who agreed to participate and reminded that they could decline participation if they so wished. Informed consent from parents to youth in residential treatment was not obtained since the head of each institution had the formal responsibility for their care. Data collection explicitly excluded identifiers like name and personal identification number but included self-reported age, gender, and parental occupation.

For control youth, not in residential treatment, oral information about the study was given by the research assistant in full class following consent from the school headmaster. It was explicitly pointed out that participation was voluntary. As the youth were 13–18 years of age, we deemed it necessary to obtain written informed consent from parents/formal caregivers. Each youth had to bring a form to their parents for signature. If both the youth him-/herself and caregivers agreed to participation, self-report forms were administered.

4.4.2 Study II

Study II was approved by the Regional ethical review board in Stockholm at Karolinska institutet (dnr 03-315). Since convicted criminal youth in residential treatment have substantially reduced autonomy, respect of their integrity is of paramount importance. The research database contains material that could cause harm to personal integrity and must be handled with caution. Secure handling of computers and backups was also important. After written and oral informed consent, participants were given a small monetary compensation (100 SEK) at baseline and 12-month follow-up, respectively. Following Swedish research ethics practice, we decided on a small sum to avoid undue persuasion into participation.

4.4.3 Study III

Study III was approved by the Regional ethical review board in Stockholm, at Karolinska institutet (dnr 2009/5:10). This study was possible through an extensive national register linkage wherein Prison and Probation Services data, including program participation, were linked to various nationwide, longitudinal population registers within the framework of an epidemiological research project on determinants, correlates, and consequences of violent crime. Ethical considerations included potential harm to research subjects from becoming aware that one might be included in a pseudonymized national research database.

5 RESULTS

5.1 STUDY I

We used self-report questionnaires to investigate if young offenders in residential treatment had more cognitive distortions, less developed moral reasoning and reduced empathy compared to individually matched youth not in residential care. Two-way ANOVA indicated that youth (mean age=15.7 years) in residential care at SiS institutions self-reported much more cognitive distortions ($F_{(1,112)}=36.44, p<0.0001$) and moderately less mature morally reasoning ($F_{(1,112)}=25.33, p<0.0001$) than matched comparison school youth. In contrast, we found only marginal differences in self-reported empathy ($F_{(1,112)}=0.27, ns$). Compared to male youth, female youth reported less pronounced cognitive distortions, more mature moral reasoning, and more empathy. In pairwise comparisons, controlling for the third variable, empathy and moral development were moderately strongly and positively correlated. Further, more mature moral reasoning was moderately negatively correlated with cognitive distortions whereas empathy was strongly negatively correlated to cognitive distortions.

5.2 STUDY II

In a randomized controlled trial, we investigated the effects of adding an individual CBT intervention to the usual treatment at residential homes for serious, male violent youth serving sentences according to the Closed Institutional Youth Care Act (LSU). Intent-to-treat analyses suggested slightly but non-significantly higher rates of violent crime reconvictions in youth that received iCBT + TAU compared to those that only received TAU at 12 months ($d=0.30, 95\% CI: -0.24-0.84, ns$) or 24 months ($d=0.23, 95\% CI: -0.25-0.72$) after release. No differences in any criminal recidivism were found between iCBT + TAU and TAU only youth at 12 months ($d=0.15, 95\% CI: -0.37-0.67, ns$) and 24 months ($d=0.09, 95\% CI: -0.63-0.45, ns$). The same held for analyses regarding aggressive DSM-5 CD symptoms 12 month after release, number of offences 12 and 24 months after release and for the entire follow-up using Cox regression modelling to control for variations in follow-up periods and baseline differences. There were many treatment dropouts, 15 (39%) completed the planned minimum amount of 15 sessions; 23 (61%) did not receive the intended number. Results suggested no difference between completers and TAU only youth.

5.3 STUDY III

We addressed the effectiveness of ART for convicted young adult offenders in an observational propensity score-matched cohort study. Cox regression analyses revealed negligible differences in violent reoffending related to ART treatment, both in intent-to-treat analysis ($HR=1.02, 95\% CI: 0.89-1.17, ns$) and per protocol-analysis (with completers only) ($HR=0.95, 95\% CI: 0.79-1.14, ns$). The same held for intent-to-treat analyses of any recidivism ($HR=0.97, 95\% CI: 0.88-1.07, ns$). We found, although significant, a negligible treatment effect regarding any recidivism for completers only ($HR=0.87, 95\% CI: 0.77-0.99, p<.05$). Sensitivity analyses using new suspected offences revealed similar results.

Interestingly, we found small significant increases in risk of both violent (HR=1.46, 95% CI: 1.16–1.80) and any recidivism (HR=1.28, 95% CI: 1.09–1.51) for treatment dropouts compared to propensity score-matched comparisons.

6 DISCUSSION

6.1 SUMMARY OF STUDIES

On average, a substantial proportion of those sentenced or incarcerated for serious or violent crime reoffend within a few years. From an international perspective, it is important to notice that these rates vary by legal and other factors affecting the severity of the incarcerated population, definitions of recidivism, length of follow-up etc. (Fazel & Wolf, 2015). Although there is evidence that treatment can be effective, especially CBT programs that follow the RNR principles, my thesis illustrates that it is difficult to provide sufficiently effective treatments with serious, violent offenders in correctional settings.

Antisocial cognitive distortions are prominent among youth in residential treatment, as suggested in **Study I**. Our data reveal that both cognitive distortions and impaired moral development are linked to criminal activity in youth also when controlling for several possible confounding sociodemographic factors. Thus, they could both be possible causal risk factors and treatment goals with antisocial youth. Empathy, on the other hand, seems less meaningful to address directly in treatment to reduce the risk of further crime. Overall, this agrees with the notion that antisocial cognitive distortions; more explicitly associated with criminal and antisocial behavior may constitute a more meaningful target for psychological treatment of serious violent offending than less proximal factors like empathy and moral judgment.

In **Study II**, we investigated whether the addition of iCBT, an individually administered CBT intervention focusing on cognitive aspects of interpersonal relations and self-control, to group-based CBT or milieu therapy would improve the reduction of reoffending among serious young violent offenders. Based on my clinical experience and understanding of the psychological treatment literature in the early 2000s, I designed iCBT specifically to be tested in this project. In the five-site RCT, 38 young males were randomized to receive iCBT plus TAU and 43 to the control condition: TAU only. Less than half of the youth received the 15 iCBT sessions needed for determining the treatment as completed. Our findings suggest that the intervention did not reduce reoffending beyond TAU for those we *intended to treat*. However, the small sample size based on an overly optimistic sample power calculation and a substantial proportion of discontinued treatments reduced the stability of the effect estimates. To further elucidate the underlying treatment concept, we conducted a well-powered, large-scale controlled observational study of possible effects of Aggression Replacement Training (ART), an established group-based intervention based on similar core features as iCBT.

ART, originally developed for use with youth, includes anger management, interpersonal skills and moral judgment training is a widespread CBT-based intervention for aggressive behavior. In **Study III**, we investigated whether ART would be effective in reducing reoffending among young adults within the SPPS. Based on the results from Study II, our hypothesis was that the program might not be as effective in reducing recidivism as hoped for. The study included 1,124 treated convicted offenders that began ART in prisons or

probation offices and 3,372 carefully propensity scored-matched offender controls during the same period; 2007–2009. No effects favoring ART were found in intent-to-treat analyses. Further, completer analyses suggested no effect on violent crime reconvictions, but a marginal reduction in non-violent reoffending. Our findings are in line with international research suggesting that ART is not an effective intervention to reduce violent or other criminal recidivism among adult offenders.

6.2 GENERAL DISCUSSION

In this thesis, I investigated if three key factors in social interactions; antisocial cognitive distortions, moral judgment and empathy, characterize serious antisocial youth, and studied possible recidivism-reducing effects of two CBT interventions with different study designs, sample sizes, participant ages, and administration formats.

Notably, it has been reported that *within-treatment change in self-reported antisocial attitudes does not correspond with individual change in reoffending risk* (Kroner & Yessine, 2013; O’Brien & Daffern, 2017; Howard & van Doorn, 2018). Our results from Study II seemed to agree with this; positive self-rated pre- to posttreatment changes were not reflected in expert-rated aggressive symptoms and criminal reconvictions at 12 and 24-month follow-ups.

Systematic reviews on treatment of violent offenders suggest a small, temporally stable recidivism-reducing effect of about ten percent for violent offender programs (Jolliffe & Farrington, 2009; Papalia et al., 2019). However, there are still *too few randomized controlled study results for firm conclusions about treatment effectiveness and possible mechanisms of change* (cf. Yehekel, Jekielek & Sandor, 2020).

For treatment studies II and III, we attempted to provide rather extensive information on sample characteristics including age, immigrant status, history of violent criminality and recidivism risk levels, often sparsely reported in published studies (DeMatteo, Haney-Caron & Flack, 2019). Importantly, *comprehensive information on client characteristics should facilitate intervention development by investigating possible moderators of treatment effects across studies*.

Another key area we need to know more about is *program attrition*. Our effectiveness studies (Study II and III) support that attrition can have negative effects and is related to increased reoffending. A meta-analysis of predictors of treatment attrition from offender programs including 114 studies with 41,438 offenders (Olver, Stockdale & Wormith, 2011) suggested that those dropping out from treatment had more risk factors. This underscores the dilemma that offenders who would benefit the most from treatment are also at greater risk for attrition. In a recent study of 116 young offenders in residential treatment in Germany (Carl, Schmucker & Lösel, 2020) found that youths initial motivation predicted attrition. Polaschek (2010) investigated attrition from a CBT intervention for high-risk violent offenders, and found no association between demographic variables, PCL-R scores, static or dynamic risk factor and treatment attrition. This is in line with our Study II and III findings which implies

that characteristics beyond (measured) baseline differences may affect attrition. Since there are several reasons for attrition: client-initiated drop-out, agency-initiated exclusions, and administrative termination (Wormith & Olver, 2002), we have to look beyond individual variables to better prevent attrition.

6.3 LIMITATIONS

In Study I, we observed that antisocial youth had more potentially treatable self-reported antisocial cognitions and less mature moral judgment (but similar empathy) compared to matched school youth. And male youth more so than female youth. One possible limitation is that these differences might be secondary to compulsory placement in an institution even for a shorter period; peer contagion or other mechanisms could make subjects more prone to develop or strengthen antisocial attitudes as tapped by self-reported constructs (cf. Dishion & Tipsord, 2011). Further, the empathy measure was originally made for children and it is possible that adaptations were not sufficient to make it sensitive enough for adolescent respondents. The SRM-SF asks respondents to write their own motivation to judgments of the presented moral dilemmas. It is possible that youth in residential care had more trouble expressing themselves in writing, which could complicate a correct interpretation of their answers in terms of level of moral judgment. Finally, we were unable control for verbal or general cognitive ability which might confound observed associations.

Study II: We did not find that individualized CBT produced meaningful reductions in criminal recidivism and aggression beyond group-based usual psychological treatment in serious, violent male youth in residential settings. The small sample size and a considerable proportion of discontinued treatments reduced the precision of effect estimates. With only 15 of 38 male youth completing the planned 15+ sessions of an already brief intervention, it is difficult to interpret the results. As with several other intervention trials, iCBT was a new intervention that had not been formally tested in feasibility or pilot studies. But only by me in my practice as a clinical psychologist in treatment sessions with serious, antisocial youth at Sundbo residential care home. There is a risk that the manual was not instructive and supportive enough of important aspects of the suggested new treatment, and training and supervision of therapists may have been insufficient. The selection of experimental conditions and randomization procedures may also have affected the results. We decided that it was reasonable to recruit and treat both iCBT + TAU and TAU only youth at all five participating institutions. That was because cluster randomization where different institutions would be compared with each other was judged to provide difficult-to-interpret results. For example, that could result from possible differences in individual youth characteristics and group composition across units. Or from difficulties in determining how the balance between individualized iCBT and TAU would play out in iCBT institutions compared to the more or less intensive baseline TAU. The study was not pre-registered, since this was uncommon research practice in 2002–2003 when Study II began. With the wide-spread endorsement of open science practices today, we would preregister our study protocol.

Statistical significance is the probability that an observed difference between two or more groups or conditions is due to chance. If the p-value is larger than the chosen alpha level (e.g., .05), any observed difference is assumed to be explained by sampling variability. Statistical power is also dependent on the expected or actual effect size and sample size. Almost needless to say, with a sufficiently large sample, a statistical test will almost always demonstrate a statistically significant difference, unless the effect size is (close to) zero. Conversely, when the effect size of an intervention is larger, it is possible to statistically ascertain such an effect already in smaller samples, whereas a smaller effect size would require larger sample sizes (cf. Akobeng, 2016). With respect to statistical power, an admittedly over-optimistic pre-study assumption of possible effect sizes of iCBT and substantial participant loss to follow-up, rendered Study II underpowered. However, the reporting of effect sizes (rather than p-values) should allow for comparison of different studies in systematic reviews and meta-analyses. To uncover knowledge gaps, it is important to gather and synthesize results from studies of similar outcomes. Hopefully, by inclusion in meta-analyses, also null results from an underpowered investigation such as Study II could inform development of interventions and clinical practice.

For **Study III**, although we were cautious throughout the process of using propensity score matching, the latter is not a perfect method. As King and Nielsen (2015) points out; propensity score matching attempts to imitate a completely randomized experiment. However, since it relies on probabilities rather than actual covariates it might create selection effects which decrease rather than increase group equivalence. Another limitation with national register data is that personality and cognitive variables, such as motivation for treatment, procriminal attitudes, and social variables such as antisocial peer or gang affiliation within or outside prison might have differed between ART participants and controls. There are several problems, regarding statistical power and fine-grained resolution aspects, with dichotomous outcome measures like registered convictions. For example, ART participation might have reduced frequency and severity of reoffending. Yet, we opted to not run additional analyses to avoid the likelihood of false positives/Type I errors.

7 CONCLUSIONS

1. In line with prior research, antisocial cognitive distortions and less mature moral judgment, but not lower empathy, seem to distinguish antisocial youth in residential care from school youth without identified antisociality.
2. Changes in psychologically important risk dimensions such as cognitive distortions and moral judgment may affect reoffending risks among serious antisocial youth.
3. In a five-site RCT, we were unable to find that the addition of an individualized 15-session CBT intervention before release from residential care reduced reoffending beyond TAU among serious, young male violent offenders.

This may be due to the intervention not addressing enough criminogenic risk factors or not being administered intensely or long enough.

4. We failed to find that ART could lower recidivism meaningfully in a well-powered, propensity scored-matched observational study of young adult offenders in the SPPS.
5. Attrition or participant dropping out from started treatment programs is a profound problem with interventions for serious, violent offenders in correctional settings and associated with increased risk of reoffending. This issue needs continued focus in future research and clinical practice.

8 IMPLICATIONS AND FUTURE DIRECTIONS

Our results regarding effectiveness of psychological treatment programs for serious and violent antisocial youth and young adults are discouraging. As mentioned previously, systematic reviews of violent offender treatment (e.g., Jolliffe & Farrington, 2009; Papalia et al., 2019) suggest small average recidivism-reducing effects. These reviews and other research reviewed here illustrate a need for more well-conducted research to facilitate analyses of treatment moderators or *success factors* that could improve intervention effectiveness.

Change processes. In my view, we know something about factors that can change serious, antisocial behavior on the group level. However, we clearly need more knowledge about how change occurs in the individual offender. And, following dynamic offender risk assessment, what the appropriate individualized content that might reduce violent reoffending should be. More focus on the process of offender skill acquisition may be one way forward in this (Simourd & Olver, 2019).

Preventing dropout. Implementation and refinement of strategies to prevent psychological treatment dropout will remain central since attrition is associated with elevated reoffending risk. Motivational techniques to engage and maintain clients' change processes should be used throughout the intervention. Treatment providers should encourage and recognize continuous feedback from clients about their experience and progress with the intervention.

The significance of implementation. Equally important to finding feasible and effective treatment models is ensuring proper implementation and treatment fidelity. We need to make sure that treatment organizations are ready to receive and correctly use new programs and treatment models. There are indications in Study III that the effectiveness of ART, albeit overall null, might have improved somewhat over time. Prior research (Andrews & Bonta, 2010; Gannon et al., 2019) pinpoints the importance of training and experience among treatment providers. However, organizational maturity and perseverance are central to obtain this.

Psychological rehabilitation programs for serious offenders cannot stand alone. They need integration or combination with other interventions. Serious, higher-risk offenders are characterized by many criminogenic risk factors in multiple areas; biological, psychological, and social. To effectively prevent reoffending and establish a prosocial life generally requires several different interventions (cf. Sovereign et al., 2019). For instance, pharmacological treatment might help clients with impulsivity and emotional dysregulation based on ADHD or craving in substance misuse, whereas psychosocial interventions might improve prosocial support and vocational training. Obviously, to desist from future offending, clients need to enter a more prosocial life. Psychological treatment can be a critical, maybe necessary, starting point. But to increase effectiveness we should make stronger efforts to integrate

different intervention types and modalities. Only then may interventions to reduce reoffending among serious violent youth and adult offenders become truly biopsychosocial and, hopefully, more effective.

9 ACKNOWLEDGEMENTS

First and foremost, I want to express my sincere gratitude to longtime friend and principal supervisor Niklas Långström. Without his enthusiasm and endurance, I would never have reached the end of this academic journey. All the hours we have spent together by computers and datasheets has given me knowledge and insight about research, but also about society and life in general. Thank you so much for all these years!

I am also grateful for the support I got from my co-supervisor, the late Martin Grann (1969—2013), who generously introduced me at the Centre of Violence Prevention at Karolinska institutet. His brilliant mind and effective management has been an important guiding light for me. Not to forget, and for that I thank him sincerely, he also recruited me to my current workplace, the Swedish Prison and Probation Service.

Further, a thank you to my second co-supervisor Mats Forsman for his courage to take over after Martin Grann and who, together with coauthor Elisabeth Nordén, introduced me more deeply into the world of multivariate statistics. I also have to thank my tutors and role models, clinical psychologists and researchers Steven Linton and Lennart Melin, also my former supervisor, who introduced me to behavior therapy and research.

I would also like to express my gratitude to collaborators and coauthors throughout the years, Ulrika Holst, Jens Högström, Märta Wallinius and others. A special thank you to Ingrid Freij, who was handling the logistics and data collection in my lengthy treatment project at the National Board of Institutional Care (SiS). Without her, we would not have had all the valuable data needed to analyze the outcome of our RCT. Thanks also to Therese Åström and Anna Kvist for helping out with the extensive material in the iCBT project. I would also like to thank Tore Andreassen for his friendship and his determination to improve institutional care.

Sincere thanks also to understanding bosses: Arne Andersson at Sundbo youth home, Nils Åkesson at SiS' Research and Development unit and, most recently, Lennart Palmgren at the Swedish Prison and Probation Service. They all generously allowed me to do research as part of my work in their respective organization.

I thank all the participants of our studies. Obviously, without them sharing their information there would never have been any research.

I would also like to extend my gratitude to the Research and Development funding bodies of the National Board of Institutional Care and the Swedish Prison and Probation Service for believing in our ideas.

Last, but most important, I want to express my gratitude to Lena and Bodil, my dear and deeply loved family.

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