Protective Factors

Validation of the Structured Assessment of Protective Factors for Violence Risk in Forensic Psychiatry

Michiel de Vries Robbé

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Doctoral Thesis

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by
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‘Fear can hold you prisoner. Hope can set you free.’

The Shawshank Redemption
by Stephen King

For Eva, Leo and Melanie, my own protective factors

List of publications

This thesis is based on the following manuscripts:

Chapter 1 de Vries Robbé, M., & de Vogel, V. (2013). Protective factors for violence risk: Bringing balance to risk assessment. In C. Logan, & L. Johnstone (Eds.), *Managing Clinical Risk: A guide to effective practice* (pp. 293-310). London: Routledge.

Chapter 2 de Vries Robbé, M., Mann, R.E., Maruna, S., & Thornton, D. (2014). A review of protective factors supporting desistance from sexual offending. *Manuscript accepted for publication, pending final revisions, in Sexual Abuse: A Journal of Research and Treatment.*

Chapter 3 de Vries Robbé, M., de Vogel, V., & de Spa, E. (2011). Protective factors for violence risk in forensic psychiatric patients. A retrospective validation study of the SAPROF. *International Journal of Forensic Mental Health, 10,* 178-186.

Chapter 4 de Vries Robbé, M., de Vogel, V., Koster, K., & Bogaerts, S. (2014). Assessing protective factors for sexually violent offending with the SAPROF. *Manuscript accepted for publication, pending final revisions, in Sexual Abuse: A Journal of Research and Treatment.*

Chapter 5 de Vries Robbé, M., de Vogel, V., & Douglas, K.S. (2013). Risk factors and protective factors: A two-sided dynamic approach to violence risk assessment. *The Journal of Forensic Psychiatry & Psychology, 24*, 440-457.

Chapter 6 de Vries Robbé, M., de Vogel, V., Douglas, K.S., & Nijman, H.L.I. (2014). Changes in dynamic risk and protective factors for violence during inpatient forensic psychiatric treatment: Predicting reductions in post-discharge community recidivism. *Manuscript accepted for publication in Law and Human Behavior.*

Chapter 7 de Vries Robbé, M., de Vogel, V., Wever, E.C., Douglas, K.S., & Nijman, H.L.I. (2014). Risk and protective factors for inpatient aggression. *Manuscript submitted for publication.*

Content

Preface

This thesis is based on the SAPROF validation studies which have been carried out at the Van der Hoeven Kliniek over the past 7 years. Out of all the people who deserve to be acknowledged for their involvement and collaboration regarding this thesis, first and foremost I would like to express my sincere gratitude to my copromotor Vivienne de Vogel. From the moment I joined the hospital in 2004 our common interests in the risk assessment field and our similar appreciation of the invaluable importance of the clinical applicability of risk assessment tools has inspired us to collaborate in research, tool development, implementation, publication and training. It has truly been and continues to be very special to work together in such a nice collaboration. Much gratitude also goes to my Canadian promotor Kevin Douglas for his invaluable feedback and inspiration. It has been a privilege to work together on our joint risk assessment studies and discuss the ins and outs of our research at the various stages of this thesis. Thanks for the kind invite to spend some time in Vancouver and for sharing more of the Canadian experience with me. I am also very thankful for my Dutch promoter Henk Nijman for his valuable contribution to this thesis and the nice collaboration in making this promotie possible at the Radboud University in Nijmegen. To all three of my promotors, I sincerely hope we will continue to work together on many interesting research projects in the years to come.

The SAPROF project has been the main focus of my research since 2006, and I am very grateful to my SAPROF co-authors Vivienne de Vogel, Corine de Ruiter and Yvonne Bouman for bringing me on board. Thanks for the collaboration we have had over the years and for trusting me to run the SAPROF project. We never anticipated this project to become so widespread, but the enthusiasm in the international mental health field for the SAPROF has been overwhelming. It has been a very engaging experience to run every aspect of this project; from writing the manual to implementing it in clinical practice, from running the research studies to providing workshops and train-the-trainer workshops, from designing the cover of the manuals to organizing distribution and from providing feedback to international users and researchers to guiding the different translations. Special thanks to my dear colleague Ellen van den Broek, for her inspiration, kindness and support in the SAPROF project throughout these years. Both on a professional and on a personal level, the countless conferences and workshops Vivienne, Ellen and I have done together have been memorable moments over the course of the writing of this thesis.

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(Danish version, 2013). Currently, a Japanese and a Chinese version are still in development. In addition, I would like to thank all international SAPROF trainers and the 'SAPROF network' for their enthusiasm for this project. In particular, Michael Doyle, Quazi Haque, Richard Whittington, Andrew Brown, and Simone Viljoen, who were among the first to introduce the SAPROF overseas.

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As the number of female patients at the Van der Hoeven Kliniek gradually increased and at the same time relatively little was known about specific risk factors for female patients, in 2011 Vivienne and I collaborated with Willemijn van Kalmthout and Caroline Place in developing additional guidelines for assessing risk factors for violence in women: the *Female Additional Manual* (FAM; English translation 2012). Currently several translations of the FAM are in preparation. In 2013, Vivienne and I worked on translating the revised HCR-20^{V3} (Douglas, Hart, Webster, & Belfrage, 2013) into Dutch. This translation was carried out in collaboration with Yvonne Bouman, Farid Chakhssi and Corine de Ruiter. It has been a pleasure collaborating on these two projects.

More recently, we have started the development of yet another risk assessment tool: the SAPROF Youth Version. As interest in the SAPROF adult version grew over the past years, we began receiving many requests from mental health professionals working with juvenile offenders for a version of the SAPROF specifically for youth. This inspired us to develop the SAPROF-YV, which is being done in close collaboration with Miranda Geers, Ed Hilterman and Manon Stapel. A pilot version of the SAPROF-YV was composed in Dutch in 2013. After pilot studies have been completed, this version will be revised into the final version of the SAPROF-YV, which is anticipated to be ready in Dutch by summer 2014. An English translation will be carried out shortly after.

Last, but certainly not least, I would like to thank all of my dear family and friends both in The Netherlands and in Canada, who have always shown kind interest in my work and continue to provide me with their support and friendship. Bart, Moritz and Pim thank you for being my paranimfen and standing by me throughout the writing and defending of this thesis.

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Introduction

Background

International violent crime rates are staggering and interpersonal violence is a major global concern causing physical, emotional and financial burden to society. In 2002 the World Health Organization stated that violence was among the leading causes of death for people aged 15–44 years worldwide and that a large number of people suffer from injuries or mental health problems caused by violence (World Health Organization, 2002). In addition to personal costs for victims, violence places a massive burden on national economies, costing countries billions of dollars each year in health care, law enforcement and lost productivity (for an overview of estimated costs of crime and common violence see Soares, 2009). Although there is an ongoing debate whether psychiatrically disordered patients in general are more likely to become violent than others (see for example van Dorn, Volavka, & Johnson, 2012; Szmukler & Rose, 2013), forensic psychiatric patients with histories of substance abuse and violent or sexually violent offending are at increased risk of violent recidivism. For this reason psychiatrically disordered violent and sexual offenders are often sentenced to mandatory treatment, outpatient or inpatient with varying levels of security depending on the severity of prior offenses and the anticipated likelihood of violent reoffending. However, even those patients admitted to medium- or high-secure forensic treatment settings will generally be reintegrated into society, as soon as justifiable. Given the high potential for violent recidivism in this group, specialized interventions targeting the important factors that contribute to violence risk, and in-depth violence risk assessment procedures are vital to ensure a safe and successful return to society. How to best treat these high-risk individuals and prevent future violence is an ongoing challenge forensic health care professionals are facing. A key question for release decision making by clinicians and judges is how can be assessed whether interventions have been successful and risk of recidivism has decreased sufficiently for a safe reintegration into society.

What does support high risk forensic psychiatric patients in desisting from violence and prevents them from recidivating after treatment? The answer to this question is neither simple nor generic across patients. Two important components likely play an important role in successful violent offender rehabilitation: the reduction of risk factors and the development of protective factors. The acknowledgement of risk factors for violent behavior goes as far back as the early days of criminology (Lombroso, 1887) and psychiatry (Freud, 1915). However, the first contemporary efforts to evaluate the evidence regarding the *prediction of violent behavior* were made in the classical work of Monahan in the 1980's, which sparked a wide international interest in identifying risk factors for violent recidivism and in seeking treatment approaches to diminish these risk factors as much as possible.

As the reliability and predictive validity of unstructured clinical judgments made by clinicians was disputed (see for example Mossman, 1994), empirically based lists of risk factors were developed aiming to provide for a more accurate prediction of violent behavior. The predictive validity of these *actuarial* tools (the enumeration of risk factors according to

a set algorithm in order to come to a final conclusion regarding the level of risk) for specific types of violence in specific populations is generally good. Nevertheless, researchers seeking a more clinically applicable use of risk assessment have argued that actuarial tools are less suitable for providing personalized information that could benefit risk management and treatment interventions. Efforts to integrate the empirical knowledge and clinical expertise and to attempt bridging the gap between risk prediction and violence prevention resulted in the development of the *Structured Professional Judgment* (SPJ) approach to risk assessment. SPJ risk assessment tools are checklists containing empirically based historical and dynamic risk factors, which are carefully interpreted and integrated for the assed individual by an experienced mental health professional in order to arrive at a well informed final judgment of violence risk. For a comprehensive overview of the evolution of violence risk assessments and an in-depth explanation of the SPJ approach see Douglas, Hart, Webster, & Belfrage (2013).

Numerous actuarial and SPJ risk assessment tools have been developed over the past decades to assist clinicians in predicting violence and making decisions regarding treatment and release for a wide range of risk types and populations (see for example Otto & Douglas, 2010). However, this strong focus on risk factors that explain and predict violent behavior seems to have caused the other side of the violence risk equation to be overlooked: the risk prevention potential of protective factors. The strengthening of protective factors has only recently started to gain more attention as an understudied prospect to complement (non-) violence prediction and as an opportunity for inspiring positive intervention strategies aiming towards safe reintegration of patients and offenders back into society. Although clinicians have always sought to bring out the positive characteristics in their patients and aimed to provide external support, only recently positive treatment models such as the *Good Lives Model* (Ward & Brown, 2004) have become more explicitly incorporated in treatment. By following the assumption that everyone wants to attain a good life and seeks to utilize the means that seem most likely to assist in achieving this positive personal outcome, the *Good Lives Model* approach aims to substitute antisocial mechanisms by prosocial ways of attaining personal goals.

In the broader field of mental health, decades of research have identified a wide range of protective factors at the level of the individual, family, and community that prevent adverse outcomes (Dion, 2013). The Child Welfare Information Gateway provides a general definition of protective factors for social and emotional well-being: Protective factors are conditions or attributes (skills, strengths, resources, supports or coping strategies) in individuals, families, communities or the larger society that help people deal more effectively with stressful events and mitigate or eliminate risks. These components are critical to ensuring that individuals are successful at home, at school/work and in the community (Resource Guide, 2013). Protective factors may be personal, situational or environmental positive assets or influences. In their review of protective factors for the development of youth violence Lösel and Farrington (2012) found evidence for the protective effect of various factors at the individual, family, school, peer, and neighborhood level.

Despite advances in the knowledge on protective factors, the field has not yet come to a consensus regarding consistent terminology, the precise definition of protective factors

and the mechanisms behind their positive effect on risk reduction. Jessor, Turbin and Costa (2003) described two different potential violence reducing influences of protective factors: a direct positive effect (predicting a low probability of violence in general) and a buffering or mediating effect on the relationship between risk factors and violence (predicting a low probability of violence in the presence of high risk). A further differentiation can be made between the preventive contribution of protective factors for onset or reoccurrence of violence: 1) protective factors can promote resilience, that is assist the ability of an individual to withstand adverse circumstances and not become violent; and 2) protective factors can enhance desistance, that is assist those who have previously engaged in violent behavior to not recidivate in violence. While a substantial amount of research has been carried out on protective factors promoting resilience to becoming violent, especially in children and adolescents (see for example Lösel & Bender, 2003; Rutter, 2012), relatively few studies have focused on protective factors that support desistance from violent reoffending (see for example Ullrich & Coid, 2011).

Protective factors in violence risk assessment

The search for universal positive or protective factors that support desistance from violence has only just begun and the potential value of incorporating protective factors in violence risk assessment is slowly starting to become acknowledged. Of the many risk assessment tools that have been developed over the past decades very few also include notions of strengths or protective factors. The *Structured Outcome Assessment and Community Risk Monitoring* (SORM; Grann et al., 2000) and the *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2006) were among the first to acknowledge that at least to some degree protective factors should be taken into account when assessing risk for violence and addressing risk management. Other tools have followed the example of incorporating strengths in their assessment procedure such as the *Short-Term Assessment of Risk and Treatability* (START; Webster, Martin, Brink, Nicholls, & Middleton, 2004, 2009), the *Inventory of Offender Risk, Needs and Strengths* (IORNS; Miller, 2006), the *Assessment Intervention Moving on* (AIM-2; Print et al., 2009), and more recently the *Structured Dynamic Assessment Case-management - 21 item* (SDAC-21; Serin & Wilson, 2012) and the *Desistence for Adolescents who Sexually Harm* (DASH-13; Worling, 2013). However, until 2007 no tool had been developed with the specific focus to assess protective factors for violence risk that could be used to complement well established risk focused tools for violent and sexual offenders.

Perhaps not surprising given the clinicians' general belief in the positive development of their clients it was the routine use of risk focused assessment tools by mental health professionals in clinical practice that inspired the idea of developing an additional tool specifically addressing the assessment of protective factors. The SPJ approach that underlies many clinically widely used violence risk assessment tools such as the *Historical Clinical Risk management-20* (HCR-20; Webster, Douglas, Eaves, & Hart, 1997) utilizes a final clinical judgment of the violence risk level after carefully considering a well defined set of risk factors. Although this approach aims to integrate and combine the risk factors for each specific patient in an individual manner, this approach also naturally incorporates the implicit strengths

and situational factors which are deemed important by the evaluator. However, despite the structured approach of the empirically well established risk factors in these tools, this positive influence at the very end of the assessment which sometimes greatly affected the outcome was merely based on the evaluator's clinical judgment. In order to bring structure and empirical foundation to this positive side of the violence risk balance, we set out to develop a tool specifically for the assessment of protective factors for violence risk: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2007; English version 2009).

Since its translation into English, the SAPROF has been eagerly adopted by clinicians around the globe, resulting in ten more translations published to date and the implementation of the tool in many international institutions. Despite the warm welcoming of the protective factors approach by mental health professionals and institutions and its apparent clinical usefulness, validation studies on the SAPROF and its protective factors have only recently started to make their way into empirical journals. This thesis specifically aims to investigate the psychometric properties of the SAPROF and seeks to provide empirical support for the link between protective factors and non-recidivism in violent behavior in forensic psychiatric patients in The Netherlands. To date, much remains unknown about how protective factors relate to risk factors and influence violence. By analyzing the empirical findings in this thesis the aim is to articulate mechanisms through which protective factors contribute to the desistance from violent behavior.

Setting and procedure

The data collection for this thesis was primarily carried out at the Van der Hoeven Kliniek, a 262 bed forensic psychiatric hospital in The Netherlands. All assessments were carried out for patients who were treated under a tbs-order ('terbeschikkingstelling'). Patients with a tbs-order have been sentenced to mandatory inpatient forensic psychiatric treatment for committing seriously violent offenses that are deemed to be related to their psychopathology. The tbs-order is imposed for indefinite duration, implying that patients are discharged from treatment only when they are no longer considered a threat to society. The intention is to carefully break down risk factors and at the same time build up protective factors, so eventually patients can be gradually reintegrated back into the community. Treatment staff periodically provides the court with a detailed evaluation of a patient's treatment progress and risk of violent recidivism. This evaluation is carried out thoroughly by means of a multidisciplinary two-sided structured professional risk assessment procedure, incorporating both risk factors (such as those in the HCR-20) and protective factors (as assessed in the SAPROF). Considering protective factors in addition to risk factors has become a clinically valued aspect of balanced risk assessment at the Van der Hoeven Kliniek. Since little was known about protective factors for violence risk at the time of development of the SAPROF, validation studies were started at the time of clinical implementation in 2007. The current thesis presents the results from these validation studies carried out at the Van der Hoeven Kliniek over the past seven years.

Thesis outline and aims

Chapter 1 concerns a book chapter which aims to illustrate the SAPROF and explain its content and intended use in clinical practice. This chapter introduces the concept of protective factors in general and more specifically the SAPROF as a protection focused tool. In addition, the use of the SAPROF is illustrated by a case study example.

Chapter 2 elaborates on the search for specific protective factors for patients with a history of sexual offending. The literature review presented takes a broad approach to come to eight proposed domains of protection for sexual offenders. Seven of these domains highly overlap with the protective factors as encompassed by the SAPROF, providing support for the potential value of the SAPROF for the assessment of violence risk in sexual offenders. The main research question in this chapter is: Do the SAPROF factors cover proposed sexual offender protective domains?

Chapter 3 provides a first study on the validity of the protective factors in the SAPROF. This retrospective file based study focuses on a sample of discharged violent offenders for whom the SAPROF is assessed in addition to the HCR-20. Interrater reliability is examined as well as concurrent validity and predictive validity for violent re-offending after discharge from inpatient treatment. Predictive accuracy is evaluated for different follow-up times after discharge. The main research questions in this chapter are: 1) Does the SAPROF show sound psychometric properties? 2) Are its protective factors predictive of (no) violence recidivism for patients with violent offending histories? 3) Do protective factors show incremental predictive validity over risk factors?

Chapter 4 follows a similar file based empirical validation approach, but for sexual offenders. Patients are retrospectively assessed on the SAPROF, the HCR-20 and the *Sexual Violence Risk-20* (SVR-20; Boer, Hart, Kropp, & Webster, 1997) upon discharge. Psychometric properties are investigated including predictive validity for violent and sexual re-offending at different follow-up times after treatment for patients with sexual offending histories. The main research questions for this chapter are: 1) Does the SAPROF perform well for sexual offenders? 2) Do its factors predict violent and sexual offending for treated sexual offenders at different follow-up times? 3) Does the SAPROF add incremental predictive validity to the HCR-20 and the SVR-20 for sexual offenders?

Chapter 5 aims to merge the data from chapters 3 and 4 into a larger forensic psychiatric sample more representative of Dutch forensic psychiatric treatment. This chapter starts off by establishing whether the influence of protective factors on violent recidivism differs for patients with different types of offending histories. The chapter continues with an investigation of the additional value of protective factors over risk factors and of dynamic factors over historical (static) factors. It concludes with an examination of the interaction between risk factors and protective factors. The main research questions are: 1) Do the SAPROF factors perform equally well across offending types? 2) Do dynamic factors add to historical factors? 3) Do protective factors add to risk factors? 4) How do risk and protective factors interact?

Chapter 6 concerns the changeability of the dynamic SAPROF protective factors during clinical treatment and the value of improvement in protective factor scores for positive treatment outcome. Pre-treatment assessments are compared to post-treatment assessments in order to compose HCR-20 and SAPROF change scores, which are then related to violent outcome. The main questions in this chapter are: 1) Are protective factors changeable during treatment? 2) Are changes in protective factor scores during treatment related to reduced violent recidivism after treatment?

Chapter 7 has a different approach and investigates actual prospectively coded risk assessment data as collected during clinical forensic psychiatric treatment. The study relates violence risk assessment scores (HCR-20 and SAPROF) to incidents of violence towards others during the year following the assessment. The relationship between assessment outcome and violent incidents is compared for assessments at different stages during treatment, as well as for assessments carried out for different groups of patients in terms of offending histories, gender and psychopathology. The main research questions are: 1) Does the SAPROF predict violent incidents during treatment? 2) Are the SAPROF factors more valuable during specific stages of treatment? 3) Does the SAPROF perform well across different groups of patients?

The thesis concludes with a discussion integrating the results from the different studies described in this thesis. The final chapter contemplates the additional value of the protective factors approach and aims to demonstrate its overall relevance to violence risk assessment. Furthermore it views the SAPROF in the light of its potential value for enhancing treatment motivation, guiding interventions and risk management strategies, offering new opportunities for treatment evaluation, and improving safe reintegration and well informed decision making on release of patients, clients and offenders with sexual or violent offending histories.

1

Protective factors for violence risk: bringing balance to risk assessment and management

This chapter is a revised version of the following book chapter:
de Vries Robbé, M., & de Vogel, V. (2013). Protective factors for violence risk: Bringing balance to risk assessment. In C. Logan, & L. Johnstone (Eds.), *Managing Clinical Risk: A guide to effective practice* (pp. 293-310). London: Routledge.

Chapter 1

Protective factors for violence risk: bringing balance to risk assessment and management

Abstract

This chapter introduces the concept of protective factors and highlights the potential value protective factors may have for the assessment of violence risk and for guiding the treatment of patients and clients with violent offending histories. The literature on protective factors is reviewed and structured professional guidelines for the assessment of protective factors are described: the Structured Assessment of Protective Factors for violence risk (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2007, 2009). A case study on the SAPROF is presented in order to illustrate the use of the SAPROF in clinical practice and exemplify the additional strengths-based approach to violence risk assessment. This chapter aims to demonstrate the value of protective factors for risk assessment, treatment planning and risk management in forensic psychiatry.

Introduction

In the past two decades, knowledge about risk factors for future violence has increased exponentially. Many instruments have been developed aiming to assess the risk of future violent behavior and several are currently in widespread use (i.e., the *Historical Clinical Risk management-20* or HCR-20, Webster, Douglas, Eaves, & Hart, 1997; the *Level of Service Inventory-Revised* or LSI-R, Andrews & Bonta, 1995; and the Static-99, Hanson & Thornton, 1999). The evolution of structured risk assessment instruments over the past few decades has provided us with increasingly helpful tools, to not only assist the prediction of future violent behavior but to also guide clinical intervention and decision-making (Douglas & Skeem, 2005; Webster, Müller-Isberner, & Fransson, 2002). Researchers and clinicians have gradually embraced these risk assessment tools and have come to appreciate their usefulness for clinical practice and violence prevention. More specifically, those factors in structured risk assessment instruments that are changeable or dynamic in nature serve as valuable targets for treatment goals, risk management strategies, and treatment evaluation (Douglas & Skeem, 2005), and their potential value for clinical practice has become more and more acknowledged in forensic mental health.

Despite major advances in everyday risk assessment procedures, there still appears to be a significant aspect of risk assessment that is generally overlooked: protective factors. Protective factors are those factors that can compensate for a person's risk factors and thus play an important part in the overall risk judgment. In his critique of risk assessment in forensic practice, Rogers (2000) stated that most adult-based studies are one-sided in their enumeration of risk factors, to the partial or total exclusion of protective factors. He argued that risk-only evaluations are inherently inaccurate and implicitly biased, often resulting in negative consequences to forensic populations. According to Miller (2006), the focus on risk factors in most risk assessment instruments is likely to result in the over- prediction of recidivism, which is costly both for the offender in terms of loss of personal liberties, and for society in terms of financial burden. Many researchers now agree that by focusing solely on risk factors, important information concerning the other side of the violence risk equation, the possible risk-reducing effect of protective factors, is wrongfully ignored and that including protective factors in risk assessment is vital for an accurate appraisal of the risk of relapse into violence (e.g., DeMatteo, Heilbrun, & Marczyk, 2005; Gagliardi, Lovell, Peterson, & Jemelka, 2004; Haggård-Grann, 2005; Salekin & Lochman, 2008). However, as of yet, the specific assessment of protective factors remains understudied and the concept of protective factors is still ambiguous (Braithwaite, Charette, Crocker, & Reyes, 2010; de Vogel, de Vries Robbé, de Ruiter, & Bouman, 2011).

In this chapter, the potential added value that protective factors have for the assessment of violence risk and for the treatment of violent offenders is discussed. The literature on protective factors is reviewed and the available assessment tools are described, focusing especially on a newly developed structured professional guideline for the specific assessment of protective factors: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel et al., 2007, English Version 2009). Recent research results and a case study on the SAPROF are presented in order to illustrate the strengths-based approach and its contribution to risk assessment, treatment planning, and risk management.

The concept of protective factors

Some authors interpret protective factors exclusively as the absence of risk factors (Costa et al., 1999) or as the opposite of risk factors (Hawkins et al., 1992; Webster, Martin, Brink, Nicholls, & Middleton, 2004), suggesting that any risk factor can also be a protective factor and the other way around. Others propose that a protective factor may exist without a corresponding risk factor (Farrington & Loeber, 2000). For example, research has demonstrated that religiosity has a negative relationship to delinquency and conduct problems (Pearce, Jones, Schwab-stone, & Ruchkin, 2003), however, the *absence* of religion does not constitute a risk factor. The positive effect of protective factors weighs against the negative effect of risk factors. Unfortunately, the exact mechanism of the interaction between risk and protective factors remains unclear.

Researchers have proposed several theoretical models about the direct and indirect effects of protective factors on favorable and unfavorable outcomes (Fitzpatrick, 1997; Jessor et al., 2003; Turbin et al., 2006). Three models have been outlined: (1) a *risk reducing* model,

which implies the effect of protective factors directly on risk factors (and the other way around, termed *mediator* model); (2) a *moderator* or *buffer* model, which suggests the interaction effect of protective factors on the relationship between risk factors and negative behavior; and (3) a *main effect* model, in which protective factors impact directly on negative behavior (see also Chapter 8). For the interaction with risk factors and the negative outcome of violent behavior, it is likely to be the first two of these mechanisms that are primarily in effect: protective factors have a negative influence on risk factors directly (resulting in reduced or weakened risk factors), but they also have an influence on the association between risk factors and violent behavior (resulting in a compensating effect on the risk factor-violence relationship). An example of a positive risk reduction effect is the favorable influence of the protective factor 'medication' on the risk factor 'active symptoms of major mental illness'. An example of a positive moderator or buffer effect is the impact on violent outcome of risk factors like 'substance abuse problems' or 'impulsivity' being diminished by the measured imposition of the protective factor 'external control'. Future studies that include the structured assessment of both risk and protective factors will have to provide more insight in the exact mechanisms of their interaction.

An exploration of protective factors

In recent years, researchers and clinicians in forensic mental health practice have started to acknowledge the presumed value of protective factors for more accurate risk assessment and more effective violence prevention in clinical practice (Douglas, Yeomans, & Boer, 2005; Farrington & Loeber, 2000; Heilbrun, 2003; Jones & Brown, 2008; Webster, Martin, Brink, Nicholls, & Middleton, 2004). Protective factors for violence risk are defined as characteristics of an offender, or alternatively, his or her environment or situation, that reduce the risk of future violent behavior (de Vogel et al., 2009); protective factors therefore range across personal and situational variables. Research on protective factors has identified static and dynamic factors that can help offenders refrain from violent behavior. Static protective factors include personal historical variables such as Intelligence (e.g., Kandel et al., 1988) and Secure childhood attachment (e.g., Fonagy, Target, Steele, & Steele, 1997). Dynamic or changeable protective factors are internal personal characteristics such as Coping (e.g., Vance, Bowen, Fernandez, & Thompson, 2002) and Self-control (e.g., Tangney, Baumeister, & Boone, 2004), motivational personal attributes such as Work and Leisure activities (e.g., Gendreau, Goggin, & Gray, 2000) and Motivation for treatment (e.g., Howells et al., 2005), and external environmental factors such as Social network (e.g., Turbin et al., 2006) and Professional care (e.g., Cooper, Eslinger, & Stolley, 2006). Additionally, research on *desistance*, the refraining from criminal behavior (Ezell & Cohen, 2005; Maruna, 2001; Vaughan, 2007), and *knifing-off*, which is the discontinuation of criminal opportunities (Maruna & Roy, 2006), has shown that reductions in violence risk over time can be the result of situational changes or due to the processes of aging and maturation.

It has been argued that treatment aimed at reducing violent recidivism should not only be focused on diminishing risk factors but also on reinforcing protective factors (Blum & Ireland, 2004; Resnick, Ireland, & Borowsky, 2004). Encouragement of the healthy aspects of mentally disordered patients and their environment can provide a valuable contribution to their

treatment and resocialization process. This concept of including positive factors in treatment is by no means new to forensic psychiatry (see for instance the *Good Lives Model* of Ward & Brown, 2004; and the *Positive Psychology* approach of Seligman, 2002) and many protective factors are often addressed during clinical intervention. However, linking this positive preventive approach to a specific structured evaluation of personal and situational strengths in risk assessment is a relatively new and potentially very promising development.

Tools assessing protective factors

To our knowledge, there are only a few risk assessment instruments that explicitly take protective factors into account (de Vogel et al., 2011). The *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2006), a structured professional judgment (SPJ) checklist for violence risk assessment in youth, contains six protective factors (e.g., 'prosocial involvement', 'resilient personality traits') in addition to 24 risk factors. Recent studies on the significance of the protective factors in the SAVRY in various samples of adolescents showed good predictive validity for refraining from violent reoffending for the summed ratings on the six protective factors (Lodewijks, de Ruiter, & Doreleijers, 2010; Rennie & Dolan, 2010). The *Inventory of Offender Risk, Needs and Strengths* (IORNS; Miller, 2006) also includes protective factors. The IORNS is a self-report risk assessment measure, which was developed to determine risks, needs and protective factors for all types of adult offenders. The IORNS includes a *Protective Strength Index* (26 items) which is comprised of a Personal Resources scale and an Environmental Resources scale. In a sample of American pre-release prisoners, several of the IORNS components, including the Protective Strength Index, were able to differentiate between offenders who were sent back to prison for half way house rule violations and offenders who did not violate any rules (Miller, 2006). Another increasingly widely used instrument containing protective factors is the *Short-Term Assessment of Risk and Treatability* (START; Webster et al., 2004), a clinical guide for the dynamic assessment specifically of short-term risks. The 20 dynamic items are simultaneously coded on two three-point scales – first as a source of protection (Strength) and then for their operation as risk factors (Vulnerability) – because the instrument assumes all 20 characteristics can simultaneously influence vulnerability as well as strength. In recent studies, the START Strength scale (i.e., the sum of all strength ratings) has been shown to be significantly predictive of short-term inpatient violent behavior (Braithwaite et al., 2010; Nonstad et al., 2010; Wilson, Desmarais, Nicholls, & Brink, 2010).

The need for a new instrument

The instruments described above seem promising for use with specific groups of patients. The SAVRY was developed specifically for the assessment of risk in juvenile offenders. The IORNS is a self-report assessment tool. However, given the risk of socially desirable responding in the users of forensic psychiatric services, a self-report measure on its own does not seem sufficient for the structured assessment of protective factors. The START is designed specifically for the short-term (1 to 8 weeks) assessment of imminent risk in (forensic) psychiatric patients

(see Webster et al., 2004, p. 30). As such, it is less suitable for the medium-term assessment (months to years) of more persistent risk and protective factors. As the pathology of long-term forensic psychiatric patients is generally persistent, the risk assessment time frame in forensic psychiatry is often longer.

The most widely used instrument for the assessment of violence risk in forensic psychiatric patients, the HCR-20 (Webster et al., 1997), has a focus of six months to a year. As the HCR-20 includes solely risk factors, the addition of protective factors for this same time frame seems a valuable and positive counterpart to all risk assessments with the HCR-20 or other risk tools with this time frame. Complementing the risk assessment procedure with a structured assessment of factors that may compensate the risk level would provide a more balanced overall assessment. However, an instrument with a specific focus on protective factors for the prediction and prevention of violence risk had not yet been developed. Considering this, and at the same time noticing the mental health professionals' need for guidelines in this area, a structured guideline was developed to specifically assess protective factors for violence risk in adult (forensic) psychiatric patients: the SAPROF.

Development of the SAPROF

The SAPROF is designed according to the structured professional judgement (SPJ) approach (see Douglas, Blanchard, & Hendry, 2013, for an overview) and intended as a positive, dynamic addition to structured risk assessment tools, such as the HCR-20 and related SPJ instruments. The aim of the instrument is to identify protective factors that can compensate for risk factors in order to create a more balanced assessment of future violent behavior. Moreover, insight into the presence or absence of protective factors may give a more complete view of the individual in his or her context and may offer additional guidelines for treatment and risk management. The positive approach of the assessment of protective factors may also inspire positive risk communication and have a motivating effect on patients and treatment staff. Therefore, the idea behind developing the SAPROF was to create an instrument that was both empirically founded and clinically useful.

The construction of the SAPROF started with extensive literature reviews on protective and contextual factors for violent behavior. Subsequently, to acquire additional indications for factors that might protect against relapse into violent behavior, the clinical expertise of mental health professionals at the Van der Hoeven Kliniek, a Dutch forensic psychiatric hospital, was tapped by asking clinicians to specifically consider protective factors during case conference risk assessment meetings (see de Vogel et al., 2009). Based on both the literature review and this clinical expertise, a pilot version of the SAPROF was constructed. Subsequently, a study was conducted with the pilot version in two Dutch forensic psychiatric hospitals and one forensic outpatient setting, in which mental health professionals and researchers rated the SAPROF and were asked to comment on the item descriptions and the instrument in general. The inclusion of clinical feedback at different stages in the development process made the instrument more practically applicable. Together with an updated review of the literature, the feedback on the pilot version was incorporated into the present version of the SAPROF,

which first came out in Dutch in 2007 and was translated into English in 2009. Based on additional user feedback and new research findings the introduction chapter of the manual was updated in a second edition of the manual, which came out in 2012 in Dutch and English. The English version was translated into German, Italian, Spanish, French, Norwegian, Swedish, Portuguese, Russian and Danish between 2010 and 2013. The item content of all versions has remained the same.

The SAPROF

The SAPROF is a checklist that includes 17 protective factors (see Table 1). Factors are scored on a three-point rating scale, in order to be easily compatible with three-point rating risk tools (e.g., the HCR-20), and are organized into three scales based on the face-value origin of their protection: *Internal factors*, *Motivational factors* and *External factors*. Two items are historical and were included based on empirical evidence of their protective significance (Intelligence and Secure attachment in childhood). The other 15 factors are dynamic, which means they could serve as targets in risk management and treatment interventions and could be valuable for treatment evaluation. Additionally, the SAPROF offers the opportunity to mark factors as particularly important for a specific individual, either in terms of present protection (*key* factors) or in terms of treatment goals (*goal* factors). The instrument concludes with a final judgment. Since the SAPROF has a focus on protection rather than on risk, the final judgment concerns the level of protection available to the individual for the specific assessment situation: the *Final Protection Judgment*. The findings from the SAPROF are then combined with the results from an SPJ risk measure, such as the HCR-20, to arrive at an overall *Integrated Final Risk Judgment*.

Since most of the research that underlies the SAPROF was based mainly on populations of male violent offenders, the SAPROF was initially developed to assess protective factors for adult males with a history of violence who suffer from a mental or personality disorder. The SAPROF can also be used with women; however, the assessor should be careful when drawing conclusions based on the SAPROF for women, as little research has been conducted on protective factors for females (see also Chapter 7). In general, limited support is available regarding the applicability of commonly used risk assessment instruments for women (see also de Vogel and de Vries Robbé, 2013). Recently, additional guidelines were published for assessing specific risk factors for women in addition to the HCR-20: the *Female Additional Manual* (FAM, de Vogel, de Vries Robbé, van Kalmthout, & Place, 2012). However, no tools are available for specifically assessing protective factors for female offenders. The few studies that have included protective factors for adult women suggest it is especially the interpersonal relationship factors which may be potentially valuable protective factors for women (Benda, 2005; Holtfreter & Cupp, 2007). First encouraging findings with the SAPROF in a female sample are described in Chapter 7. Furthermore, very little research has been conducted into protective factors specifically for sexually violent behavior. Almost no specific factors for sexual offenders were found from the literature reviews on protective factors (see also Chapter 2) or from the feedback collected from mental health professionals in the SAPROF development process. However, the SAPROF factors are regarded as appropriate for use with both violent

and sexual offenders. Empirical research will have to determine precisely if this assumption is just and whether we may need to amend the instrument for use with sexual offenders (see also Chapters 2 and 4).

Table 1. The SAPROF Checklist and Expected Changes during Treatment

	Possible key factor	*Possible goal factor*	*Expected change during treatment*
Internal factors			
1. Intelligence	Yes	No	Static
2. Secure attachment in childhood	Yes	No	Static
3. Empathy	Yes	Yes	Dynamic personal
4. Coping	Yes	Yes	Dynamic personal
5. Self-control	Yes	Yes	Dynamic personal
Motivational factors			
6. Work	Yes	Yes	Dynamic personal
7. Leisure activities	Yes	Yes	Dynamic personal
8. Financial management	Yes	Yes	Dynamic personal
9. Motivation for treatment	Yes	Yes	Dynamic personal
10. Attitudes towards authority	Yes	Yes	Dynamic personal
11. Life goals	Yes	Yes	Dynamic personal
12. Medication	Yes	Yes	Dynamic personal
External factors			
13. Social network	Yes	Yes	Dynamic personal
14. Intimate relationship	Yes	Yes	Dynamic personal
15. Professional care	Yes	Yes	Dynamic situational
16. Living circumstances	Yes	Yes	Dynamic situational
17. External control	Yes	Yes	Dynamic situational

A case example: Jacob

Jacob is a 35-year-old man, who was sentenced to three years imprisonment and the tbs-order (Dutch judicial measure implying mandatory inpatient psychiatric treatment) following his conviction for attempted murder. Jacob grew up as the oldest of two boys in a family that highly valued soccer competences. His parents had high expectations for him and, while Jacob's father was strict and rigid, his mother was gentle and spoiling. At a very young age, Jacob joined the youth team of a prestigious soccer club. After finishing high school and military service, he started playing high-level soccer for a living. At the age of 20 he got involved in a turbulent relationship with a sixteen-year-old girl and quickly moved in with her. After being unfaithful with a teammate's girlfriend, the relationship ended and his soccer team turned against him. Eventually Jacob stopped playing soccer altogether and his life went downhill from there. He started abusing alcohol and hard drugs, spent his money on flamboyant partying and got into financial trouble. He had many short-term relationships, sometimes several at the same time, and physically abused one of his girlfriends when she tried to leave him. One night, Jacob knocked at the door of a woman who lived in his building. He attempted to make sexual advances towards her, but when the woman asked him to leave, he suddenly stabbed her multiple times with a knife. After taking some money, he left the woman for dead. Despite her injuries, the victim survived the attack. Jacob was arrested soon after in a confused state.

After his prison sentence, Jacob was admitted to the forensic psychiatric hospital. He was diagnosed with a narcissistic personality disorder. His main problem areas were considered to be: low tolerance for frustration; lack of perseverance; problems with addiction; and inability to cope with emotions, criticism and authority. Although Jacob was impatient and his ability to change his behavior was constantly overrated, both by himself and by others, he participated well in the hospital. He passed all random drug tests and there were no incidents of physical violence. After a year, Jacob was allowed outside the hospital on supervised leave and later on unsupervised leave, during which he always behaved appropriately. Two years after the start of his treatment, Jacob started his resocialization phase, which meant he lived and worked outside of the hospital but was still supervised closely by his inpatient treatment team. His increased freedom did not go without setbacks. Several (non-physical) conflicts and drug-related incidents showed his continuing vulnerability to addiction and his difficulty seeking help from others. Following alleged cocaine use, Jacob was readmitted to inpatient treatment in the hospital.

After this relapse, he seemed to become more aware of the seriousness of his problems. The central theme for him and his treatment team became his relapse-prevention plan, focusing especially on his impulsivity, his tendency to avoid difficult matters, and the lack of communication with his support system. After several months he was allowed to return to his own apartment outside the hospital. In the following year, Jacob managed to keep up his good intentions. He remained in close contact with his treatment team, was open about the difficulties he encountered in daily life and asked for help when needed. He finished his psychotherapy

in the hospital and found a new therapist at an affiliated outpatient treatment setting. He emphasized his wish to continue this therapy on a voluntary basis in the future. Although Jacob still did not have many close friends, his relationship with his family improved and his parents became more involved in his treatment. Soon after his return to the resocialization phase he started going out with a girl, which turned into a serious relationship. With the work skills he learned at the hospital, he managed to find a stable job at a small company in a nearby town. As both Jacob and his employer were content with his work, he was offered a year contract. He succeeded in paying off the last part of his debts from the past and continued to manage his finances properly. In his spare time, Jacob joined an indoor recreational soccer team and started salsa dancing classes. His girlfriend proved to be supportive and understanding of the importance for him of complying with the agreements made with his treatment team. As their relationship continued to stand firm, they started making plans to move in together. Twelve months after his return to the resocialization phase, the treatment team feels Jacob might be ready to finalize his mandatory treatment. In order to support the release decision making process and inform the court about his treatment progress, a careful evaluation of Jacob's violence risk is carried out by means of a multidisciplinary assessment of his risk factors and protective factors for violent recidivism.

Analysis of Jacob's protective factors

Jacob's risk assessment consists of independent codings on the SAPROF and the HCR-20 by three different raters and a final consensus rating, which is agreed upon during a case-conference meeting. Table 2 shows the consensus scores for the SAPROF. The first two items are static and thus not applicable as treatment targets. As Jacob has an IQ score of 90 on the *Wechsler Adult Intelligence Scales 3rd Edition* (WAIS-III), which according to this intelligence test is at the low end of the average range, the first static item Intelligence is scored 1. However, it is an important observation that Jacob's capabilities are easily overestimated. The second static item, Secure attachment in childhood, is scored 1 since his parents were there for him when he was growing up, but were also rigid and spoiling. The other items of the SAPROF are all dynamic and therefore qualify as possible goals for further treatment intervention. They are rated for the near future situation (6-12 months ahead), which in Jacob's case is unconditional discharge from mandatory treatment. Information from the past six months may be used to guide the assessment of the different item. The internal dynamic items Empathy, Coping and Self-control are all scored as 1. Coping and Self-control are especially important items for Jacob as, in the past, these were his weaknesses and caused his life to go downhill. Since his best coping mechanism during treatment has been seeking help from his treatment team, developing new coping skills is seen as an important target for future voluntary treatment.

Next, the motivational items are coded. Overall, they show a positive picture. Jacob's stable job gives him a good score on the item Work. The daily structure and life fulfillment that his job gives him make employment a key factor in keeping Jacob on the right track. His participation in a soccer team, together with his salsa dancing, gives him a score of 2 on Leisure activities. Since the soccer league he currently plays in is purely recreational, it is not seen as a potential

stress factor like soccer has been for Jacob in the past. He also scores well on the item Financial management as he manages his finances well and has paid off all his debts. His Motivation for treatment is a difficult item to rate for treatment staff. They believe in his good intentions to seek voluntary treatment after his mandatory treatment has ended. However, not all members of the treatment team are convinced Jacob will be motivated to keep coming on a voluntary basis when problems arise in the long run. He therefore gets a score of 1, but as his voluntary treatment is seen as a very important protective factor for the near future, it is still marked as a key factor. The item Attitudes towards authority concerns whether or not Jacob will be able to keep to the rules and agreements. Since he has not had any problems with this in the past year, he gets a score of 2. Although Jacob is generally motivated not to fall back into his old behavior, there is nothing out of the ordinary that gives him extra motivation in terms of Life goals. The development of personal ambitions or responsibilities that bring extra life fulfillment would be an additional incentive for him to stay on the right track. Since Medication was not considered necessary, this item is not applicable for Jacob.

Finally, the external items show a mixed picture. Jacob's relationship with his close family has been restored to some extent and they are willing to support him. However, he still has a hard time making new friends and does not have a wide supportive network. He therefore gets a score of 1 and extending his Social network is seen as a goal-item. Although he has not been with his girlfriend for that long, the intimate relationship is an important factor for Jacob. His girlfriend is supportive and provides him with company and meaning in life. Maintaining this stable relationship is seen as a valuable protector for Jacob and thus Intimate relationship is marked as a key item. Since living together with a partner or family member is seen as a form of social control, Jacob also receives a score of 1 on Living situation. After mandatory treatment ends, Jacob will keep seeing his outpatient therapist voluntarily. The bi-weekly sessions with his therapist give him a score of 1 on Professional care. Lastly, the item External control gets a rating of 0, as all mandatory supervision will be dropped when treatment is ended, and no further court conditions are being imposed on Jacob.

After analyzing the ratings on the SAPROF and weighing and integrating them for Jacob's specific situation, the conclusion on the Final Protection Judgment for the context of unconditional discharge is 'moderate' level of protection for future violent behavior. The HCR-20 risk factors are also assessed. Combining Jacob's ratings on the SAPROF protective factors with his ratings on the HCR-20 risk factors makes it possible to formulate an overall Integrated Final Risk Judgment. The overall judgment is rated as 'moderate' risk for relapse into violent behavior if mandatory treatment is dropped altogether. Although Jacob has quite a few protective factors supporting him, it is especially the presence of several key protective factors that give him the protection he needs: his suitable job, his stable intimate relationship, and the continued voluntary outpatient treatment. It also becomes clear, however, that these key factors make Jacob's situation quite vulnerable: in case his relationship breaks off, if he gets fired from his job, or if his outpatient treatment ends in the near future for some reason, an important part of Jacob's protection will be lost. Jacob's most likely path to violence seems to be through the loss of important protective factors, resulting in alcohol and drug abuse, financial problems,

and a decrease in coping skills and self-control, which could eventually lead to violence, most likely towards women. Given the importance of his key protective factors, the treatment team feels the need for a closer monitoring of Jacob's situation after treatment ends and the factor External control is marked as a goal item.

Table 2. Case Study: SAPROF Scores and Final Judgments

Name: **Jacob** Assessment: **Unconditional discharge**	Score	Key	Goal
1. Intelligence	**1**	☐	
2. Secure attachment in childhood	**1**	☐	
3. Empathy	**1**	☐	☐
4. Coping	**1**	☐	☑
5. Self-control	**1**	☐	☐
6. Work	**2**	☑	☐
7. Leisure activities	**2**	☐	☐
8. Financial management	**2**	☐	☐
9. Motivation for treatment	**1**	☑	☐
10. Attitudes towards authority	**2**	☐	☐
11. Life goals	**0**	☐	☐
12. Medication	**N/A**	☐	☐
13. Social network	**1**	☐	☑
14. Intimate relationship	**2**	☑	☐
15. Professional care	**1**	☐	☐
16. Living circumstances	**1**	☐	☐
17. External control	**0**	☐	☑

Final Protection Judgment	**Integrated Final Risk Judgment**
☐ Low	☐ Low
☑ Moderate	☑ Moderate
☐ High	☐ High

Note: HCR-20 scores are not shown but are included in the Integrated Final Risk Judgment.

Following the outcome of the assessment, instead of proposing unconditional discharge, the treatment team decides to propose conditional discharge with outpatient treatment as a mandatory condition and supervision by the probation service, who will be able to intervene if Jacob's situation should start to deteriorate. The results of the assessment are discussed with Jacob and his outpatient therapist and suggestions are made for the further development of Jacob's goals within the continuing outpatient therapy: improving his coping skills and developing a more widespread supportive social network. With the outpatient therapist and probation service securely in place, the treatment staff feels confident that Jacob will be able to deal adequately with his risks and not fall back into his old behavioral patterns. As Jacob agrees with this plan and his motivation to work on a positive future without violence seems sincere, treatment team is confident that Jacob will be able to safely return to society, albeit under court conditions.

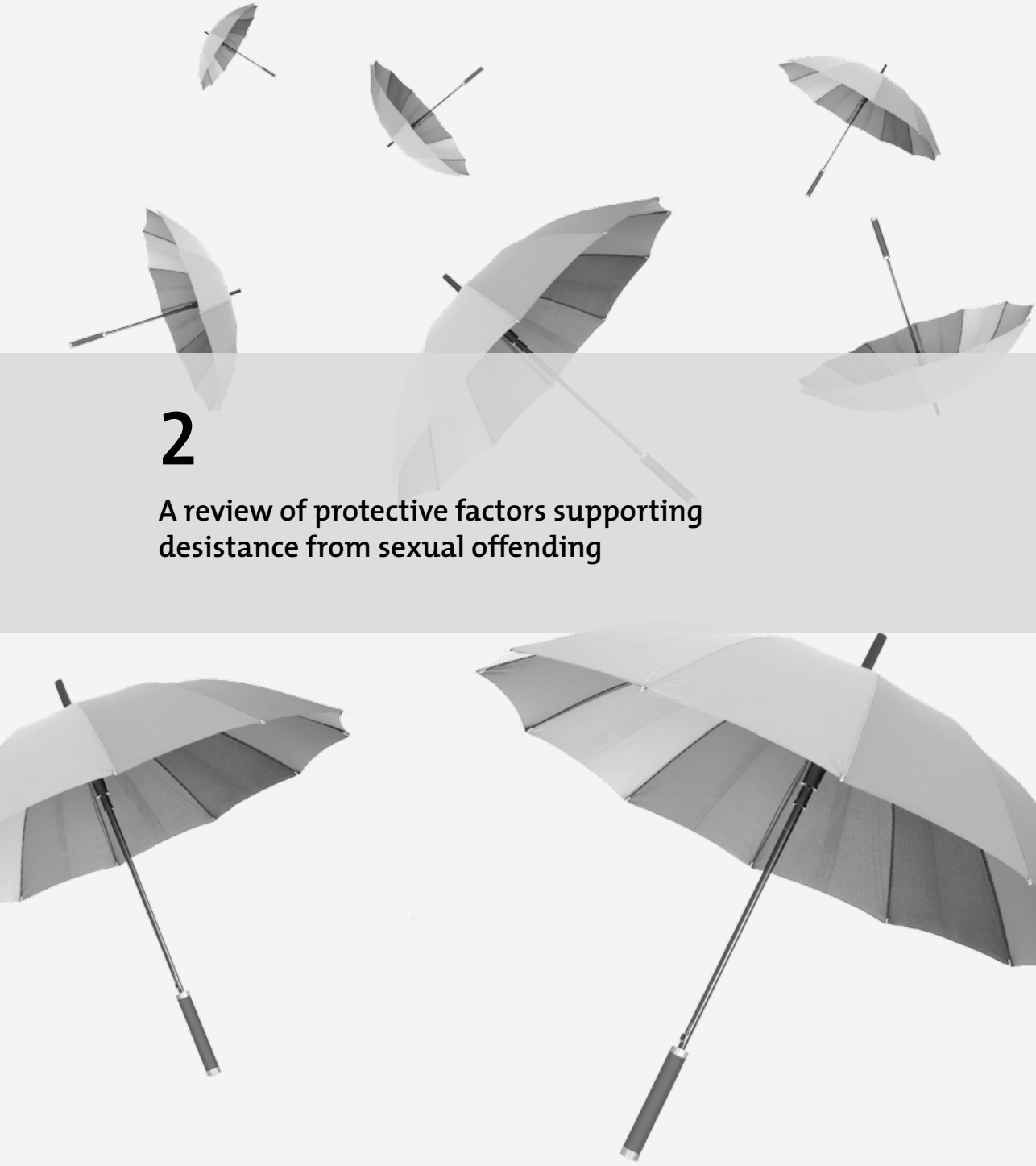
Discussion

With this book chapter, the authors hoped to increase the awareness of the potential value of protective factors for risk assessment and their usefulness for treatment planning and risk management in forensic mental health services. The inclusion of protective factors will provide mental health professionals with a more balanced violence risk assessment and additional guidelines for strengths-based clinical interventions. This chapter provided information about the background of the SAPROF as a tool specifically designed for the assessment of protective factors.

In the Van der Hoeven Kliniek in the Netherlands, the SAPROF was implemented in clinical practice in 2007, in order to complement violence risk assessment. The regular use of protective factors in forensic clinical treatment has since shown valuable potential. Frequent users of the SAPROF have stated that the instrument can be helpful in formulating treatment goals, phasing treatment and facilitating risk communication (van den Broek & de Vries Robbé, 2008). Prospective studies into the qualitative value of complementing forensic treatment with the protective factors approach are ongoing. As many of the protective factors are dynamic in nature, repeated assessments of these factors are highly recommended. Especially when changes occur in a patient's situation or liberties, alterations on the dynamic protective factors should be assessed carefully as different factors can be of particular importance for different situations. At the start of forensic clinical intervention, the external mandatory protection usually provides almost all of the available protection. During treatment the aim is to increase the 'dynamic personal' factors (see Table 1) to such a level that eventually the protection from mandatory intervention, the 'dynamic situational' factors, is no longer necessary and the patient can be discharged. Accordingly, a Final Protection Judgment for a given situation is not based on adding up the scores on all protective factors, but consists of a personal protection profile that is subject to change as treatment progresses. At any moment, it is the combination of the present risk factors and the available protection that

determines one's resistance against relapse into violence. The relevance of specific protective factors can vary greatly between patients. While one patient may benefit most from medication and the availability of mental health professionals, another may benefit more from structured daily activities and a supportive social network.

In terms of the implementation and application of protective factors in clinical practice, it may be valuable to attempt to link the results from protective factors assessments with strengths-focused treatment interventions, such as those guided by the *Good Lives Model* approach (Ward & Brown, 2004). The inclusion of positive, strength-focused factors in treatment may lead to more elaborate and patient-adjusted risk management strategies and improved risk communication, which is motivating for both staff and patients. In conclusion, protective factors may bring a valuable balance to risk assessment and provide new guidance in narrowing the gap between risk assessment and violence prevention. The additional use of protective factors offers an increasingly well-rounded approach to risk management and treatment interventions in forensic clinical practice.



2

A review of protective factors supporting desistance from sexual offending

This chapter is a slightly revised version of:
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Chapter 2

A review of protective factors supporting desistance from sexual offending

Abstract

This chapter considers factors that assist desistance from sexual offending in those who have previously offended. Current risk assessment tools for sexual offending focus almost exclusively on assessing factors that raise the risk for offending. The inclusion of notions of desistance and strengths may provide additional guidance to the assessment and treatment of those who sexually offend. The aim of this study was to review the available literature on protective factors supporting desistance from sexual offending. The chapter discusses the potential value of incorporating protective factors into the assessment process, and examines the literature on this topic. Finally, a list of eight potential protective domains for sexual offending is proposed. In order to consolidate the preliminary conclusions from this study recommendations are given for further research investigations regarding the nature and influence of protective factors in enabling individuals to desist from further offending.

Introduction

Modern day sexual violence risk assessment schemes tend to predict recidivism better than chance, but there is room for improvement. The major 'third generation' assessment frameworks for assessing convicted sexual offenders focus almost exclusively on factors that raise risk for recidivism, for example: the *STABLE-2007* (Fernandez, Harris, Hanson, & Sparks, 2012); the *Structured Risk Assessment* (Thornton, 2002), the *Violence Risk Scale - Sexual Offender version* (VRS:SO; Wong, Olver, Nicholaichuk, & Gordon, 2003); the *Sexual Violence Risk-20* (SVR-20; Boer, Hart, Kropp, & Webster, 1997); and the *Risk for Sexual Violence Protocol* (RSVP; Hart et al., 2003). Consequently, Maruna and LeBel (2003) described the assessment of risks and needs as 'deficit focused' and urged those in the criminal justice field to consider balancing such measurement with an assessment of individual strengths.

There are three reasons in particular why it may be important to consider strengths as well as risks in the assessment process. First, to do so could improve the predictive validity of our risk assessment tools. For instance, the combined use of risk factors and protective factors

has demonstrated incremental predictive validity over assessments with risk factors alone. A study on a combined violent and sexual offender sample that had been discharged from inpatient forensic psychiatric treatment, showed a significant increase in predictive validity for violent recidivism after treatment when protective factors were added to the risk factors in the assessment (see Chapter 6). Second, a one-sided focus on risk can lead to over-prediction of violence risk, and poor risk management and treatment planning. Rogers (2000) argued that risk-only evaluations are inherently inaccurate and implicitly biased, often resulting in negative consequences to forensic populations. In particular, over-prediction (i.e., too many false positives) can lead to pessimism among therapists and unnecessarily long treatment or overly restrictive risk management, which are costly for both society, in terms of financial burden, and for the individual in terms of limited liberties (Miller, 2006). Third, deficit-focused assessments can be stigmatizing for criminal justice clients. In particular, research by Attrill and Liell (2007) among prisoners and ex-prisoners emphasized the feelings of unfairness of the assessors' focus on risk to the exclusion of any recognition for positive accomplishments. For example, one prisoner in their study reported his view that, "From my experience risk assessment isn't fair as it's just pure negatives that people look at, not positives". Such testimony raises the possibility that the emphasis on risks found in most current assessment processes will have a negative impact on the relationship between the assessor and the assessee, and consequently perhaps on the rehabilitation process itself.

These risky aspects of risk assessment may be offset by paying more than lip service to the concept of *protective factors* in assessment work. By this term, we mean factors that enable or assist desistance from (sexual) offending among those that have already offended. In the criminology field, some work has focused on the assessment of protective factors (e.g., Herrenkohl et al., 2003) or individual *strengths* as a way of complementing the deficit-driven focus on risks and needs (e.g., Maruna & LeBel, 2003). Others have sought to subtly shift the focus away from assessing predictors of recidivism to those factors associated with successful desistance from crime (e.g., Farrall, 2004; McNeill, 2006; Robinson & Shapland, 2008).

Before protective factors can be fully incorporated into sexual offending assessment frameworks, however, we need to (1) identify potential protective factors from exploratory research and the theoretical literature; (2) build theoretical models to explain how the identified protective factors reduce risk; (3) articulate and systematically collect data on these variables and examine their relationship with recidivism; and (4) build and validate tools for the assessment of protective factors for sexual violence. The present chapter seeks to complete the first of these steps, i.e., examine the existing literature to identify and propose potential protective factors for sexual offending.

Conceptualizing protective factors

A starting point in seeking to define protective factors for sexual offending might be to mirror accepted definitions of risk factors (e.g., Andrews & Bonta, 2006) by stating that a protective factor is *a feature of a person that lowers the risk of reoffending*. In addition to internal, psychological features, there is a question about whether or not external, environmental or circumstantial features of an individual's life situation could also be considered to be protective factors. Certainly, criminological research into desistance indicates that an ex-offender's social situation is an important factor associated with desistance. In fact, some desistance researchers would argue that external factors are more important than internal ones (for a discussion, see LeBel, Burnett, Maruna, & Bushway, 2008). This is in line with results from a protective factors study by Ullrich and Coid (2011) in a sample of violent and sexual offenders, which found that protection was primarily related to social network factors. In the case of sexual offending in particular, restrictive external circumstances are frequently imposed upon the individual against his preference, such as incarceration, residency restrictions, social isolation, and restricted employment opportunities. If these external circumstances are guided by empirical evidence, they can be an important part of risk management processes to create more protective environments. Therefore, we believe that the definition of a protective factor should encompass social, interpersonal and environmental factors as well as psychological and behavioral features.

In pursuit of an approach to risk reduction based on building protective resources, we could profitably further differentiate between static/unchangeable protective factors (e.g., secure attachment in childhood) and those that are behavioral or otherwise potentially changeable. In line with a recent theory of risk factors (Mann, Hanson, & Thornton, 2010), we also suggest that it is helpful to distinguish between the protective factor as an *underlying propensity* (psychological or personality characteristic) and observable *manifestations* of that propensity. For example, holding down a job may be a manifestation of several underlying propensities (e.g., work ethic, plus self-discipline, plus ability to manage social relationships) which together enable stable employment, along with external factors (e.g., economy, employment discrimination). In another example, the underlying propensities of good social skills may be manifest in generally well-functioning intimate relationships.

Some researchers (e.g., Farrington, 2003) have divided the factors associated with positive desistance outcomes into two categories depending on whether the positive factor has a direct influence on desistance irrespective of risk level (termed *promotive factor*) or whether the positive factor moderates the impact of risk factors (i.e., has greater risk reducing effects for those people deemed to be at high-risk of offending than for those deemed to be low-risk - the more precise use of the term *protective factor* or *resilience*). Ullrich and Coid (2011) did not find indications that protective factors have different effects at different levels of risk, while Lodewijks, de Ruiter and Doreleijers (2010) found proof for a buffering or mitigating effect of protective factors on risk factors in adolescent samples. As we are equally concerned with both types of positive factors, and as the sexual offending protective factor literature is still in its infancy, these distinctions are probably too fine for the current state of knowledge, and so we use the term protective factors here as a general term to refer to both types.

To develop the definition further, we propose that protective factors must exist as definable propensities or manifestations thereof in their own right, rather than being no more than the absence of a risk factor. Accordingly, it should be possible to define individual protective factors without the use of negatives. To illustrate, 'capacity for intimacy' would meet this condition, but 'lack of hostility' would not. Put another way, some protective factors are likely to be the opposite of risk factors, a proposal which we explore in more detail below, but in this argument we draw a clear distinction between the *opposite* of a risk factor and the *absence* of a risk factor.

Additionally, protective factors and risk factors can conceivably co-occur in the same domain. That is, even protective factors that are the opposite, or 'healthy pole', of risk factors are not necessarily mutually exclusive entities from the risk factor. An example in which protective and risk factors can co-occur is in the domain of social influences. Negative social influences are generally considered a risk factor, while positive social influences are considered a protective factor. However, it is quite possible for individuals to have both negative and positive social influences in their lives, that is for strengths and risk factors to co-exist even though they seem like opposites. For example, a person could both belong to a drug-using social group and, separately, attend university classes with students learning engineering. A single measure of social influences 'positive or negative?' would not capture this common complexity. A risk assessment tool which poses strengths as the opposites of vulnerabilities, yet measures both ends of risk domains simultaneously is the *Short-Term Assessment of Risk and Treatability* (START; Webster, Martin, Brink, Nicholls, & Middleton, 2004). However, despite good results for predicting non-violence with the strengths scale, no incremental predictive validity over vulnerabilities has yet been reported (e.g., Braithwaite, Charette, Crocker, & Reyes, 2010; Chu, Thomas, Ogloff, & Daffern, 2011; Viljoen, Nicholls, Greaves, de Ruiter, & Brink, 2011). Another risk assessment tool that incorporates protective strengths in addition to risk factors is the *Inventory of Offender Risk, Needs and Strengths* (IORNS; Miller, 2006), a self-report measure to determine risks, needs and protective factors for all types of offenders. To date no sexual offender validation studies have been published on either of these tools.

Finally, protective factors can be the result of social development factors (families, peers, communities) as well as from biological and psychological maturation. As with risk factors (see Ward & Beech, 2006) there may well be neural mechanisms associated with protective factors, possibly originating from pre-natal or peri-natal conditions or early childhood experiences. Such mechanisms need to be uncovered and understood, in order to assist treatment providers' efforts to strengthen an individual's protective factors, or provide *prosthetics* to compensate for under-developed or 'missing' protective factors. Although the medical analogy is far from ideal, we use the term *prosthetics* here to refer to 'artificial' (or coached) protective factors that effectively compensate for the absence of 'organically' occurring protective factors. Examples would be structured problem solving skills or learned ways of expressing feelings assertively. Psychiatric medications (e.g., SSRIs or anti-libidinal medications) could be considered to be prosthetic protective factors if they have the effect of reducing the intensity of sexual drive or enhancing sexual self-control.

Identifying protective factors for sexual offending

Mirroring the accepted definition of a risk factor for sexual offending, a protective factor should be empirically related to desistance from sexual offending. A stringent standard, equivalent to the standard set for a risk factor (see Mann et al., 2010), would require at least three separate studies, when meta-analytically integrated, to demonstrate that the presence of the protective factor was associated with lower reconviction rates. However, as the literature into protective factors for sexual offending is in its infancy with few empirical studies yet reported, there is a minimal evidence base to consider (see also Laws & Ward, 2011).

Moreover, there may be additional ways of identifying protective factors besides reconviction studies. After all, desistance research starts from a different point than treatment research by putting the individual (not the program) at the centre of the change process (see Maruna, 2001). Rather than asking 'what works' and comparing the reconviction rates of treatment and control groups, desistance studies ask how change works and seek to identify those factors that support the individual in his or her efforts to maintain desistance (for reviews see Laub & Sampson, 2001; Farrall & Calverley, 2005). Therefore, in this review we also draw on qualitative and quantitative desistance studies to identify potential protective factors in sexual offending. The hope is that future evaluation research will empirically test the protective factors proposed in this study and complement the understanding of desistance from sexual offending. Additionally, it would be valuable if sexual offending research were to differentiate between protective factors associated with desistance from general or violent offending and protective factors associated specifically with desistance from sexual offending, as these may not necessarily be the same factors.

We will consider a variety of sources of ideas about what psychological propensities or sociological circumstances might aid desistance from sexual offending. Our literature review concentrates on three areas (1) the sex offending risk factor literature, to consider when the opposing / healthy end of a risk domain could be considered protective; (2) the desistance literature in criminology specifically on sexual violence; and (3) the content (and validity) of existing measures of protective factors that have been applied in sex offending assessment. The aim is to integrate the findings from these diverse sources to create a list of potential protective domains for sexual offending.

1. Protective factors as the opposite of risk factors for sexual offending

As already discussed, it seems likely that protective factors and risk factors would be two sides of the same coin. That is, the unhealthy pole of a continuum represents a risk factor (e.g., offense-supportive beliefs) while the healthy pole represents a protective factor (e.g., in this example, beliefs supportive of respectful and age-appropriate sexual relationships). As proposed earlier, protective factors must exist as definable propensities rather than being no more than the absence of a risk factor. However, in some cases, risk factors are actually formulated as the absence of a healthy propensity or skill (e.g., poor problem-solving skills) so the presence of the healthy propensity (in this example, good problem-solving skills) could be considered a protective factor.

Table 1. Established and Promising Risk Factors for Sexual Offending and their Corresponding Healthy Poles

Risk Factor	Corresponding Healthy Pole
Sexual preoccupation	*Moderate intensity sexual drive* A preference for having sex with someone you are emotionally attached to and who is attached to you. Romantic or emotionally intimate connection is seen as being as desirable as sexual gratification.
Deviant sexual interest	*Sexual preference for consenting adults* A preference for sex with consenting sexual partners of adult age. Desire for potentially reciprocal sexual activities in which the adult partner is more likely than not to also be interested in the activity.
Offense-supportive attitudes	*Attitudes supportive of respectful and age-appropriate sexual relationships* Weighs the rights of others equally with own wants and desires. Recognizes the right to refuse sexual activity and opposes sexual abuse. Recognizes the nature of childhood and the implications of emotional and physical immaturity for likely harm that would be caused by early sexual activity.
Emotional congruence with children	*Preference for emotional intimacy with adults* Recognizes the nature of childhood developmental stages and the more limited capacity of children in relation to adult-oriented constructs such as reciprocal emotional intimacy.
Lack of emotionally intimate relationships with adults	*Capacity for lasting emotionally intimate relationships with adults* Has one or more emotional confidantes; has lasting intimate relationships including sexual relationships; can maintain a stable relationship for longer period of time; relationships are characterized by mutual disclosure of vulnerability and acceptance of each other's faults. Sustained emotionally intimate marital type relationships; emotionally intimate friendships; cooperative and discriminating approach to casual social / work contacts.
Lifestyle impulsiveness (poor self regulation, impulsive and reckless, unstable work patterns)	*Self-control* Able to set and achieve medium- and long-term goals through effortful goal-directed actions. Considers consequences before taking decisions, and weighs consequences to others at least as highly as consequences to self. Values pro-social solutions and seeks to achieve peaceful resolutions of difference rather than aggressive resolutions. Regulating immediate impulses, stress reactions, and general lifestyle.
Poor cognitive problem solving	*Effective problem solving skills* Able to articulate different solutions to a problem, including pro-social solutions, and choose between solutions by considering the consequences, to self and others, of each option. Weights long term gain over short term gain.

Risk Factor	Corresponding Healthy Pole
Resistance to rules and supervision	*Acceptance of rules and supervision* Capacity to connect with people in authority. Meaningful relationships with supervising or treating professionals. Able to accept rules and regulations and keep to agreements with treatment staff, employers, probation officers and other professionals. Manages to obey imposed legal conditions.
Grievance/hostility	*Trustful and forgiving orientation* An orientation to others that is typically trustful and peaceful, seeing the others' point of view/perspective, preferring peaceful solutions to interpersonal conflict and generally able to offer forgiveness after being wronged.
Negative social influences	*Law-abiding social network* Social network primarily or entirely composed of stable, law-abiding individuals who promote pro-social activity and who offer support and strengthen self-control.
Hostility towards women	*Positive attitudes towards women* Generally pro-social, trusting and respectful attitudes towards women. Views women as equal to men. Believes women have good intentions.
Machiavellianism	*Honest and respectful attitudes* Views others as equal. Recognizes others' abilities and strengths. Values honesty and does not take advantage of others.
Lack of concern for others / Callousness	*Empathy* Shows interest in others. Cares about other people's feelings and well-being. Attempts to help others when in need. Does not act upon own needs before considering those of others.
Dysfunctional coping	*Functional coping* Dealing with negative emotions (like anger, anxiety or rejection) through appropriate, socially acceptable strategies. Managing stress in a calm, non-sexual and effective manner.

Table 1 shows the risk factors for sexual offending which have the strongest empirical support (see Mann et al., 2010, for an account of the evidence base for these factors). For each of these factors a description is given of the suggested corresponding positive pole, i.e., the healthy propensities of these risk factors (see Table 1). The healthy poles of the 14 factors identified as most valid for sexual offending are proposed to be: *Moderate intensity sexual drive*, *Sexual preference for consenting adults*, *Attitudes supportive of respectful and age-appropriate sexual relationships*, *Preference for emotional intimacy with adults*, *Capacity for lasting emotionally intimate relationships with adults*, *Self-control*, *Effective problem solving skills*, *Acceptance of rules and supervision*, *Trustful and forgiving orientation*, *Law-abiding social network*, *Positive attitudes towards women*, *Honest and respectful attitudes*, *Empathy* and *Functional coping*. Given the strong empirical base for the risk poles of these sexual offending factors, it is hypothesizes that their healthy poles are equally strong related to reductions in sexually violent recidivism.

2. Protective factors in the desistance literature

'Desistance from crime' has become a dominant area of research activity within criminology over the last 20 years (see Farrall & Calverley, 2005). The concept of desistance relates to the process of abstaining from crime after repeated or habitual engagement in criminal activities (Maruna, 2001). Desistance processes often involve key turning points or disorienting life episodes (Laub & Sampson, 2001), but desistance is not a single moment or event in a person's life. Instead, desistance is widely understood as a long-term maintenance process involving a slow recognition of the need to change, motivational fluctuation, and possible false starts followed by lapses or relapses. By changing the focus of inquiry from investigating why some ex-prisoners 'fail' (or re-offend) and instead trying to understand how and why some individuals succeed or 'go straight', desistance research has opened up new understandings in criminology with distinct implications for assessment and treatment practice.

General desistance factors. The factors identified by the criminological literature for desistance from general criminal offending may also be relevant to sexual offending (Laws & Ward, 2011). For example, ageing, stable employment, marriage, sobriety, lack of stress, and good mental health, have all been found to have a protective effect on criminal behavior (Laub & Sampson, 2001). Moreover, research with ex-prisoners suggests that long-term, persistent offenders tend to lack a sense of hope or feelings of agency (Maruna, 2001; Zamble & Quinsey, 1997). On the other hand, reformed ex-prisoners are characterized by hope and optimism: they seem to maintain an overly optimistic sense of control over their future and strong internal beliefs about their own self-worth and personal destinies (Burnett & Maruna, 2006; LeBel et al., 2008; Maruna, 2001). Desisters also seem to embrace change-enhancing cognitive patterns: consistent patterns of cognition that encompass the ability to evaluate one's behavior and learn from one's mistakes (Maruna, 2001). Arguably, one potential indicator of this willingness to change is the individual's persistence with a course of intervention to change risk-relevant behavior. Additionally, desisters seem to possess a sense of achievement and accomplishment (see Maruna & LeBel, 2003). Making meaningful contributions to one's community or family can lead to grounded increments in self-esteem, feelings of meaningful purposiveness, and a cognitive restructuring toward responsibility for young people in trouble with the law (Toch, 2000). Such successful achievements can predict successful desistance (LeBel et al., 2008) or abstinence from crime (Uggen & Janikula, 1999). Lastly, the desistance literature has established the importance of moving away from groups of delinquent peers (Warr, 1998) and establishing meaningful intimate relationships (Laub & Sampson, 2001). The latter also being the opposite pole of 'lack of emotional intimacy with others', which is a strongly evidenced risk factor for sexual offending (Mann et al., 2010).

Sex offending desistance factors. To date studies of desistance from sexual crimes are few (see Laws & Ward, 2011). Farmer, Beech and Ward (2012) studied the self-narratives of individuals convicted of child molestation who had apparently desisted from offending, comparing them with individuals who were thought to be still actively seeking opportunities to offend. Several factors differentiated the desistance group from the active group. The desisters appeared to have an *Enhanced sense of personal agency*; had a *Stronger internal locus*

of control; were consistently more able to *Find positive outcomes from negative events*; identified *Treatment as having provided them with a turning point*; and, most strikingly, seemed to have found a *Place within a social group or network*. They described belonging to three particular types of social groups or communities: family, friends and church. In contrast, the 'active' or at-risk group all described themselves as socially alienated or isolated from others (Farmer et al., 2012).

3. Measures of protective factors

In this section, we review structured assessment tools that have incorporated protective factors into their frameworks and have been developed or tested for use with sexual offenders. Our search yielded only one such tool designed specifically for (juvenile) sexual offenders: the *Assessment Intervention Moving on* (AIM-2; Print et al., 2009) and one tool designed for broader criminal populations that has specifically been tested with sexual offenders: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009, 2nd Edition 2012).

AIM-2. Building on an earlier *Protective Factors Scale* (Bremer, 2001), the AIM-2 (Print et al., 2009) is a tool designed to guide the assessment of young people (aged 12 to 18) who are known to have sexually abused another person. The factors assessed are grouped into four domains: developmental issues, family issues, current environment and offense-specific issues. The tool includes 24 protective factors (which are termed *strengths* or *resiliencies*) as well as 51 risk factors. The AIM-2 manual articulates similar clinical reasons for assessing strengths to those we described earlier, such as wishing to avoid negative labeling, and wishing to promote a positive focus in work with young people. The AIM-2 assessment yields two profiles: a *Concerns profile* and a *Strengths profile*, which form the basis for an evaluation report and/or a treatment plan. The model theorizes that protective factors "present the possibility of being able to reduce the trait level of problems" (Griffin, Beech, Print, Bradshaw, & Quayle, 2008, p. 216).

At present, the AIM-2 is supported by one published research study (Griffin et al., 2008). This study involves 70 adolescents convicted of sexual crimes, seven of whom recidivated in a new contact sexual offense. Chi-square analysis indicated that fifteen items distinguished the recidivists from the non-recidivists, eight of which were strengths items (*Above average intelligence*, *Positive talents / leisure interests* (analyzed separately in this study), *Positive attitude from significant adults*, *Positive emotional coping from significant adults*, *At least one emotional confidant*, *Positive evaluations from work/education*, *Positive relationships with professionals*). It was found that a high score on the strengths scale acted as a protective factor even for those with a high score on the concerns scale. All the recidivists had high concerns scores and low strengths scores. Only seven of the 63 non-recidivists had a high concerns score, and only one of these seven also had a low strengths score. Whilst there were several important limitations to this juvenile study (particularly the small sample size) the results tentatively support the initial hypothesis that protective factors ameliorate risk of sexual re-offending.

SAPROF. The SAPROF (de Vogel et al., 2009) is designed to assess protective factors in adults convicted of any violent crime (including sexual; see Chapter 1). The SAPROF was developed as a protective factors assessment tool to form a positive supplement to risk focused structured professional judgment (SPJ) tools like the *Historical Clinical Risk management-20* (HCR-20 Version 2; Webster, Douglas, Eaves, & Hart, 1997), its revision the *HCR-20 Version 3* (HCR-20^{V3}; Douglas, Hart, Webster, & Belfrage, 2013) or related SPJ risk tools. However, it can also be used in addition to actuarial risk tools such as the STABLE-2007. The SAPROF contains 17 protective factors, which are mostly dynamic in nature and divided into 3 scales: internal factors, motivational factors and external factors (similarly to psychological, behavioral and environmental features). Each factor is provided with a rationale describing its empirical background, which largely relies on general violent crime research and to a lesser extent incorporates research on sexual offending. After completing the scale, the assessor has the option to mark factors as critical for the overall protection or for treatment planning (*keys* and *goals*) and makes a *Final Protection Judgment*. The results from the assessment are intended to be integrated with results from a risk tool to come to an overall final judgment on the level of risk, which incorporates both the present risk- and protective factors.

Previous results with forensic psychiatric patients convicted of violent offending showed good predictive validities for the SAPROF for violent incidents towards others and self-harm during treatment (Abidin et al., 2013) as well as for violent recidivism after discharge from treatment (see Chapter 3). Moreover, incremental predictive value of assessing the SAPROF protective factors in addition to the HCR-20 risk factors was demonstrated (see Chapter 5). The first study that concentrated solely on patients convicted of sexual offending was recently carried out (see Chapter 4). In this study the predictive validity of the protective factors in the SAPROF for non-recidivism among 83 discharged treated sexual offenders was analyzed. The total score of the 17 protective factors was significantly predictive of no new convictions for any (including sexual) violence for short-term as well as long-term (15 year) follow-up as was the Final Protection Judgment. When only sexually violent recidivism was used as outcome measure, the SAPROF total score was also a significant predictor at different follow-up times. Incremental predictive validity over the HCR-20 and the SVR-20 was found when the assessments included both risk- and protective factors. This incremental value of including protective factors was demonstrated for general violent re-offending as well as for sexually violent re-offending. The best predicting protective factors for abstaining from (sexual) violence in this study were *Coping, Self-control, Motivation for treatment* and *Attitudes towards authority*. The factors *Work, Leisure activities, Financial management, Professional care, Living circumstances* and *External control* also showed good individual predictive values for either violent or sexually violent recidivism for sexual offenders.

Prospective clinical studies into the predictive validity of the protective factors in the SAPROF for no violent incidents towards others during treatment of forensic psychiatric patients (follow-up 12 months) also showed good results for those patients convicted of sexual offending (see Chapter 7). Prospectively, the strongest desistance predicting factors for the sexual offending sample were *Coping*, *Self-control, Work, Leisure activities* and *Attitudes towards*

authority. Additional studies into the predictive validity of the SAPROF for different categories of sexual crime types will be conducted in the near future.

The protective factor measures above that have been developed so far show some promising results. Nevertheless, the research samples are still small and replication of these findings is essential. The tools vary in terms of the extent to which they measure variables with similar properties. For example, if the lists of protective factors included in the various measures are examined in the light of the propensity/manifestation distinction, it can be seen that the scales include both types. For instance, many of the dynamic AIM-2 items seem to describe manifestations of an underlying propensity to form positive relationships with friends, family and professionals. However, overall (and perhaps unsurprisingly given that research in this area is still in its infancy), there are easily observable themes to the items within the different scales.

Proposed protective factors for sexual offending

We propose that the various literatures discussed in the preceding review can be summarized into eight 'protective domains' that could be hypothesized to assist desistance from sexual offending. Table 2 provides an overview of the protective factors derived from the preceding review and their relationship to the proposed protective domains. The factors are categorized by source: (1) the healthy poles of sexual violence risk domains; (2) desistance factors for sexual offending; and (3) initial findings from studies on protective factors in risk assessment tools for sexual offending.

(1) Healthy sexual interests. This domain refers to a propensity to prefer sexual relationships with consenting adults co-existing with a moderate intensity sexual drive. Individuals with protective factors in this domain are likely to show a balance between a desire for sexual fulfillment and a desire for other types of fulfillment. They will have adequate sexual knowledge and beliefs that support age appropriate and consenting relationships. This domain is construed as the healthy poles of two, well-established sexual offending risk factors: *Sexual preference for consenting adults* and *Moderate intensity sexual drive*. Additional evidence for healthy sexual interests may be found in the presence of *Attitudes supportive of respectful and age-appropriate sexual relationships* (the healthy pole of the risk factor Offense-supportive attitudes).

(2) Capacity for emotional intimacy. This domain refers to a propensity to form and maintain emotionally close and satisfying relationships with other adults. Individuals with protective factors in this domain will most likely have a *Trustful and forgiving orientation to others* (healthy pole for the risk factor Grievance/hostile attitude to others), a *Preference for emotional intimacy with adults* rather than children (healthy pole for the risk factor Emotional congruence with

children), and the ability to communicate effectively. The most obvious manifestation of this propensity is that the individual has, or has had, long-lasting and emotionally stable intimate relationships with adult partners (e.g., the risk factor healthy pole *Capacity for lasting emotionally intimate relationships with adults*). The healthy poles *Positive attitudes towards women*, *Honest and respectful attitudes* and *Empathy* all reflect underlying personality traits which enhance capacity for emotional intimacy. This domain is also reflected in SAPROF item *Intimate relationship*.

(3) Constructive social and professional support network. This protective domain refers to the capability of forming constructive relationships with other adults, both socially and with persons in professional support and authority roles. Individuals with protective factors in this domain will have a law abiding social network. This is represented in the sexual offending desistance factor *Place within a social group or network* and in the risk factor healthy pole *Law-abiding social network*. Additional support is provided by AIM-2 items *At least one emotional confidant*, *Positive attitude from significant adults* and *Positive emotional coping from significant adults* (also reflected in SAPROF item *Network*).

Individuals with protective factors in this domain may also have meaningful relationships with professionals, reflected by sexual offending desistance factor *Treatment as turning point* (also demonstrated in AIM-2 item *Positive relationships with professionals* and SAPROF items *Motivation for treatment*, *Professional care* and *Living circumstances*). Furthermore, they may have a positive attitude to authority, risk factor healthy pole *Acceptance of rules and supervision* (reflected in SAPROF item *Attitudes towards authority*). The risk factors healthy poles *Honest and respectful attitudes* and *Empathy* provide underlying traits which facilitate the development of a constructive social and professional support network.

(4) Goal directed living. This protective domain refers to the capacity to set goals and direct daily activities so that progress can be made towards those goals. Individuals with protective factors in this domain will show effortful, positive, goal directed behaviors (the risk factor healthy pole *Self-control*), will have *Enhanced sense of personal agency* and *Stronger internal locus of control* (both desistance factors), and will show good self-discipline (reflected in SAPROF items *Self-control* and *Financial management*).

(5) Good problem solving. This protective domain refers to the capacity to manage life's daily problems without becoming overwhelmed or resorting to anti-social or avoidance techniques to regain control. Such a propensity is reflected by the risk factor healthy poles *Functional coping* and *Effective problem solving skills* and is also present in SAPROF item *Coping*. The AIM-2 item *Above average intelligence* may reflect underlying abilities for good problem solving.

Table 2. Proposed Protective Domains and Evidence

Evidence	Healthy poles of risk factors	Desistance factors	Preliminary evidence protective factors tools AIM-2 / SAPROF
1. Healthy sexual interests	• Moderate intensity sexual drive • Sexual preference for consenting adults • Attitudes supportive of respectful and age-appropriate sexual relationships		
2. Capacity for emotional intimacy	• Preference for emotional intimacy with adults • Capacity for lasting emotionally intimate relationships with adults • Trustful and forgiving orientation • Positive attitudes towards women • Honest and respectful attitudes • Empathy		
3. Constructive social and professional support network	• Acceptance of rules and supervision • Law-abiding social network • Honest and respectful attitudes • Empathy	• Treatment as turning point • Place within a social group or network: family, friends and church	• Significant network members have positive attitudes • Significant network members have positive emotional coping • At least one emotional confidant • Positive relationships with professionals • Motivation for treatment • Attitudes towards authority • Professional care • Network
4. Goal directed living	• Self-control	• Enhanced sense of personal agency • Stronger internal locus of control	• Self-control • Financial management

Evidence	Healthy poles of risk factors	Desistance factors	Preliminary evidence protective factors tools AIM-2 / SAPROF
5. Good problem solving	• Effective problem solving skills • Functional coping		• Above average intelligence • Coping
6. Engaged in employment or constructive leisure activities			• Positive talents / leisure interests • Positive evaluations from work/education • Work • Leisure activities
7. Sobriety	• Self-control		• Self-control
8. Hopeful, optimistic and motivated attitude to desistance		• Find positive outcomes from negative events • Treatment as turning point	• Motivation for treatment • Medication

(6) Engaged in employment or constructive leisure activities. This protective domain refers to the propensity to live a life that involves constructive and rewarding activity and ideally also a sense of intrinsic satisfaction and accomplishment. Employment is the most obvious protective factor, reflected in SAPROF item *Work* and AIM-2 item *Positive evaluations from work/education*. Equal results could be obtained from engaging in personally meaningful leisure or social activities such as sports, social hobbies, or caring for others (reflected in SAPROF item *Leisure activities* and AIM-2 item *Positive talents / leisure interests*).

(7) Sobriety. This protective domain refers to the abstention from drug or alcohol misuse. It is an established protective factor in the literature with *Self-control* as a risk factor healthy pole indicating the likelihood of sobriety intentions to succeed (also present in the SAPROF). External motivation through *Professional care* and *External control* (SAPROF) may provide assistance with sobriety.

(8) Hopeful, optimistic and motivated attitude to desistance. This protective domain refers to optimistic change-enhancing cognitive patterns. Individuals with protective factors in this domain are likely to *Find positive outcomes from negative events* and see *Treatment as a turning point* (both sexual offending desistance factors). As a result they are often motivated to work with treatment providers or other helping agencies (reflected in SAPROF item *Motivation for treatment*).

Discussion

In summary, eight protective domains are proposed based on being healthy poles of well-established sexual offending risk domains or being desistance factors for sexual offending. Additional support for the proposed domains is found in protective factors from existing risk assessment tools, which preliminarily proved valuable in predicting sexual and violent offending of sexual offenders. We propose that each domain represents an underlying propensity, which may be pre-existing, may have developed as the individual reflects on his life and the consequences of his offending, or may have developed as a prosthetic through a rehabilitative intervention. The presence of each propensity may be observed in a range of possible behavioral indicators, or manifestations of the propensity.

Limitations

The biggest limitation of this review study of protective factors for future offending for those who have sexually offended in the past is that very few studies on this topic are available. For the two risk assessment tools discussed that provide preliminary findings for the value of protective factors for the assessment of sexual offenders, only one or two studies each have been published on sexual offender samples. Similarly, only one specific empirical desistance study was found for sexual offending. The results from these studies need to be replicated in other sexual offender samples in order to be able to generalize the findings. Given the limited resources, the design of the present study aimed to include direct as well as indirect evidence for the proposed domains. Nevertheless, the domains are not supported by a large body of empirical evidence and should be viewed as a preliminary proposal. This review presents a first step towards more in depth studies into protective factors for sexual offending and their potential value for risk assessment and treatment of sexually violent offenders. Hopefully this will spark enthusiasm among researchers and clinicians to incorporate protective factors in their studies of sexual offending, which will result in a broader evidence base for positive sexual offender assessment.

Conclusions and implications for research

De Ruiter and Nicholls (2011) describe the study of protective factors as a new frontier in forensic mental health which needs to be explored in order to increase our knowledge on what works in risk prevention. We know very little about what those who have offended sexually value, what makes them happy, and what skills and strengths are related to their desistance from offending. The desistance literature is very sparse in relation to sexual offending. We therefore urgently need desistance studies that focus on sexual offending. We also need to further investigate whether and to what extent assessments of protective factors increase the accuracy of sexual violence risk assessment. We may need to create new structured schemes for identifying protective factors specifically for sexual reoffending, and use these routinely, so that we can collect and compare data from samples of individuals convicted of different types of sexual crimes and relate these to risk focused tools, treatment efforts and recidivism outcome.

The SAPROF seems to be a good starting point for this as it encompasses many of the proposed protective domains described above. *Healthy sexual interests* is the only proposed protective domain which is identified as exclusively relevant for *sexual* offending and has not been incorporated in the SAPROF. The other seven domains should be considered as general protective domains and are represented in several of the factors in the SAPROF. These factors can all be described as 'dynamic personal' or 'dynamic improving', meaning that potentially they could change for the better, serve as positive goals for treatment efforts and be valuable factors for evaluating treatment progress. Large-scale prospective follow-up research is needed to be able to validate their assumed potential for desistance from sexual offending.

In this study we have argued for a greater focus on protective factors in assessment, research and practice. In recent years, those who work in sexual offender treatment have shown an extensive interest in the *Good Lives Model* of offender rehabilitation (Ward & Brown, 2004). As a strengths-based approach to understanding and treating sexual offending this has played an important role in enabling treatment practice to move away from the more confrontational approaches that were typical in the 1980s. However, the field of sexual offending risk assessment still employs a predominantly deficit-focused approach. It takes some years to collect and analyze the data necessary to validate new risk prediction and prevention items or scales. We therefore believe that it is necessary for those engaged in sexual offender assessment to incorporate the notion of protective factors into their research and practice as a matter of urgency. A sea change in our approach to risk assessment could yield multiple benefits, both to treatment clients and to society.

3

Protective factors for violence risk in forensic psychiatric patients: a retrospective validation study of the SAPROF

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Chapter 3

Protective factors for violence risk in forensic psychiatric patients: a retrospective validation study of the SAPROF

Abstract

The Structured Assessment of Protective Factors for violence risk (SAPROF) has recently been developed as a strengths-based addition to the assessment of risk for future violent behavior (de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009). Following the Structured Professional Judgment (SPJ) model, the positive and predominantly dynamic factors in the SAPROF were designed to counterbalance the assessment of risk as measured by risk assessment instruments, such as the HCR-20. The present retrospective study provides a first validation of the SAPROF in a Dutch sample of 126 forensic psychiatric patients. Analyses showed good interrater reliability, good predictive validity for non-recidivism of violence after clinical treatment for both the SAPROF total score and the SAPROF Final Protection Judgment and good predictive validity for violent recidivism for a combined HCR-20 - SAPROF total score. The predictive validity of the combined HCR-SAPROF index significantly outperformed the predictive validity of the HCR-20 in this study. Repeated assessments of the same patients over time demonstrated a significant improvement of SAPROF scores during treatment. Overall, the results provide evidence for the relationship between the presence of protective factors and non-recidivism of violence and for the additional value of protective factors in the assessment of risk for future violence. Moreover, the sensitivity of SAPROF scores to change provides support for the usefulness of the instrument in planning and evaluating treatment interventions.

Introduction

The translation of risk prediction to risk prevention is a considerable challenge in forensic psychiatry. The evolution of structured risk assessment instruments over the past few decades has provided increasingly helpful tools to not only predict future violent behavior but to guide clinical intervention and decision-making (Douglas & Skeem, 2005; Webster, Müller-Isberner, & Fransson, 2002). With regard to the utility of different risk assessment instruments for clinical practice, Dvoskin and Heilbrun (2001) contemplated that violence risk prediction can well rely on static actuarial tools, but that violence risk prevention and management need to

be informed by assessment of clinically relevant, changeable violence risk factors that have empirically demonstrated their risk-reducing value. For this purpose, the method of actuarial prediction has been combined with the clinically informed method of risk judgment to form a new generation of risk assessment tools: the Structured Professional Judgment (SPJ) instruments. SPJ instruments consist of checklists containing empirically based static and dynamic risk factors, which are interpreted, weighed and integrated to arrive at a Final Risk Judgment about the risk of future violence for a specific individual in a specific situation. By including both empirical knowledge and clinical expertise, SPJ instruments attempt to bridge the gap between risk prediction and violence prevention. Overall, research demonstrated good results for SPJ instruments in terms of predictive validity for recidivism and usefulness in clinical practice (Douglas, Blanchard, Guy, Reeves, & Weir, 2010). Nevertheless, it has also been stated that higher accuracy is needed to effectively bring risk assessment and risk management further together (Buchanan, 2008; Haggard-Grann, 2005).

Most of the commonly used SPJ risk assessment instruments, such as the *Historical Clinical Risk management-20* (HCR-20; Webster, Douglas, Eaves, & Hart, 1997), consist of static and dynamic risk factors. As past behavior is a strong predictor of future behavior, static factors can be viewed as vulnerabilities that should not be ignored when performing risk assessments. However, while some offenders with high scores on historical risk factors remain at high risk for future re-offending, others seem to not recidivate, even over extended periods of time. We can learn from research on *desistance* (Ezell & Cohen, 2005; Maruna, 2001; Vaughan, 2007) and *knifing-off* (Maruna & Roy, 2006), that reductions in violence risk over time can be the result of the processes of aging and maturation. However, other changeable factors also contribute to the variation in risk levels (e.g., informal social control and interpersonal bonds; Kazemian, 2007; Laub & Sampson, 2003). According to Douglas and Skeem (2005), the changeable nature of dynamic risk factors makes them the most promising targets for risk reduction in forensic psychiatric treatment. As dynamic factors are vital in guiding risk management and treatment intervention, the inclusion of additional dynamic, treatment-focused risk factors might be the likely key to more successful risk prevention (Gendreau, Little, & Goggin, 1996; Quinsey, Jones, Book, & Barr, 2006; Sheldrick, 1999).

Another type of factors that seem promising for the improvement of risk assessment and risk prevention is protective factors. Protective factors for violence risk are defined as characteristics of an offender, his environment or situation that protect an individual from relapsing into violent behavior (de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009). In his critique of risk assessment in forensic practice, Rogers (2000) stated that most adult-based studies are one-sided in their enumeration of risk factors to the partial or total exclusion of protective factors. He argued that risk-only evaluations are inherently inaccurate and implicitly biased, often resulting in negative consequences to forensic populations. According to Miller (2006) the mere focus on risk factors in most risk assessment instruments likely results in over-prediction of recidivism, which is costly both for the offender, in terms of loss of personal liberties, and for society, in terms of financial burden.

Many researchers now agree that by focusing solely on risk factors, important information concerning the other side of the equation, the possible risk reducing effect of protective factors, is wrongfully ignored and that including protective factors in risk assessment is vital for an accurate appraisal of the risk of relapse into violence (e.g., DeMatteo, Heilbrun, & Marczyk, 2005; Gagliardi, Lovell, Peterson, & Jemelka, 2004; Haggård-Grann, 2005; Salekin & Lochman, 2008). The positive effect of protective factors weighs against the negative effect of risk factors, either by mitigating the effect of risk factors or by an independent favorable effect on the negative outcome (Fitzpatrick, 1997; Jessor et al., 2003). Similar to risk factors, protective factors can be static or dynamic in nature. Static protective factors include personal historical factors such as Intelligence (e.g., Kandel et al., 1988) and Secure childhood attachment (e.g., Fonagy, Target, Steele, & Steele, 1997).[1] Dynamic, changeable, protective factors concern internal personal factors such as Coping (e.g., Vance, Bowen, Fernandez, & Tompson, 2002) and Self-control (e.g., Tangney, Baumeister, & Boone, 2004); motivational personal factors such as Work and Leisure activities (e.g., Gendreau, Goggin, & Gray, 2000) and Motivation for treatment (e.g., Howells et al., 2005); and external environmental factors such as Social network (e.g., Turbin et al., 2006) and Professional care (e.g., Cooper, Eslinger, & Stolley, 2006).

In recent years, researchers in forensic psychiatry have encouraged focusing on the presumed value of protective factors for more accurate risk assessment and more effective violence prevention in clinical practice (Douglas, Yeomans, & Boer, 2005; Farrington & Loeber, 2000; Heilbrun, 2003; Jones & Brown, 2008). Although the concept of including positive factors in treatment is by no means new to forensic psychiatry - see for instance the *Good Lives Model* (Ward & Brown, 2004) and the *Positive Psychology* approach (Seligman, 2002) - and many protective factors are indeed often part of clinical intervention, linking this positive approach to risk assessment is a relatively new and potentially promising development. Inspired by research findings and reinforced by the desire of clinicians to focus more on changeable and positive factors in risk assessment, the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2007; English version, 2009) was developed as a positive, dynamic addition to structured risk assessment tools. Following the SPJ approach, a checklist containing 17 protective factors was developed arising from literature on protective and contextual factors (see de Vogel, de Vries Robbé, de Ruiter, & Bouman, 2011). The instrument consists of two static and 15 dynamic protective factors and aims to inform clinicians about potential goals for treatment intervention. The SAPROF can offer valuable guidance in narrowing the gap between risk assessment and violence prevention.

Present study

Although the greatest supplemental value of the SAPROF is expected to be its guidance in treatment planning and evaluation, examination of its predictive validity for violent recidivism is necessary. This study aims to provide a retrospective validation of the SAPROF in a sample of 126 male violent offenders discharged from intensive forensic psychiatric hospital treatment

[1] Boutwell and Beaver (2008) also found static biological indicators (e.g., dopamine receptor genes) that seem to have a protective effect on violence.

in The Netherlands. The interrater reliability of the SAPROF was assessed and ratings of the SAPROF, the HCR-20 and a combined HCR-SAPROF index at the end of treatment were related to official recidivism data in order to assess the predictive validity of both instruments. It was hypothesized that the combined measure of both instruments would have increased predictive validity over either instrument alone. Additionally, post-treatment ratings of patients discharged to the community were compared to those of patients transferred to another forensic psychiatric hospital for prolonged treatment. It was expected that patients who were considered to be ready to return to society would have better SAPROF ratings than patients who were considered to be in need of prolonged treatment at another forensic psychiatric hospital. Finally, to examine developments in protective factors over time, the changeability of SAPROF scores during treatment was analyzed by comparing pre-treatment and post-treatment ratings.

Method

Setting

This study was carried out at the Van der Hoeven Kliniek in Utrecht, The Netherlands, a forensic psychiatric hospital with 262 beds. All patients in the present study had been sentenced to a tbs-order ('terbeschikkingstelling') by criminal court. A tbs-order is a judicial measure that allows for the mandated treatment of seriously violent offenders who are not held fully responsible for their offenses due to severe psychopathology. The main goal of the tbs-order is to protect society, initially through mandatory admission of high-risk offenders to a secure hospital setting and ultimately through providing treatment aimed at reducing violence risk. The tbs-order is of indefinite duration, but its aim is to eventually reintegrate patients safely back into society. The necessity of prolonged treatment is re-evaluated every one or two years by the court. Hospital staff provides the court with a detailed evaluation of a patient's treatment progress and a judgment on the risk of recidivism.

Subjects

The present sample consisted of 126 male patients with a history of violent offending who had been admitted to the Van der Hoeven Kliniek, and were discharged between 1990 and 2006. The average treatment length of the sample was about 5.3 years (*SD* = 2.2, range = 1-15) and the mean age at release was 31 years (*SD* = 7.3, range = 20-56). The majority (83%) of the patients suffered from Axis II personality disorders, particularly cluster B disorders, 19% of the patients suffered from an Axis I disorder (e.g., schizophrenia, bipolar disorder). A history of substance abuse was present in 65% of the cases. The index-offense of 56% of the sample concerned (attempted) homicide, while 12% had been admitted for arson and 32% for other violent offenses. At the end of treatment, 57 patients were discharged without any

further court conditions, 44 were discharged under court conditions[2] and five were unlawfully absent. A group of 20 patients who did not show sufficient treatment progress after several years or had caused serious incidents during their stay in the hospital were transferred to another forensic psychiatric hospital in The Netherlands for a second treatment attempt (the *readmission group*). For the 20 readmitted patients, SAPROF scores were assigned for a hypothetical discharge situation in order to be able to compare them with the scores of patients discharged from mandatory forensic treatment (the *discharge group*). As most of the readmitted patients were still in treatment at the time this study was carried out, their recidivism data could not be retrieved. Therefore, the *readmission group* was excluded from the predictive validity analyses. Additionally, one patient of the *discharge group* had emigrated soon after discharge and was also excluded as international recidivism data could not be retrieved. The predictive validity analyses thus included 105 male violent offenders. Female patients as well as patients with predominantly sexual index-offenses were not included in this study.

Procedure

The HCR-20 and SAPROF were coded from patients' files, which contained biographical information, psychological reports, reports to the court regarding treatment progress, treatment plans and treatment evaluations. Because of the dynamic nature of most SAPROF factors, it was important to have sufficient information about the final phase of treatment (from 12 months prior to discharge). For all patients, the *Psychopathy Checklist-Revised* (PCL-R: Hare, 1991, 2003) had previously been coded, either retrospectively (see Hildebrand, 2004) or prospectively. In the present study, trained raters, including the three authors, coded the SAPROF and the HCR-20 retrospectively for all cases at the end of treatment based on the available file information. The ratings were performed while all raters were blind to previous risk assessments and recidivism outcome data. For 60 patients, additional ratings were performed for the start of treatment (pre-treatment ratings), based on available file information up to the first year after admission. Finally, in order to establish interrater reliability, 40 randomly selected cases were coded independently by two different raters, after which consensus scores were agreed upon. The consensus scores were used for the predictive validity analyses. In order to be able to compare the predictive validity of the SAPROF for non-recidivism at fixed follow-up times, for all patients in the *discharge group* (n = 105) only official reconvictions within one, two or three years after release were used.

Measures

HCR-20. The HCR-20 (Webster et al., 1997; authorized Dutch version: Philipse, de Ruiter, Hildebrand, & Bouman, 2000) is probably the most widely used SPJ risk assessment instrument (Douglas et al., 2010). It contains 20 risk factors: 10 *Historical factors*; five *Clinical factors* and five *Risk management factors*. Factors are scored on a three-point scale (0-2). A meta-analysis

[2] The most commonly imposed court conditions concern prolonged supervision by the probation service, mandatory outpatient treatment, restraining orders and injunctions forbidding someone to appear in certain areas.

of over 50 studies on the HCR-20 by Douglas and Reeves (2010) revealed good to excellent interrater reliabilities and moderate to large associations between the HCR-20 and violence. In her thesis on the Dutch version of the HCR-20, de Vogel (2005) found good to excellent interrater reliabilities and good predictive validities both for violent incidents during treatment and for violent recidivism after treatment.

SAPROF. The SAPROF is a checklist following the SPJ approach and is intended to always be used in combination with an SPJ risk assessment instrument, such as the HCR-20. The instrument consists of 17 protective factors (see Table 1 in Chapter 1), all of which are rated on a three-point scale (0-2), reflecting the extent to which they are present as a protective factor for violence risk for a given patient in a specific situation. Additionally, factors can be indicated as particularly important for the individual: factors that provide much protection at the time of assessment can be marked as *key factors*, while factors that are seen as potential targets for treatment intervention can be marked as *goal factors*. In clinical practice, the indication of key and goal factors focuses attention on the importance of specific protective factors for an individual, which can be useful for the development of risk management and treatment intervention strategies. As the present file study is retrospective, no quantitative analyses were carried out on keys and goals, since their value lays especially in their prospective use. After rating all the protective factors, a Final Protection Judgment on the level of available protection for relapse into violence is composed by interpreting, weighing and integrating the protective factors that are present. Next, the Final Protection Judgment is combined with the HCR-20 risk factors to arrive at an Integrated Final Risk Judgment for future violent behavior. The Final Protection Judgment and the Integrated Final Risk Judgment are made on a 3-point scale (*low*, *moderate*, or *high*).

The SAPROF factors are organized within three scales: *Internal factors*, *Motivational factors* and *External factors*. Factors 1 and 2 are static; the other 15 factors are dynamic and therefore changeable during treatment. Scores on Factors 3 through 14 are expected to improve during treatment as higher scores on these factors reflect more balance in internal and social functioning as well as increased motivation for treatment or to be a positive member of society. Scores on Factors 15 through 17, however, are expected to decrease during treatment as these factors concern protection from professional external care, which at the end of treatment is expected to be reduced as much as possible. For the purpose of this study we divided the SAPROF factors into three different categories by combining the scale organization with the expected direction of factor change during successful treatment: *static internal factors,* comprising factors 1 and 2; *dynamic improving* or *dynamic personal factors*, comprising factors 3 to 14; and *dynamic decreasing* or *dynamic situational factors*, comprising factors 15 to 17 (see Table 1 in Chapter 1). The three categories were compared for the purpose of measuring change in factor scores during clinical treatment. A total SAPROF protection score was composed by adding up the 17 SAPROF factors. Additionally, an overall total score of risk and protection was composed by subtracting the SAPROF total score from the HCR-20 total score, resulting in a total risk score corrected for available protection: the HCR-SAPROF index.

Statistical analyses

The interrater reliability of the SAPROF was examined by means of the intraclass correlation coefficient (ICC), using the two-way random effect variance model and consistency type (McGraw & Wong, 1996). The critical values for single measure ICCs are: ICC ≥ .75 = excellent; .60 ≤ ICC < .75 = good; .40 ≤ ICC < .60 = moderate (Fleiss, 1986). For the purpose of measuring change on the SAPROF during treatment, pre- and post-treatment total scores on the three categories (the *static internal factors*, the *dynamic improving factors* and the *dynamic decreasing factors*) were compared for 60 cases by means of three paired sample *t* tests. In addition, a comparison was made between the SAPROF *dynamic improving factors* scores of the discharged patients (the *discharge group*; *n* = 105) and of the patients who were transferred to a different hospital (the *readmission group*; *n* = 20) by means of an independent samples *t* test. In order to assess the predictive validity for violent recidivism, Receiver Operating Characteristics (ROC; Mossman, 1994; Rice & Harris, 1995, 2005) analyses were carried out with recidivism as outcome measure for the HCR-20 and non-recidivism as outcome measure for the SAPROF. An advantage of the ROC analysis is its relative insensitivity to recidivism base-rate levels (Hanson, 2008). An Area Under the Curve (AUC) of 0.5 represents chance level prediction, while an AUC of 1.0 represents perfect prediction of recidivism by risk factors or perfect prediction of non-recidivism by protective factors. AUC values of .70 and above are considered moderate to large and values of .75 and above are considered large (Douglas et al., 2010). For the purpose of determining significant differences between AUC values, a comparative analysis was carried out using the ROCTools statistical software for the analysis of ROC curves (Allaire & Cismaru, 2007) that applies the DeLong, Delong and Clarke-Pearson (1988) method for comparing AUC values. Pearson point-biserial correlation analyses were used to examine the correlations between violent recidivism and the total scores on both the SAPROF and the HCR-20. Pearson's correlation analyses were used to examine correlations between the SAPROF and the HCR-20.

Outcome

Official recidivism data were collected from the Judicial Documentation register of the Dutch Ministry of Justice. Recidivism was defined as any new conviction for a violent offense according to the HCR-20 definition of violence, that is, *actual, attempted, or threatened violence* (see Webster et al., 1997, p. 24). For all patients, follow-up time started on the day of discharge from the hospital, ending 12 months later for the 1 year follow-up period, 24 months later for the 2 year follow-up period and 36 months later for the 3 year follow-up period.

Results

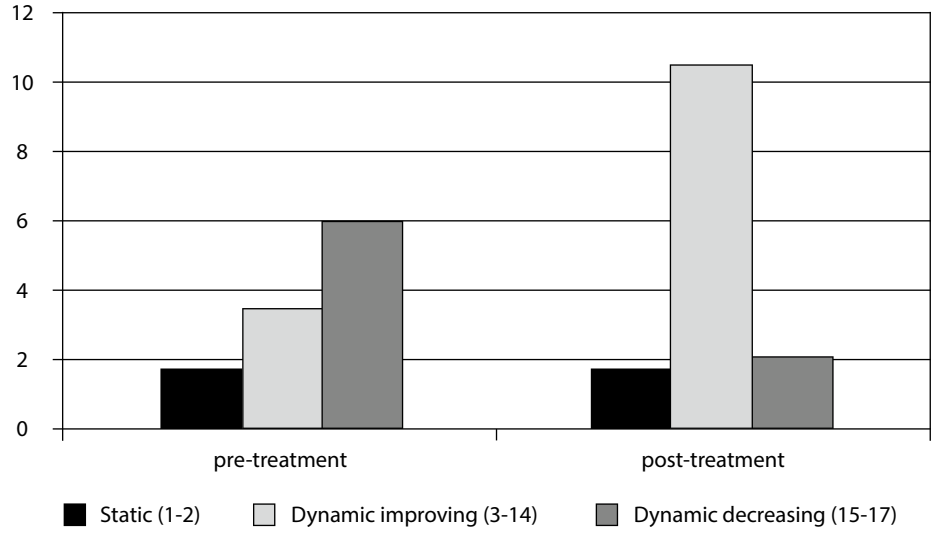
Interrater reliability

Reliability analyses of post-treatment ratings of 40 cases showed single measure ICCs of .88 ($p < .001$) for total SAPROF scores and .85 ($p < .001$) for Final Protection Judgments. All individual factors had moderate to excellent interrater reliabilities, ICCs ranging from .42 (Coping) to .94 (Financial management), all $p < .01$.

SAPROF total score and Final Protection Judgment

The mean SAPROF total score for the entire sample (*N* = 126, post-treatment ratings) was 11.65 (*SD* = 6.41, range = 1-24). The mean factors scores were as follows: Internal factors, M = 3.48 (SD = 1.84, range = 0-7); Motivational factors, M = 5.01 (SD = 3.91, range = 0-14); and External factors, M = 3.18 (SD = 1.89, range = 0-9). The Final Protection Judgment was *low* for 52 patients (41% of the sample; *M* total score = 5.15, *SD* = 2.47, range = 1-10); *moderate* for 64 patients (51% of the sample; *M* total score = 15.26, *SD* = 3.19, range = 9-22); and *high* for 10 patients (8% of the sample; *M* total score = 22.28, *SD* = 1.54, range = 20-24). Of the 105 discharged patients, the *high* group recidivated less often with a violent offense in all three follow-up periods (1 year = 0%; 2 years = 0%; 3 years = 10%) than the *moderate* group (2%, 6%, and 10%, respectively) and the *low* group (22%, 34%, and 41%, respectively).

Figure 1. SAPROF Mean Pre- and Post-Treatment Total Scores by Category: *Static Factors, Dynamic Improving Factors* and *Dynamic Decreasing Factors* (*n* = 60)



Changeability of dynamic factors

Paired sample *t* tests for pre- and post-treatment ratings of 60 cases revealed significant positive results for the *dynamic improving factors* scores, t (59) = 12.16, $p < .001$), and significant negative results for the *dynamic decreasing factors* scores, t (59) = -18.00, $p < .001$. Figure 1 shows the average changes in factor scores during treatment. Paired sample *t* tests for individual factors showed significant results for all dynamic factors in the expected direction (Factors 3-14 positive; Factors 15-17 negative).

A comparison was made between the post-treatment SAPROF ratings on the *dynamic improving factors* of the *discharge group* (n = 105, M = 9.83, SD = 5.28, range = 0-23) and the *dynamic improving factors* of the *readmission group* (n = 20, M = 2.10, SD = 2.61, range = 0-11) by means of an independent samples t test. Results showed significantly higher *dynamic improving* scores for the *discharge group, t* (123) = 6.39, $p < .001$.

Table 2. AUC Values for SAPROF and HCR-20 Ratings upon Discharge

Follow-up period	1 year	2 year	3 year
SAPROF total score	.85**	.80**	.74**
Final Protection Judgment	.82**	.77**	.71**
HCR-20 total score	.81**	.77**	.68*
HCR - SAPROF index	.85**	.81**	.72**
Integrated Final Risk Judgment	.80**	.72**	.65*

Note. n = 105; The values for the HCR-20 total score, the HCR total score - SAPROF total score and the Integrated Final Risk Judgment concern violent recidivism, the values for the SAPROF total score and the Final Protection Judgment concern non-recidivism of violence; * $p < .05$, ** $p < .01$.

Predictive validity

Criminal records showed that 8 out of the 105 discharged patients were reconvicted for a violent offense within one year after discharge, 15 patients were reconvicted for violence within two years (including the 8 patients convicted in the first year) and 20 patients within three years (including the 15 patients convicted in the first two years). Table 2 shows the results from the ROC-analyses for the three different follow-up periods for post-treatment ratings on the different measures. Ratings on protective measures are related to non-recidivism, those on risk measures to recidivism. SAPROF total scores showed good predictive validity for non-recidivism of a violent offense, AUC values were large at one-year follow-up (AUC = .85) and two-year follow-up (AUC = .80) and moderate to large for three-year follow-up (AUC = .74). For all three follow-up periods, the predictive validity for violent recidivism of the HCR-20 total score was lower than the predictive validity for non-recidivism of the SAPROF total score. However, this difference was not significant. The combined total score of HCR-SAPROF was the best predictor of violent reconvictions for short-term follow-up. Comparative analyses on the AUC values at one-year, two-year and three-year follow-up, showed a significantly better predictive validity of the HCR-SAPROF index over the HCR-20 total score for both one-year and three-year follow-up, χ^2 (1, n = 104) = 4.20 and 4.16, respectively, both $p < .05$). The SAPROF Final Protection Judgment (FPJ) and the Integrated Final Risk Judgment (IFRJ) showed good

predictive validity for (no) violent recidivism within one and two years follow-up (FPJ AUC = .82 and .77, respectively, IFRJ AUC = .80 and .72, respectively). However, the predictive validities of both final judgments decreased at three years after discharge (FPJ AUC = .71; IFRJ AUC = .65). At all follow-up periods the predictive validities of the final judgments were lower than those of the total scores, although these differences were not significant. The best individual predicting SAPROF factors for no violent reconvictions were Self-control (AUC at 1, 2, and 3 years = .83, .74, and .73, respectively, all p < .01) and Work (AUC = .83, .76, and .71, respectively, all $p < .01$).

Correlations

The analyses of the correlations between the total score on each instrument and recidivism ($n = 105$) revealed significant negative results for 1, 2, and 3, year follow-ups for the SAPROF (r_{pb} = -.35, -.38, and -.35, respectively, all $p < .01$) and significant positive results for all three follow-up times for the HCR-20 (r_{pb} = .31, .34, and .25, respectively, all $p < .05$). The relationship between the HCR-20 and the SAPROF total scores was calculated for the entire sample ($N = 126$). Analyses showed a high negative correlation between both instruments ($r = -.69$, $p < .01$). The highest inter-item correlations were found between the SAPROF factor Self-control and the HCR-20 factors Impulsivity ($r = -.73$, $p < .01$) and Unresponsiveness to treatment (r = -.69, p < .01) and between the SAPROF factor Motivation for treatment and the HCR-20 factor Noncompliance with remediation attempts (r = -.67, $p < .01$).

Discussion

This chapter presents the first validation study that was carried out for the SAPROF, an SPJ instrument for the assessment of protective factors for violence risk. Although the main objective of the SAPROF is improving violence risk management and prevention, the purpose of the present retrospective study was to provide information on its reliability and predictive validity. Interrater reliability analyses showed that both the SAPROF factor scores and the Final Protection Judgment could be reliably coded. The ROC analyses demonstrated that both the SAPROF total score and the Final Protection Judgment have good predictive validity for the short- to medium-term prediction of non-recidivism of violence after discharge. Moreover, the combined total score of HCR-SAPROF was a significantly better predictor of violent reconvictions than the HCR-20 total score. Scores on the dynamic SAPROF factors proved to be sensitive to change between pre- and post-treatment ratings and the *dynamic improving factors* showed the ability to significantly discriminate between those patients considered ready for discharge and those patients in need of prolonged treatment.

Both the SAPROF and the HCR-20 total scores had good predictive validity for future violence in this study. However, SAPROF predictions consistently outperformed predictions by the HCR-20. Therefore, one could reason that the SAPROF might be preferred over the HCR-20. However, the differences in predictive accuracy were not significant. Moreover, being merely

dynamic in nature and having a sole focus on protective factors it will always be a necessity that the SAPROF is used in combination with a well-established risk-focused assessment tool that includes historical risk factors, preferably an SPJ risk assessment instrument like the HCR-20. The combined total score of HCR-SAPROF predicted violent recidivism significantly better than the HCR-20 total score alone, even though the negative correlation between the SAPROF and the HCR-20 was high. This significant improvement of the predictive validity for future violent behavior through combining the HCR-20 with the SAPROF provides a valuable argument for the use of a combination of risk and protective measures in risk assessment. These findings prove the usefulness of protective factors for risk assessment and support the notion by various researchers (e.g., Miller, 2006; Rogers, 2000) that protective factors have been wrongfully ignored in risk-only evaluations.

As the time between the risk assessment and follow-up increased, the predictive accuracy of the SAPROF seemed to decline. This effect could be explained by the dynamic nature of the SAPROF and the increased likelihood that over time dynamic and situational factors change. This implicates the necessity of regularly updated assessments with dynamic instruments such as the SAPROF. The predictive validity for violent recidivism of the HCR-20, which consists of an equal share of static and dynamic factors, would be expected to be more stable over time than that of the largely dynamic SAPROF. However, the prediction of recidivism by the HCR-20 total score showed a similar decline in accuracy to the SAPROF as follow-up time increased. A possible explanation for this could be that in the present sample the variation in *Historical* scores was generally low and thus non-discriminating between recidivists and non-recidivists. An additional comparative analysis between the total scores on the *Historical* scale of the HCR-20 for recidivists and for non-recidivists at three-year follow-up indeed showed no significant difference between the two groups.

Organizing the SAPROF protective factors into *static*, *dynamic improving,* and *dynamic decreasing* factors proved to be useful for measuring treatment progress. The observed significant changes in scores on the different categories between the beginning and the end of treatment, point to the importance of particular factors for different situations. At the start of clinical intervention the external mandatory protection usually provides almost all the available protection. During treatment the goal is to increase the *dynamic improving factors* to such a level that eventually the protection from mandatory intervention is no longer necessary and the patient can be discharged. Accordingly, the Final Protection Judgment is not based on adding up the scores on all protective factors, but consists of a personal protection profile that is subject to change as treatment progresses. At any moment it is the combination of the present risk factors and the available protective profile that determines ones resistance against relapse into violence. The relevance of specific protective factors can vary greatly between patients. While one patient benefits most from medication and the availability of mental health professionals, another might benefit more from structured daily activities and a supportive social network.

Limitations

There are a number of limitations to the present study. First of all, the retrospective design of this file study is an important limitation, as this restricts the validation of the SAPROF to an examination of its psychometric properties. Therefore, its value as a dynamic treatment-informing instrument could not be evaluated in this study. Moreover, although files had been carefully selected based on the availability of dynamic information, required data for accurate dynamic ratings were not always available for every factor. Especially factors 15 (*Professional care*), 16 (*Living circumstances*) and 17 (*External control*) were difficult to rate upon discharge since future interventions after treatment were often unclear. A further limitation to this study is the low recidivism base rate. Although it will be evident that low recidivism rates are the ultimate goal of risk assessment in forensic psychiatry, small base rates also complicate research on predictive validity of risk assessment instruments. Garcia-Mansilla, Rosenfeld and Nicholls (2009) stated that base rates exert a tremendous influence on estimates of predictive accuracy because it becomes increasingly difficult to accurately predict events as the likelihood of their occurrence decreases. Besides the possibility that violent relapse rates may have declined due to improved release decision-making and more gradual reintegration policies, the low base rate of violent reconvictions could also be explained by the 'dark figure' of undetected violent re-offenses. Criminal reconvictions are the most objective outcome measure available but are also likely to under-represent actual violent recidivism as not all violent offenses are reported and not all offenders are prosecuted and convicted. A final limitation of this study lies in the sample that was used, consisting of a relatively homogeneous group of male forensic psychiatric patients admitted to a single forensic psychiatric hospital. Although the patient sample that was used for the construction of the SAPROF was different from the present sample, both samples originated from the same population of forensic psychiatric patients admitted to the Van der Hoeven Kliniek.

Recommendations and concluding remarks

Future studies will have to focus on comparable inpatient samples in Dutch and international forensic psychiatry, as well as on other populations such as sexual offenders, female offenders, forensic outpatients and general psychiatric patients. Moreover, prospective studies will have to carefully analyze the supplemental value of the SAPROF for everyday clinical practice. Although the results of this study show good predictive validity for future violent behavior, the dynamic SAPROF was not primarily designed for relapse prediction but for prospective prevention of recidivism by informing treatment staff on dynamic protective factors and thus guiding risk management. Only prospectively the full clinical potential of the SAPROF as a supplementary resource for effective intervention planning and treatment evaluation can be examined.

In conclusion, this chapter demonstrated that the SAPROF is a promising new instrument in forensic psychiatry. Its dynamic approach of protective factors creates new opportunities for effective and positive treatment interventions. By complementing the dynamic assessment of risk for violent recidivism, the SAPROF creates a more balanced assessment of future violence risk, with the ultimate goal to provide a valuable contribution to preventive risk management in forensic clinical psychiatry.

4

Assessing protective factors for sexually violent offending with the SAPROF

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Chapter 4

Assessing protective factors for sexually violent offending with the SAPROF

Abstract

The Structured Assessment of Protective Factors for violence risk (SAPROF) has recently been developed as a risk assessment tool to focus solely on protective factors for (sexual) violence risk. Research on protective factors for sexual offending is limited and most risk assessment tools for adult sexual offenders do not incorporate protective factors. This chapter investigates the applicability and predictive validity of the SAPROF for forensic psychiatric patients who have sexually offended. For a sample of 83 hands-on sexual offenders, risk assessments were carried out retrospectively with the SAPROF, the Historical Clinical Risk management-20 (HCR-20) and the Sexual Violence Risk-20 (SVR-20). Results show good interrater reliability and negative correlations between the SAPROF and both risk tools. Predictive validities of the SAPROF protective factors for reconvictions of general and sexual violence were good for short-term as well as for long-term follow-up. Moreover, the SAPROF added significant incremental predictive validity to both the HCR-20 and the SVR-20 in the prediction of future violence and sexual violence. Implications of these findings and recommendations for future research are discussed.

Introduction

The quest for optimal risk assessment for reoffending of sexually violent offenders is an ongoing challenge for forensic mental health care professionals. Although we may be approaching a statistical ceiling in the predictive accuracy of risk assessment tools, the introduction of more dynamic empirically grounded tools brings an innovative approach to risk assessment. At the very least dynamic tools offer more treatment guidance, likely resulting in greater risk reduction and better violence prevention (Skeem & Monahan, 2011). For sexual offenders treated in inpatient forensic psychiatric hospitals in The Netherlands, routinely repeated assessments with the *Sexual Violence Risk-20* (SVR-20; Boer, Hart, Kropp, & Webster, 1997) are mandatory. However, despite good findings on its predictive abilities (see de Vogel, de Ruiter, van Beek, & Maed, 2004), the clinical utility of the SVR-20 is somewhat limited

due to the low number of dynamic factors in this tool. For adult sexual offenders, dynamic tools such as the STABLE (Fernandez, Harris, Hanson, & Sparks, 2012) have been valuable recent assessment developments, which provide more direction to the treatment and risk management of sexually violent offenders.

Most sexual offender risk assessment tools only focus on risk factors and altogether ignore the potential value that patient strengths and positive environment factors may have for the assessment and treatment of adults who have sexually offended. The inclusion of protective factors could be a promising new contribution to (sexual) violence risk assessment, which might still increase predictive accuracy and could possibly offer additional guidelines to the often difficult and lengthy treatment of violent and sexually violent offenders (de Ruiter & Nicholls, 2011; Ullrich & Coid, 2011). In their reflection on assessing risk for sexual recidivism, Mann, Hanson and Thornton (2010) concluded that future developments of risk assessment tools should strive to measure risk and protective factors embedded within plausible (and testable) models of offender recidivism risk. Griffin, Beech, Print, Bradshaw and Quayle (2008) also stated that the inclusion of strengths is important when assessing the risk of future sexually violent behavior. Protective factors could bring more balance to risk assessment and offer positive treatment goals, possibly leading to higher quality offender treatment and more accurate decision making. As such, protective factors could provide an important contribution to violence prevention.

While the literature on protective factors for general violent offenders is limited, literature on specific protective factors for sexually violent offenders is even scarcer (de Vogel, de Vries Robbé, de Ruiter, & Bouman, 2011). In their attempt to present a richer way of intervening with sexual offenders, Ward and Laws (2010) brought together the (sex) offending desistance approach and the strengths-based rehabilitation and reintegration framework for sexual offenders the *Good Lives Model* (Ward, 2002). They argue that in attempting to persuade sexual offenders to give up criminal activities, rather than simply eradicate, control, or manage risk it is advisable to build up offender and environment strengths. Effective positive rehabilitation strategies should not only focus on enhancing positive personal skills, but need to also enforce the aid of practitioners in the desistance process. Through offering a variety of different resources in a holistic approach health care professionals are advised to attempt to enhance sound therapeutic alliance and create social support, future opportunities and personal life significance (Ward & Laws, 2010).

Protective Factors in Risk Assessment

As far as we know, there are no sexual violence risk assessment tools available that focus specifically on protective factors for sexual violence risk in adults. However, a tool intended for the assessment of protective factors for general violence risk was recently developed: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009; 2012). Most of the protective factors in the SAPROF are potentially changeable and aim to provide opportunities for positive treatment interventions and risk management. Although most of the empirical support for the 17 protective factors

in the SAPROF stems from general violent offender studies, the SAPROF was intended to be applicable both to violent and to sexually violent offenders. As most commonly assessed risk factors are valid for general violence as well as sexual violence (see also Hanson & Morton-Bourgon, 2004), it was also expected that most protective factors would be valid for non-sexual violence as well as for sexual violence. Nevertheless, since the SAPROF was not specifically developed for sexual offenders, its factors may neither be fully applicable to sexual offending, nor may this list of protective factors be exhaustive for those who have sexually offended.

Validation research with violent offenders showed good interrater reliability for the SAPROF factors as well as good concurrent validity with the *Historical Clinical Risk mangement-20* (HCR-20; Webster, Douglas, Eaves, & Hart, 1997) and good predictive validity for no violent reconvictions at different follow-up times after discharge from forensic psychiatric treatment (de Vries Robbé, de Vogel, & de Spa, 2011). Incremental predictive validity was found when the SAPROF was used together with the HCR-20. Prospective clinical evaluation also showed good predictive validity for the absence of violence to others and the absence of self-harm during treatment (Abidin et al., 2013). A first exploration of the usefulness of the SAPROF for sexual offenders was done by Yoon, Spehr and Briken (2011). They found a significant correlation between the SAPROF and the sexual violence risk assessment tool the SVR-20. Higher SAPROF ratings were related to lower SVR-20 ratings. However, no significant correlation was found with the *Static-99* (Hanson & Thornton, 1999), which according to Yoon and colleagues was likely due to the historical nature of the Static-99 versus the dynamic nature of the SAPROF. The present study investigated the additional value of the SAPROF when combined with the HCR-20 and the SVR-20 for a sample of discharged forensic psychiatric patients with a history of sexually violent offending.

Present study

The aim of this study was to provide a validation for the SAPROF protective factors for assessing the risk of future general violence and of future sexual violence in sexual offenders. First, the interrater reliability of the tools was assessed as well as the concurrent validity between the tools. Second, the predictive validity of the different tools was examined. In order to study the ability of the SAPROF, the HCR-20 and the SVR-20 to predict (desistance from) future violence, discharge ratings on each tool were related to violent and sexually violent recidivism at different follow-up times. It was expected that the SAPROF protective factors would be able to significantly predict desistance from future violence, especially for the short-term follow-up. Moreover it was expected that the SAPROF would add incremental predictive validity to the HCR-20 in predicting future violence and to the SVR-20 in predicting future sexual violence.

Method

Participants

This study involved 83 male sexual offenders who had been admitted to two different Dutch forensic psychiatric hospitals and were discharged between 1984 and 2006; 65 patients from the Van der Hoeven Kliniek hospital in Utrecht, and 18 from the Van Mesdag Kliniek hospital in Groningen, both in The Netherlands. All sexual offenders discharged to the community from either hospital during this time period, for whom sufficient file data was available to be able to retrospectively rate the different (dynamic) risk and protective factors in the tools, were included in the present sample. Patients from the two hospitals were merged together to ensure sufficient sample size for studying the predictive validity for recidivism. All participants had previously committed sexually violent offenses for which they had been sentenced to a tbs-order ('terbeschikkingstelling') by criminal court, randomly assigned to a Dutch tbs-hospital. A tbs-order is a judicial measure that allows for the mandated treatment of violent offenders who are not held fully responsible for their offenses due to severe psychopathology. The order is in effect for as long as deemed necessary by the court, with the aim to rehabilitate patients safely back into society. Although naturally interventions changed over the 20 year course that the different patients in this study were admitted in, treatment at both hospitals typically involved intensive inpatient treatment following a cognitive behavioral and relapse prevention model through an eclectic approach. Among the many aspects of treatment patients generally received psychiatric support, individual psychotherapy, group-based interventions, (psycho)education, social network involvement, work skills development, and engagement in leisure activities. All activities aimed to assist with a safe and successful reintegration into society. Most patients gradually reintegrated into the community, before being discharged.

The average treatment length was about 5.4 years (*SD* = 2.5, range = 1-16). Median age at release was 30 years (*SD* = 7.5, range = 18-51). A large proportion of patients suffered from Axis II personality disorders (45%) or traits (29%), particularly cluster B disorders. Only three percent of the patients suffered from a psychotic disorder (e.g., schizophrenia), while 14 percent of the patients had a diagnosis of a sexual disorder (mostly pedophilia). One in four patients had committed a sexual offense involving at least one child victim; the other patients only had adult victims. Almost half of the sexual offenders in this study had also been convicted for a non-sexual violent offense in the past. At the end of treatment, 56 patients were discharged without any further court conditions, 26 were discharged under court conditions, one had recidivated shortly after discharge and was therefore admitted to another institution. The most commonly imposed court conditions at discharge concerned prolonged supervision by the probation service and court-ordered outpatient treatment, with or without mandatory use of androgen deprivation medication.

Measures

SAPROF. The SAPROF is a relatively new tool specifically developed for the assessment of protective factors for (sexual) violence risk. The SAPROF was designed according to the Structured Professional Judgment (SPJ) approach and intended to be used in addition to risk focused tools like the HCR-20, its recent revision the *Historical, Clinical, Risk Management: Version 3* (HCR-20^{V3}; Douglas, Hart, Webster, & Belfrage, 2013), or the SVR-20. However, the protective factors in the SAPROF could also be assessed in addition to dynamic actuarial risk tools such as the STABLE. The 17 SAPROF items are rated on a three-point scale (0-2), with higher scores indicating the presence of a protective factor for the assessed individual. The SAPROF items are organized in three scales: *Internal factors*, *Motivational factors* and *External factors*. Items 1 and 2 are static; items 3 through 17 are dynamic and potentially changeable during treatment. Items of particular importance to the individual may be marked as 'key', items considered most relevant for further treatment interventions can be marked as 'goal'.

HCR-20. For the assessment of risk factors for general violence (including sexual violence) the HCR-20 was used. The HCR-20 contains 20 risk factors: 10 static (*Historical factors*) and 10 dynamic items (five *Clinical factors* and five *Risk management factors*). Items are scored on a three-point scale (0-2), with higher scores indicating the presence of a risk factor.

SVR-20. In order to specifically assess the level of sexual violence risk the SVR-20 was also included in this study. The SVR-20 consists of 20 factors in three different domains: 11 psychosocial adaptation items, seven sexual offending items and two items relating to future plans. Only the last four items are dynamic, the other items are static. Items are scored on a three-point scale (0-2), with higher scores reflecting the presence of a sexual violence risk factor.

In addition to rating the 17 SAPROF protective factors and recognizing the most important factors for the individual, an overall *Final Protection Judgment* is made on the level of available protection for the individual that reduces the risk of (sexually) violent recidivism (*low*, *moderate*, or *high* protection). Next, the results from the SAPROF protective factors assessment are integrated with the results from the HCR-20 risk factors for violence and with the results from the SVR-20 risk factors for sexual violence in order to come to an integrated *Final Violence Risk Judgment* for future general violent behavior (including sexual violence) and an integrated *Final Sexual Violence Risk Judgment* specifically for future sexually violent behavior.

Procedure

The SAPROF, the HCR-20 and the SVR-20 were coded from patients' hospital files, which generally included case history information, clinical documentation, court evaluations, treatment progress reports and discharge plans. Because of the dynamic nature of most SAPROF items, it was important to have sufficient information concerning the final phase of treatment (the last year prior to discharge). Dynamic factors were rated based on file information that was available on the last 12 months of treatment. Missing items were prorated for each participant. Ratings were performed while all raters were blind to recidivism outcome data as recidivism data were collected after the file codings had finished and none

of the raters coded files for patients they were familiar with. For all patients the *Psychopathy Checklist-Revised* (PCL-R; Hare, 2003) had previously been coded, either retrospectively or prospectively and results from the PCL-R ratings were used to code the psychopathy items in the HCR-20 and the SVR-20. In this study, seven trained psychologists coded the SAPROF, the HCR-20 and the SVR-20 retrospectively for all cases at the end of treatment based on all available file information. Thirty cases were rated by two independent raters in order to be able to assess the interrater reliability. After the individual ratings, a consensus rating was done for these cases. The consensus ratings were used for the predictive validity analyses.

In addition to the final protection and risk judgments, for the purpose of this study total scores were composed for the 20 HCR-20 general violence risk factors, for the 20 SVR-20 sexual violence risk factors and for the 17 SAPROF protective factors, as well as for the subscales of each tool. In clinical practice only the final judgments are composed, however empirically it is informative to also analyze the item scores in an actuarial fashion. As this study aimed to investigate the joint predictive abilities of the risk tools and the SAPROF protective factors, in addition to the separate total scores on each tool, two overall total scores of risk and protection were composed reflecting violence risk corrected for available protection: 1) subtracting the SAPROF total score from the HCR-20 total score resulted in the HCR-SAPROF index for general violence risk; and 2) subtracting the SAPROF total score from the SVR-20 total score resulted in the SVR-SAPROF index for sexual violence risk.

Statistical analyses

The interrater reliability of the SAPROF, the HCR-20 and the SVR-20 was examined by means of reliability analysis using the intraclass correlation coefficient (ICC) with two-way random effect variance model and consistency type, single measure (McGraw & Wong, 1996). The critical values for single measure ICCs are: ICC ≥ .75 = excellent; .60 ≤ ICC < .75 = good; .40 ≤ ICC < .60 = moderate (Fleiss, 1986). To determine the correlations between the SAPROF, the HCR-20 and the SVR-20 Pearson's correlation analysis was used. Pearson point-biserial correlation analysis was utilized to examine the correlations between the scores on the different tools and violent as well as sexually violent recidivism at different follow-up times. For the final judgments Spearmans rho correlation analysis was applied. Partial correlation analysis was done to examine the correlation between the SAPROF and violent outcome while controlling for the HCR-20 and the SVR-20. In order to assess the predictive validity for violent and sexually violent recidivism of each tool individually and of the combined HCR-SAPROF index and the combined SVR-SAPROF index, *Receiver Operating Characteristics* (ROC; Mossman, 1994; Rice & Harris, 2005) analyses were conducted resulting in *Area Under the Curve* (AUC) values. AUC values of .70 and above are considered moderate to large, AUC values of .75 and above are considered large (Douglas, Blanchard, Guy, Reeves, & Weir, 2010). Further analyses were done using the ROCTools statistical software for comparison of ROC curves (Allaire & Cismaru, 2007) that applies the DeLong, Delong and Clarke-Pearson (1988) method for determining significant differences between AUC values. In addition, hierarchical logistic regression analyses were carried out to assess the incremental predictive validity of the SAPROF over

the risk tools, while controlling for follow-up time. Finally, logistic regression analyses were carried out for the final judgments and violent as well as sexually violent recidivism at different follow-up times.

Table 1. Descriptive Statistics for the SAPROF, HCR-20 and SVR-20 (*N* = 83)

Tool	*M*	SD	Range
SAPROF total score	12.25	5.91	1 - 27
Internal scale	3.37	1.79	0-7
Motivational scale	5.43	3.58	0-13
External scale	3.48	1.59	1-8
HCR-20 total score	22.69	5.79	12-37
Historical scale	13.08	2.68	7-19
Clinical scale	3.76	2.12	0-8
Risk Management scale	5.93	2.40	2-10
SVR-20 total score	19.73	5.31	7-33
Psychosocial adaptation scale	11.78	3.49	4-19
Sexual offending scale	6.12	2.49	0-13
Future plans scale	1.83	1.39	0-4
HCR-SAPROF index total	10.44	11.19	-14 - 36
SVR-SAPROF index total	7.50	9.35	-15 - 31

Outcome

For all patients, criminal records were collected from the Judicial Documentation register of the Dutch Ministry of Justice. In the predictive validity analyses (sexually) violent recidivism was used as outcome measure for the HCR-20 and the SVR-20 and non-recidivism in (sexual) violence was used as outcome for the SAPROF. Violent recidivism was defined as any new conviction after discharge for a violent (sexual or non-sexual) offense. Sexually violent recidivism was defined as any new conviction for a sexually violent offense after discharge. Thus, sexually violent recidivism is part of general violent recidivism in this study. All patients in the study had a follow-up time of at least 3 years after discharge. To be able to compare predictive validities at fixed follow-up times, official reconvictions within one and three years after release were included in the analyses. In addition, analyses were also carried out on

the maximum follow-up time available for each patient: on average this *long-term follow-up* was 15.1 years (*SD* = 5.3, range = 3-24). None of the participants was incarcerated for more than a year for a non-violent offense during the follow-up. As the exact incarceration time for non-violent offenses was often unclear from the criminal records and overall follow-up time was sufficiently long, no corrections were carried out for time not at risk due to possible temporary imprisonment for non-violent offenses. General violent recidivism rates (including sexual violence) were: 7% for one year, 17% for three year and 45% for long-term follow-up. Sexually violent recidivism rates were much lower: 2% for one year, 7% for three year and 19% for long-term follow-up. Given the low sexual violence recidivism rate for the one year follow-up, predictive validity analysis was not carried out for this outcome for the one year follow-up.

Results

Interrater reliability

The SAPROF showed good interrater reliability for the total score (ICC = .85) as well as for the Final Protection Judgment (ICC = .73). All individual factors had moderate to excellent interrater reliabilities with ICCs ranging from .57 (*Self-control*) to .91 (*External control*), all significant (p <.01). Good interrater reliability was also found for the HCR-20 total score (ICC = .86) and the SVR-20 total score (ICC = .85). For the integrated Violence Risk Judgment and the integrated Sexual Violence Risk Judgment interrater reliability was moderate (ICC = .62 and .55, respectively).

Table 2. Final Protection Judgment versus Final Risk Judgment and Final Sexual Risk Judgment (*N* = 83)

Protection|Risk	Final Risk Judgment			Final Sexual Risk Judgment		
	Low	Moderate	High	Low	Moderate	High
Low	0	7	20	1	8	18
Moderate	3	36	7	6	36	4
High	9	1	0	8	2	0

Note. Final protection and risk judgments were made according to the Structured Professional Judgment method.

Descriptive statistics and correlations

Table 1 shows the mean total and scale ratings for the HCR-20, the SVR-20 and the SAPROF. Table 2 shows the distribution of final judgments. The SAPROF total score demonstrated a strong negative correlation with the total score on the HCR-20 (r = -.83) and the SVR-20 (r = -.39), while the correlation between the total scores on the HCR-20 and the SVR-20 was positive (r = .63). Similarly, the Final Protection Judgment had a strong negative correlation with the Final Violence Risk Judgment and with the Final Sexual Violence Risk Judgment (r_S = -.72; and -.67, respectively), while both risk judgments were also strongly correlated (r_S = .88).

Table 3. Correlation Matrix for SAPROF, HCR-20, SVR-20 and (Sexually) Violent Recidivism at Different Follow-up Times (N = 83)

	Violent recidivism			Sexually violent recidivism	
	1 year	**3 year**	**long-term**	**3 year**	**long-term**
SAPROF total score	-.28**	-.36**	-.41**	-.25*	-.29**
HCR-20 total score	.37**	.41**	.31**	.15	.13
HCR-SAPROF index total	.34**	.40**	.38**	.21	.22*
SVR-20 total score	.26*	.35**	.16	.15	.11
SVR-SAPROF index total	.33**	.42**	.36**	.24*	.24*
Final Protection Judgment	-.29**	-.33**	-.32**	-.15	-.24*
Final Risk Judgment	.29**	.29**	.32**	.15	.24*
Final Sexual Risk Judgment	.25*	.24*	.33**	.18	.31**

Note. ** = $p < .01$, * = $p < .05$ (two-tailed).

Predictive validity

Table 3 shows the correlations between the risk assessment tools and violent as well as sexually violent outcome at the different follow-up times. Correlations between the total scores on the three tools and general violent outcome were significant for all follow-up times, except for the SVR-20 at long-term follow-up. The correlation between sexually violent outcome and SAPROF score was significant at both three year and long-term follow-up. However, no significant correlation was found between sexual violence and the total scores on the HCR-20 and the SVR-20. The correlation between violent recidivism and the HCR-SAPROF index, the SVR-SAPROF index and the final judgments, was significant for all follow-up times. The correlation between these measures and sexual violent recidivism was significant only for the long-term follow-up, except for the SVR-SAPROF index which was also significant for the 3

year follow-up. Partial correlation analysis showed that the correlation between the SAPROF and general violent outcome remained significant for long-term follow-up when controlled for the HCR-20 and the SVR-20 (r_{pb} = -.29, p < .01). The correlation between the SAPROF total score and sexually violent outcome was found to remain significant after controlling for the HCR-20 and SVR-20 total scores for 3 year (r_{pb} = -.26, p < .05) as well as long-term (r_{pb} = -.35, p < .01) follow-up.

Table 4. Area Under the Curve Values for SAPROF, HCR-20 and SVR-20 Ratings Upon Discharge for General Violent Recidivism and Sexually Violent Recidivism (N = 83)

	Violent recidivism						**Sexually violent recidivism**			
Follow-up period	**1 year**		**3 year**		**long-term (M=15 year)**		**3 year**		**long-term (M=15 year)**	
	AUC	**CI**	**AUC**	**CI**	**AUC**	**CI**	**AUC**	**CI**	**AUC**	**CI**
SAPROF total score	.83**	.72-.95	.77***	.64-.91	.74***	.63-.85	.76*	.49-1.00	.71**	.56-.86
HCR-20 total score	.91***	.82-.99	.81***	.66-.95	.67**	.55-.79	.65	.39-.92	.59	.44-.74
HCR-SAPROF index total	.89**	.81-.97	.80***	.66-.95	.72***	.61-.83	.71	.44-.97	.66*	.51-.81
SVR-20 total score	.78*	.63-.93	.77**	.64-.89	.60	.47-.72	.63	.41-.86	.58	.42-.74
SVR-SAPROF index total	.89**	.80-.97	.81***	.68-.94	.70**	.59-.81	.72	.46-.97	.65	.49-.82
Final Protection Judgment	.79*	.62-.95	.73**	.57-.88	.66*	.55-.78	.65	.38-.91	.65	.50-.81
Final Risk Judgment	.79*	.62-.95	.70*	.53-.87	.67**	.55-.79	.65	.39-.91	.66*	.51-.81
Final Sexual Risk Judgment	.75*	.56-.94	.67*	.50-.84	.67**	.55-.79	.68	.42-.94	.71*	.56-.85

Note. The values for the HCR-20/SVR-20 and Final Risk Judgments concern recidivism, the values for the SAPROF and the Final Protection Judgment concern non-recidivism; *** = $p \leq$ .001, ** = p < .01, * = p < .05 (two-tailed).

In Table 4 results are shown from the ROC-analyses for violent and sexually violent recidivism at the different follow-up periods, for the ratings on the risk assessment tools at discharge. Ratings on the SAPROF are related to non-recidivism in (sexual) violence, those on the HCR-20 and the SVR-20 to violent recidivism. Table 4 shows good predictive validities for the SAPROF protective factors total score for violent reconvictions with short- as well as long-term follow-up after discharge from treatment (AUC = .83 - .74). The items Coping, Self-control, Motivation for treatment and Attitudes towards authority were the best predicting factors for general violence, while the items Leisure Activities, Professional care and External control also showed significant predictive values.

The HCR-20 also predicted future violence well for the short-term, however, at long-term follow-up the SAPROF and the combined HCR-SAPROF index both showed significantly better predictive validity than the HCR-20 total score (χ^2 (1, N = 83) = 4.24, p < .05, and χ^2 (1, N = 83) = 6.96, p < .01, respectively). In general, the SVR-20 (not designed for the prediction of general violence) had lower predictive validity for general violence compared with the SAPROF and the HCR-20. However, this difference was only significant when compared to the SAPROF at long-term follow-up (χ^2 (1, N = 83) = 4.79, p < .05). The SVR-SAPROF index predicted future violence significantly better than the SVR-20 at 1 year as well as long-term follow-up (χ^2 (1, N = 83) = 4.15, p < .05 and χ^2 (1, N = 83) = 7.21, p < .01, respectively). The predictive validities of the final judgments were slightly lower than those of the total scores. However, this difference was only significant at three year follow-up both for the integrated Final Risk Judgment compared to the HCR-SAPROF index (χ^2 (1, N = 83) = 4.35, p < .05) and for the integrated Final Sexual Risk Judgment compared to the SVR-SAPROF index (χ^2 (1, N = 83) = 5.16, p < .05).

Table 4 shows the results from the ROC-analyses for sexually violent recidivism at three year and long-term follow-up. Since sexually violent recidivism rates were very low for the one year follow-up, this follow-up period was not included for the sexual recidivism analyses. The ROC analyses for sexual violence risk outcome showed good predictive validity for the SAPROF protective factors total score for reconvictions for sexual violence for 3 year as well as long-term follow-up after discharge from treatment (AUC = .76 - .71). The items Coping, Self-control, Motivation for treatment and Living circumstances were the best predicting factors for sexual violence. Work, Financial management and Attitudes towards authority were also good predictors of sexual violence, although not significant in this sample. Both the HCR-20 total score and the SVR-20 total score (specifically designed for the prediction of sexual violence) were unable to significantly predict future sexual violence at either follow-up time. The SAPROF predicted sexual violence significantly better that the HCR-20 at 3 year as well as long-term follow-up (χ^2 (1, N = 83) = 5.65, p < .05 and χ^2 (1, N = 83) = 9.78, p < .01, respectively).

The HCR-SAPROF index produced a significant predictive validity for sexual violence at long-term follow-up. At 3 year as well as long-term follow-up predictions with the HCR-SAPROF index were significantly better than for the HCR-20 total score (χ^2 (1, N = 83) = 5.20, p < .05 and χ^2 (1, N = 83) = 10.92, p < .01, respectively). Predictions with the SVR-SAPROF index were better than for the SVR-20, although this difference was not significant. The Final Protection Judgment was slightly less accurate in predicting future sexual violence than the SAPROF total score. However, this difference was also not significant. The integrated Final Risk Judgment and the integrated Final Sexual Risk Judgment predicted sexual violent recidivism equally good as their total score equivalents: the HCR-SAPROF index and the SVR-SAPROF index, respectively. Both final risk judgments were able to significantly predict future sexual violence at long-term follow-up. The Final Sexual Risk Judgment was able to predict sexual violence significantly better that the Final Violence Risk Judgment at both follow-up times (χ^2 (1, N = 83) = 6.42, p < .05; and χ^2 (1, N = 83) = 7.11, p < .01, respectively).

To further test the incremental predictive validity of the SAPROF over the risk tools for violent and sexually violent recidivism, hierarchical logistic regression analyses were carried out on each of the follow-up times. The HCR-20 and SVR-20 total scores were entered in Step 1 of the analyses and the SAPROF total score was added in Step 2. For the long-term follow-up, in addition, the follow-up time itself was added as a covariate in Step 1 in order to control for the influence of time-at-risk for each participants. Similar to the results from the ROC analyses for the Violent Recidivism outcome, for the long-term follow-up the Violent Recidivism prediction model improved significantly when the SAPROF was added, even after controlling for the influence of follow-up time ($\Delta\chi^2$ (1, N = 83) = 6.53, $p < .05$). However, addition of the SAPROF did not show significant improvement to the model for the 1 year and 3 year follow-up times. For Sexual Violent Recidivism adding the SAPROF improved the model significantly for both the 3 year follow-up ($\Delta\chi^2$ (1, N = 83) = 5.90, $p < .05$) and the long-term follow-up ($\Delta\chi^2$ (1, N = 83) = 10.18, $p < .01$), while controlling for time-at-risk again for the latter.

Finally, odds ratios were calculated for the final judgments. For Violent Recidivism odds ratios were higher for all three final judgments for the 1 year follow-up (Final Protection Judgment OR = 10.75; Final Violence Risk Judgment OR = 10.37; and Final Sexual Violence Risk Judgment OR = 5.68), then for the 3 year follow-up (OR = 4.74; OR = 3.45; OR = 2.79) and for the long-term follow-up (OR = 3.06; OR = 2.74; OR = 2.95). These values indicate that for example when a patient received a rating of 'moderate protection' in stead of 'low protection' (one category difference), his likelihood to become violent within the year after discharge was 10.75 times smaller. Odds rations for Sexual Violent Recidivism showed an opposite pattern: slightly lower values were observed for the 3 year follow-up (OR = 2.35; OR = 2.38; OR = 3.09) than for the long-term follow-up (OR = 2.70; OR = 2.73; OR = 3.79).

Discussion

Given the limited number of empirical studies on protective factors for sexual offending, this chapter aimed to provide insight in the potential value of protective factors for the assessment and treatment of sexual offenders and for reducing violent and sexually violent reoffending. The SAPROF is currently the only risk assessment tool that solely focuses on protective factors for violence risk, developed for use with adult violent as well as sexually violent offenders. This study investigated the applicability of the SAPROF protective factors for the risk assessment of patients with a history of sexual offending. The HCR-20 and the SVR-20 were also examined in order to reflect common risk assessment practice with the SAPROF alongside risk focused tools. The inclusion of the three tools made comparison possible between protection focused and risk focused factors for the assessment of general and sexual violence risk.

The interrater reliability was found to be good for all three tools, although the values were lower for the final judgments. Perhaps making final judgments retrospectively based on patient file information only, was more difficult than rating the items in the tools. Future retrospective file studies should consider more intensive training of raters regarding the

making of final judgments. Correlations between the tools showed significant concurrent validity. The protective factors in the SAPROF were negatively correlated to the risk factors in both the HCR-20 and the SVR-20. The overlap between the SAPROF and the SVR-20 was sufficiently small to conclude that these tools may add substantially to one another, which was expected given the predominantly static nature of the SVR-20 and the predominantly dynamic nature of the SAPROF. This result is in line with findings by Yoon and colleagues (2011). The strong negative correlation between the SAPROF and the HCR-20 suggests that there is a bigger overlap between the concepts within the HCR-20 and those in the SAPROF. Although skeptics might interpret this as both tools virtually measuring the reverse of the same constructs and may only view protective factors as clinically relevant, several other findings in this study may provide an argument for the individual empirical value of assessing protective factors. First, it was found that the correlation between the SAPROF and (sexually) violent outcome remained significant after controlling for the HCR-20 and the SVR-20, indicating that the SAPROF had an independent relationship with violent recidivism. Second, the predictive validity analyses for sexually violent recidivism revealed a significant result for the SAPROF, but not for the HCR-20 and the SVR-20. Finally, both the comparative analyses for AUC values and the regression analyses revealed incremental predictive validity of the SAPROF over the HCR-20 and the SVR-20. These findings suggest that the SAPROF contains sufficient independent value to be empirically complementary to the HCR-20. That being said, the main value of the SAPROF likely lies in the prospective guidance of positive treatment efforts for violent and sexual offenders, which was not studied in the present retrospective research design.

Predictive validity

For the short-term (1 year and 3 year) as well as for the long-term (average 15 year) follow-up, the predictive validity of the SAPROF total score was good for general violent reconvictions. This finding is in line with the results found for violent offenders (de Vries Robbé et al., 2011). The HCR-20 predicted violent outcome well for the short-term, but was a weaker predictor for violence at long-term follow-up. The SVR-20 showed significant results for the short-term prediction of general violence but not for long-term predictive validity. Overall final judgments predicted general violence slightly less accurate than the total scores on the tools. Differences between the HCR-SAPROF index and the Final Violence Risk Judgment and between the SVR-SAPROF index and the Final Sexual Violence Risk Judgment were found to be significant for the 1 year follow-up. Only the SAPROF showed to be able to provide good predictive validity specifically for sexually violent offenses. Neither the HCR-20 nor the SVR-20 total score was able to significantly predict future sexual violence. For the long-term follow-up the integrated Final Violence Risk Judgment and the integrated Final Sexual Violence Risk Judgment were significant predictors for sexual violence. The latter being the better predictor.

In general, the predictive validity findings for the SAPROF in this study are higher than what is internationally being demonstrated in terms of predictive accuracy of SPJ risk assessment tools. A meta-analysis of SPJ tool performance by Guy (2008) including 113 disseminations

reported an average AUC of .74 for violent and .59 for sexually violent behavior. Long-term predictive values were found to be lower than short-term ones in the present study. This was not surprising as in general it is harder to predict events further away in time than in the near future, especially given the fact that all tools in this study incorporate dynamic factors which may be sensitive to external influences and life events. The lower long-term follow-up predictive validity of the HCR-20 compared to the SAPROF was somewhat surprising given the fact that half the HCR-20 is comprised of historical static factors. Static factors could be expected to serve as better predictors for the long-term as dynamic risk- and protective factors might be more susceptible to change for the worse after treatment. However, the findings in this study suggest that positive treatment effects on dynamic factors may be more enduring than previously assumed. It may even be the case that not only the dynamic 'markers' (the dynamic risk- and protective factors) are affected by treatment but that the underlying static psychopathological traits also change for the better through intervention (e.g., enduring good self-control, coping and social integration may in fact have changed someone's general anxiety and/or hostility). More treatment focused research is needed to be able to draw conclusions regarding the effects of different treatment efforts on psychopathology, dynamic risk- and protective factors and ultimately violence risk.

The weak performance of the SVR-20 in this study for general violence was not surprising as the tool was developed for the prediction of sexual violence. In their meta-analysis on risk assessment tools for sexual offenders, Hanson and Morton-Bourgon (2009) also found that tools designed for sexual violence are less suitable for the prediction of general violence in sexual offenders compared to tools designed for general violence. However, the finding that the SVR-20 did not significantly predict sexual recidivism was unexpected given the good results that had previously been found with the SVR-20 in a similar sample of Dutch sexual offenders (de Vogel, de Ruiter, Hildebrand, Bos, & van de Ven, 2004). The different findings may be due to the fact that the sample use by de Vogel and colleagues had been discharges between 1974 and 1996 and had much higher recidivism base-rates.

Interestingly, combining the SAPROF protective factors with the HCR-20 in the HCR-SAPROF index and combining the SAPROF with the SVR-20 in the SVR-SAPROF index produced significantly better results for long-term general violent recidivism compared to predictions by both risk tools alone. For sexually violent recidivism the HCR-SAPROF index and the SVR-SAPROF index also produced significantly better predictions than the HCR-20 and the SVR-20 on their own, which was not surprising since the SAPROF was the only significant total score predictor for sexual violence. This demonstration of the incremental predictive validity of the SAPROF for general future violence as well as sexual future violence when used in addition to the HCR-20 and in addition to the SVR-20 is an important finding. It provides back-up for the assumption that the predictive accuracy of risk assessment can be significantly increased by adding protective factors to the violence risk equation.

Overall, in this study the best predicting protective factors for (sexually) violent recidivism were Coping, Self-control, Motivation for treatment and Attitudes towards authority. In addition, Work, Leisure activities, Financial management, Professional care, Living

circumstances and External control also showed good individual predictive values for either violent or sexually violent recidivism. These factors are in line with several of the proposed protective factor domains in Chapter 2. This chapter reviewed the limited available research specifically on protective factors related to desistance in adult sexual offenders and concluded with eight empirically supported potential domains of protection for sexual offending: *Healthy sexual interests*; *Capacity for emotional intimacy*; *Constructive social and professional support network*; *Goal directed living*; *Good problem solving*; *Engaged in employment or constructive leisure activities*; *Sobriety*; and *Hopeful, optimistic and motivated attitude to desistance*. The domain *Capacity for emotional intimacy* is related to the SAPROF item *Intimate relationship*. Although in this study this item did not reveal high overall predictive accuracy, likely due to the fact that stable intimate relationships were quite exceptional in this sample, the nature of this item seems to make it a promising protective factor for sexual offenders. The same goes for the final domain identified concerning *Healthy sexual interests*, which is not covered in the SAPROF items and has therefore not been included in this study. In future studies on protective factors for sexual offenders it would be valuable to include this potentially important domain of *Healthy sexual interests*. If indeed this domain shows a strong relationship with desistance from sexual violence, it may provide for a valuable additional protective factor to the SAPROF for sexual offenders.

Clinical use

It is common practice to use item and total tool scores when studying the psychometric properties of SPJ tools. Yet, the empirical evidence resulting from this actuarial approach of the tools may be difficult to translate to the SPJ use in clinical practice. In treatment the final judgments, composed based on the factors in the different risk assessment tools, are the most relevant outcome for guiding interventions and risk management strategies. The predictive validities for the final judgments that were shown in this study and the odds ratios presented aimed to provide some insight into the decreased or increased likelihood of reoffending when patients fall into different protection or risk categories, which may be helpful for the interpretation of the present results in SPJ guided practice.

Despite the apparent overlap with well established risk factors in some of the protective factor domains and the undisputable value of these risk factors in offender treatment, in our view the simple 'reversed' scores on risk factors are unable to replace the assessment of protective factors on the same domains, as the approach in risk focused tools is ultimately different. Offender desistance from violence is nourished by a positive approach to treatment and reintegration efforts (see also Ward & Laws, 2010). Focusing on the development of strengths through positive treatment guidelines provides for valuable intervention alternatives to the repression of risk factors. A greater focus on positive treatment goals could enhance offender as well as practitioner motivation, provide meaning to life for the offender and inspire non-criminal future planning, which in turn is likely to positively influence desistance from offending. Furthermore, stimulating the development of personal strengths can provide offenders with more personal resilience against relapse and greater emphasis on external and situational protective factors may be able to enhance risk management strategies.

Although traditional treatment efforts have focused primarily on risk factors, more recently clinicians have increasingly adopted strength based approaches. Protective factors need to become embedded in treatment efforts in order to become manifest over time and have a risk reducing effect. Ward and Stewart (2003) argued that the therapeutic focus in sexual offender treatment should be on implementing offenders' good lives plans rather than simply managing risks. By focusing on providing offenders with the necessary conditions (e.g., skills, values, opportunities, and social supports) for meeting their human needs in more adaptive ways, their assumption was that sexual offenders would be less likely to harm others or themselves. In their development of the *Good Lives Model-Comprehensive sexual offender treatment approach*, Ward and Gannon (2006) conclude that the primary goal is to help offenders to live better lives and thereby reduce their likelihood of committing further crimes. In addition, they comment on the crucial role that context or ecological variables have in the process of rehabilitation and on the importance of the development of offender skills and resources to be able to function successfully in their environment. They state that context and relationship variables play an essential role in effective sexual offender treatment and should be addressed accordingly. In order to be able to effectively use strengths-based interventions, it is our belief that positive treatment goals should be derived from the periodical assessment of empirically related protective factors. The promising findings in this study on the potential value of the SAPROF factors for guiding treatment interventions need to be consolidated. A recent study into the changeability of the dynamic protective factors during the treatment of violent and sexual offenders, showed that most of the factors in the SAPROF are indeed changeable during clinical intervention and that improvements on these factors during treatment are related to reduced recidivism after treatment (see Chapter 6). A further prospective validation study on the predictive validity of protective factors for inpatient aggression also provided good results for violent and sexual offenders alike (see Chapter 7). However, more prospective studies specifically on sexual offenders in different treatment settings are needed. The true potential value of dynamic protective factors for treatment atonement and risk management planning can only be assessed prospectively in clinical and community follow-up studies. Promising dynamic developments in dynamic violence risk assessment practice, such as the HCR-20^{V3} for general violence risk and the STABLE for sexual violence risk should be included in these studies in order to provide insight into the additional value each of these tools has for sexual offender risk assessment.

Limitations

Although the extensive follow-up time of this study makes long-term predictive validity analysis possible, the downside of this retrospective file study design is that dynamic factors are challenging to code on file information and that it was impossible to seek after missing data. Although patient files were generally extensive and sufficiently informative, information on the presence of the dynamic factors in the final stage of treatment was less detailed than the information would be in prospective studies. However, by carefully scanning the files beforehand and only including cases for which sufficient file information was available on the last year of treatment before discharge, it was attempted to overcome this limitation.

Another limitation from the retrospective design is that treatment changes over time. The fact that on average patients were discharged from treatment 15 years ago, means that the treatment that was received by the patients in this study does not reflect the state-of-the-art best practice sexual offender treatment of today. Not only the content of sexual offender treatment has changed, release decision making has also become stricter, resulting in longer treatment duration, less discharges and consequently also lower recidivism rates. Given the fact that the time span of the discharges in this study was about 20 years and participants originated from different hospitals, even within the study sample some noticeable variability was present in treatment efforts and discharge decisions, which is a limitation to the study. However, in our opinion ensuring a sufficiently large participant sample for this study outweighed these limitations.

A further limitation of this study is the low base-rate of registered sexually violent recidivism. It is possible that this low base-rate is influenced by a 'dark figure' of unreported or unprosecuted sexual offenses, although the long-term follow-up is likely to compensate for this to some degree. Nevertheless, a low sexual violence reconviction base-rate seems to point to a positive treatment result, which is of course desirable for society and for the offender. At the same time, low base-rates make validation research of risk assessment tools somewhat difficult. It would be expected that, given the professional development in sexual offender treatment and the increasingly strict decision making on community discharge, if the same study were to be repeated with currently discharged patients, sexual violence recidivism rates would even be lower and the validation of these tools more difficult. Hart (1998) argued that in fact if we do our job as professionals correctly by letting risk assessment guide decision making in clinical practice, it becomes increasingly challenging to validate tools as high-risk cases simply are not being discharged and thus little differentiation remains in the risk levels of discharged patients. Although ultimately it seems like we are doing our risk management job well when high-risk cases remain in treatment, the threshold for release decision making remains a difficult issue. Tolerance in society for potentially violent individuals has rapidly decreased, inspiring politicians to instate more repressive and punitive measures rather than solution-focused treatment and rehabilitation promoting initiatives. This also means more stringent decision making on community discharge and as a result a higher number of offenders that are subject to potentially unnecessary lengthy interventions. Besides the short-term negative and possibly unethical effects this has for the offenders, this development likely also leads to adverse long-term effects on successful offender rehabilitation and as a result high financial burden for society.

Concluding remarks

The findings from this chapter support the potential value of the inclusion of protective factors in sexual offender risk assessment and treatment. The evidence presented demonstrates an increase in risk assessment accuracy when the SAPROF is administered for patients with a history of sexual offending. From a risk assessment point of view this supports the emerging notion that protective factors should be more incorporated in risk assessment procedures for sexual offenders. From a treatment point of view this demonstrates the importance of attending to protective factors in clinical practice and the potential value that protective factors have for evaluating the treatment effectiveness of sexual offenders. The findings in this chapter are in line with those found in studies on protective factors for violent offenders (see Chapter 3). Future multi-phase prospective studies on protective factors will have to confirm their promising clinical value for different patient and offender populations.

5

Risk factors and protective factors: a two-sided dynamic approach to violence risk assessment

This chapter is a slightly revised version of:
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Chapter 5

Risk factors and protective factors: a two-sided dynamic approach to violence risk assessment

Abstract

The complementary use of risk- and protective factors has been one of the major advances in violence risk assessment in recent years. This chapter investigates the value of this two-sided approach. The HCR-20 and the SAPROF were coded retrospectively for a sample of 188 patients with a history of violent or sexual offending, discharged from forensic psychiatric treatment. No moderating effect was found for type of offending history. The combined evaluation of risk- and protective factors was found to have good predictive validity for violent recidivism after treatment. Especially the dynamic factors of both tools proved good predictors of (desistance from) violence at short- as well as long-term follow-up. Protective factors showed to provide incremental predictive validity over the use of risk factors alone. In addition, evidence was found for an interaction effect between risk- and protective factors. Implications of these findings for treatment planning and risk management are discussed.

Introduction

Violent behavior is often preceded by the presence of risk factors and the absence of protective factors. In the past two decades many good tools have been developed to assess violence risk from the perspective of risk factors for future violence (see Heilbrun, Yasuhara, & Shah, 2010). Dynamic risk assessment aims to inform decision making regarding intervention planning and to provide guidance to the treatment of forensic patients. Especially the third generation risk assessment tools following the Structured Professional Judgment (SPJ) approach, which generally include both historical and dynamic factors, have proven very useful for clinical treatment (see Guy, Packer, & Warnken, 2012). Empirical studies on factors influencing violence risk have traditionally focused on risk factors and much less on the value of protective factors (de Ruiter & Nicholls, 2011; Fougere & Daffern, 2011). Consequently, the positive influence of personal and situational strengths on desistance has received very little attention in violence risk assessment procedures. In addition, the role of environment factors

in the prediction of violence has often been underestimated (Steinert, 2002). Empowered by a strong demand from clinical practice for a more strengths-based approach and simultaneously a growing criticism from international research literature on the risk-only focus in violence risk assessment (see Rogers, 2000; Farrington, 2003; Miller, 2006), assessment tools were developed that include strengths or protective factors. The *Structured Assessment for Violence Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2006), a checklist for risk assessment in youth, includes six protective factors in addition to its risk factors. The *Short-Term Assessment of Risk and Treatability* (START; Webster, Martin, Brink, Nicholls, & Middleton, 2004), a clinical guideline for the assessment of short-term risks, contains items which are simultaneously coded as risk and strength. Finally, an assessment tool was developed specifically for the assessment of protective factors for violence risk in adults: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009, 2012).

The SAPROF was designed to complement risk focused SPJ risk assessment tools like the *Historical Clinical Risk management-20* (HCR-20; Webster, Douglas, Eaves, & Hart, 1997) with a specific assessment of protective factors, in order to provide for a more balanced and accurate assessment of violence risk. Consisting of mainly dynamic factors, the SAPROF aims to inform the treatment of adults with a history of violent or sexually violent offending by adding positive and changeable factors. The SAPROF was quickly adopted by clinicians around the globe and has now been translated into ten different languages including English, German, Swedish and Norwegian. Although clinicians seem to embrace the SAPROF's clinical utility and welcome the addition of a tool for the specific assessment of protective factors with open arms, international validation studies on the empirical relevance of the SAPROF protective factors and the value of the tool in addition to risk tools like the HCR-20 are still scarce. Preliminary findings in several international samples show good results for the clinical utility of the SAPROF and for its psychometric properties in terms of correlations with other measures, interrater reliability and predictive validity in different populations (e.g., Yoon, Spehr, & Briken, 2011).

Results with the SAPROF in studies involving Dutch forensic psychiatric patients revealed good interrater reliabilities and good predictive validities for desistance from violence for a sample of patients with a history of violent offending (Area Under the Curve value (AUC) = .85-.74 for one to three years follow-up; see Chapter 3) as well as for a sample of patients with a history of sexual offending (AUC = .83-.74 for one to 15 year follow-up; see Chapter 4). A review of potential protective domains for sexual offending revealed great overlap between protective factors relevant for desistance in violent and sexual offenders (see Chapter 2).

In this chapter the authors are especially interested in the empirical value of a combined assessment of risk and protective factors with the HCR-20 and the SAPROF and in the interaction between risk factors and protective factors in predicting (desistance from) violence over time. Ullrich and Coid (2011) stated that the interaction between risk- and protective factors has rarely been studied, but that it is crucial for judgments on violence risk to investigate how protective factors ameliorate risk of future violence at different levels of risk. In addition, in the present study a clear distinction is made between historical static factors

and dynamic factors changeable in treatment. As both the HCR-20 and the SAPROF intend to inform the treatment of patients with a history of (sexually) violent offending by providing guidance to clinical interventions, the focus lies especially on the value of the dynamic factors in both tools. This is in line with the international notion that violence risk prevention and management should be informed mostly by the assessment of clinically relevant, changeable factors (Dvoskin & Heilbrun, 2001) and that dynamic factors are the most valuable opportunities for targeting treatment interventions aiming to change violence risk (Douglas & Skeem, 2005).

Aims of the study

To empirically test the review finding that protective factors for violent offenders and sexual offenders are similar, this study aims to first of all investigate whether offense type has a moderating effect on the relationship between protective factors and desistance by combining the previously described patient samples with violent and sexually violent offending backgrounds. Secondly, possible interaction effects between risk and protective factors are investigated for this larger sample representative of the general patient population in forensic psychiatry. It was hypothesized that including both the protective factors and risk factors in the assessment process would have incremental predictive validity over the use of risk factors alone and that next to main effects of risk factors and protective factors on violent recidivism, there would be an interaction effect present between risk factors and protective factors in their relation with future violence.

Method

Participants

The present sample consisted of 188 male patients who had been admitted to a Dutch forensic psychiatric hospital and were discharged between 1984 and 2006. All patients in this study had committed either violent or sexually violent offenses for which they had been sentenced to a tbs-order ('terbeschikkingstelling') by criminal court. A tbs-order is a judicial measure that allows for the mandated treatment of seriously violent offenders who are not held fully responsible for their offenses due to severe psychopathology. Of the present sample, 105 patients had a history of general violent offending (without a history of sexual offending), while 83 patients had a history of sexually violent offending (sexually violent index offense, with possible previous convictions for general violence). The sample was predominantly Caucasian. Treatment typically started with intensive inpatient treatment according to the Cognitive Behavioral Therapy and Relapse Prevention approaches and gradually evolved into community reintegration. The average treatment length of the total sample was about 5.5 years (SD = 2.3, range = 1-16). Mean age at release was 32 years (SD = 7.3, range = 18-56). The majority of the patients suffered from Axis II personality disorders (66%) or traits (20%), particularly cluster B disorders. Only 15% of the patients suffered from a psychotic disorder

(e.g., schizophrenia). Comorbidity between personality disorders and psychotic disorders was high. Other disorders present included sexual disorders, substance abuse disorders, mood disorders and others. A history of substance use problems was present in 72% of the cases. At the end of treatment, 112 patients were discharged without any further court conditions, 70 were discharged under court conditions (generally mandating prolonged supervision by the probation service and/or outpatient treatment) and six were unlawfully absent.

Measures

HCR-20. The HCR-20 is internationally the most widely used SPJ tool for the structured assessment of violence risk. It contains 20 risk factors: 10 Historical factors and 10 dynamic factors (five Clinical factors and five Risk management factors). Factors are scored on a three-point scale (0-2), with higher scores reflecting the presence of a risk factor. A quantitative review of over 50 studies on the HCR-20 by Douglas and Reeves (2010) revealed good to excellent interrater reliabilities and moderate to large associations between the HCR-20 and violence (see also Douglas, Blanchard, Guy, Reeves, & Weir, 2010; Guy, 2008). Specific studies on the dynamic Clinical and Risk management factors demonstrated their changeability during treatment and the relationship between treatment changes and reduced violence (e.g., Michel et al., 2013). In The Netherlands good results were found for the HCR-20 in terms of interrater reliability and predictive validity both for violent incidents during treatment and for violent recidivism after treatment (de Vogel & de Ruiter, 2006; de Vogel, de Ruiter, Hildebrand, Bos, & van de Ven, 2004).

SAPROF. The SAPROF is a relatively new SPJ measure specifically aimed at assessing protective factors for violence risk. The tool is intended to be used in combination with an SPJ risk-focused tool, such as the HCR-20. The 17 protective factors in the SAPROF are rated on a three-point scale (0-2), with higher scores reflecting the presence of a protective factor for the assessed patient in his or her personal situation. Protective factors are described as: characteristics of a person, his or her environment or situation which reduce the risk of future violent behavior (see de Vogel et al., 2012, p. 23). Some protective factors may operate at the opposite end of well-known risk factor domains (e.g., *Self-control* versus *Impulsivity*; or *Coping* versus *Stress*), while other protective factors do not have corresponding risk factors other than their absence (e.g., *Medication*, *Leisure activities*, *Life goals*, *Intimate relationship* and *Professional care*). The SAPROF includes personal factors as well as situational or environmental protective factors, organized within three scales: Internal factors, Motivational factors and External factors. The first two (Internal) items are static; the other 15 items are dynamic and therefore changeable during treatment. In addition to rating the 17 protective factors a Final Protection Judgment on the level of available protection for relapse into violence (*low*, *moderate*, or *high*) is composed by interpreting and integrating the protective factors that are present. Next, the Final Protection Judgment is viewed together with the HCR-20 risk factors to arrive at an integrated Final Risk Judgment for future violent behavior.

Procedure

The HCR-20 and SAPROF were coded from patients' hospital files. Because of the dynamic nature of most SAPROF factors, files were selected based on the availability of sufficient information on the final phase of treatment (from 12 months prior to discharge). For all patients the *Psychopathy Checklist-Revised* (PCL-R; Hare, 2003) had previously been coded, either retrospectively or prospectively. In the present study, 9 trained raters coded the SAPROF and the HCR-20 retrospectively for all cases at the end of treatment based on the available file information. Training involved a one day workshop in both tools, followed by the coding of several practice cases. Interrater reliabilities were ICC = .74 for the HCR-20 total score and ICC = .79 for the SAPROF total score (N=24; single measure). Ratings were performed while raters were blind to recidivism outcome data. As this study focused on the joint predictive abilities of the risk factors in the HCR-20 and the protective factors in the SAPROF, in addition to the total scores on each tool and the final judgments on protection and risk, an overall total score of risk and protection was composed by subtracting the SAPROF total score from the HCR-20 total score. This resulted in a total risk score corrected for available protection: the HCR-SAPROF index. The rationale for measuring overall risk by means of the HCR-SAPROF index is conceptual in that this method resembles the reduction of risk through the presence of protective factors.

Statistical analyses

To test for a moderator effect of offense type (violent versus sexual) on the relationship between tool scores and re-offending, the interaction between offense type and total tool scores (both centralized) was entered in a logistic regression analyses for each tool, with new convictions for violent offending at different follow-up times as outcome. All subsequent analyses were carried out on the pooled sample of violent and sexual offenders. Pearson's correlation analysis was used to examine the correlation between the SAPROF and the HCR-20. Pearson point-biserial correlation analyses were used to examine the correlations of the total scores on both the SAPROF and the HCR-20 with violent recidivism at different follow-up times. To assess the predictive validity for violent recidivism, Receiver Operating Characteristics (ROC; Mossman, 1994; Rice & Harris, 1995, 2005) analyses were carried out with recidivism at different follow-up times as outcome measure for the HCR-20 and non-recidivism as outcome measure for the SAPROF. AUC values of .70 and above are considered moderate to large and values of .75 and above are considered large (Douglas et al., 2010). For the purpose of determining significant differences between AUC values, a comparative analysis was carried out using the ROCTools statistical software for the analysis of ROC curves (Allaire & Cismaru, 2007) that applies the DeLong, Delong and Clarke-Pearson (1988) method for comparing AUC values. To further explore the incremental predictive validity of adding the static and dynamic SAPROF factors to the assessment with the static and dynamic HCR-20 factors, hierarchical logistic regression analysis was used entering the total of the static and the total of the dynamic HCR-20 factors in Step 1 and subsequently the total of the static and the total of the dynamic SAPROF factors in Step 2. To test for an interaction effect between risk and

protective factors, in the final step of the regression analysis the interaction of HCR-20 total x SAPROF total was added to the model. Finally, comparative analyses were carried out on the Final Protection Judgments at different risk levels. By means of logistic regression (odds ratios) and independent samples t-tests for all risk levels and follow-up times the effect of moderate/high protection on desistance was compared to that of low protection.

Outcome

Criminal records were collected from the Judicial Documentation register of the Dutch Ministry of Justice. Recidivism was defined as any new conviction after discharge for a violent (sexual or non-sexual) offense according to the HCR-20 definition of violence: actual, attempted, or threatened violence (see Webster et al., 1997, p. 24). All patients in this study had a follow-up period in the community of at least 3 years after discharge. To be able to compare predictive validities at fixed follow-up times, official reconvictions within one and three years after release were used. In addition, comparisons were made with the maximum follow-up time available for each patient: on average the long-term follow-up was 11.1 years (M = 7.9 years for violent offenders, range 3-17; M = 15.1 years for sexual offenders, range 3-24). Respective violent recidivism rates were 8% for one year, 19% for three year and 30% for long-term follow-up for the violent offender sample. For the sexual offender sample this was 7%, 17% and 45%.

Results

Moderation Analysis

By means of multiple moderator analyses it was investigated whether offense type (history of violent offending versus history of sexual offending) had a moderating effect on the relationship between on the one hand the total scores on the HCR-20, the SAPROF and the HCR-SAPROF and on the other hand violent re-offending after treatment at different follow-up times. None of the nine logistic regression analyses (one for each of the three follow-up periods for each total score) revealed offense type as a significant moderator for the relationship between the total score and violent recidivism. This indicates that risk factors and protective factors as measured by the HCR-20 and the SAPROF operate in a similar way for both types of offenders and samples could be pooled together for further analysis.

Correlations

Analysis of the relationship between the post-treatment HCR-20 total score and SAPROF total score for the entire sample (N = 188) showed a high negative correlation between both instruments (r = -.76, p < .001). The analyses of the correlations between the total scores on the tools and recidivism revealed significant negative results for one year, three year and long-term follow-up for the SAPROF (r_{pb} = -.32, -.35, and -.39, respectively, all p < .001) and significant positive results for all three follow-up times for the HCR-20 (r_{pb} = .33, .32, and .26, respectively, all p < .001) and for the combined index of HCR-SAPROF (r_{pb} = .34, .35, and .34,

respectively, all $p < .001$). When controlling for the HCR-20 in a partial correlation analysis the correlation between the SAPROF and recidivism remained significant at both three year ($r_{pb} = -.18$, $p = .017$) and long-term ($r_{pb} = -.31$, $p < .001$) follow-up. On the other hand, when controlling for the SAPROF correlations between the HCR-20 and recidivism were no longer significant. Given the high negative correlation between the HCR-20 and the SAPROF we tested for collinearity between the risk factors and the protective factors, however the variance of inflation (VIF) did not identify multicollinearity (VIF = 2.34, while values above 3 generally point to multicollinearity).

Table 1. Area Under the Curve Values for SAPROF and HCR-20 Ratings upon Discharge

Follow-up period	1 year		3 year		long-term (M = 11 year)	
	AUC	CI	AUC	CI	AUC	CI
SAPROF total score	.85**	.74-.96	.75**	.65-.85	.73**	.66-.81
Historical factors	.58	.42-.74	.61	.50-.71	.62*	.54-.70
Dynamic factors	.86**	.77-.95	.75**	.65-.84	.72**	.65-.80
HCR-20 total score	.84**	.73-.95	.73**	.62-.84	.64**	.56-.73
Historical factors	.74*	.61-.87	.67*	.56-.77	.55	.47-.64
Dynamic factors	.84**	.75-.94	.72**	.61-.83	.67**	.59-.76
HCR-SAPROF index total	.87**	.76-.97	.76**	.65-.86	.70**	.62-.78

Note. The values for the HCR-20 and the HCR-SAPROF index concern violent recidivism, the values for the SAPROF concern non-recidivism; $N = 188$; ** = $p \leq .001$, * = $p < .01$ (two-tailed).

Predictive validity

Table 1 shows the results from the ROC-analyses for the three different follow-up periods for ratings on the tools at discharge. The SAPROF total score showed good predictive validity (AUC one year = .85; AUC three year = .75; AUC long-term = .73). The Dynamic protective factors were the strongest predictors of desistance from violence, even at long-term follow-up. The predictive validity of the HCR-20 total score for violent recidivism was almost equal to that of the SAPROF total score for one and three year follow-up (AUC = .84 and .73, respectively). However, the long-term predictive accuracy of the risk factors was not as strong as for the protective factors. The dynamic (Clinical and Risk management) risk factors predicted future violence better than the static (Historical) ones. The combined total score of the HCR-SAPROF index was the best predictor of violent reconvictions for one and three year follow-up (AUC = .87, .76, respectively). Comparative analyses on the AUC values showed that at long-term

follow-up the HCR-SAPROF index total score predicted violent recidivism significantly better than the HCR-20 total score alone (χ^2 (1, N = 188) = 13.4, p < .001), however at one year and three year follow-up these differences were not significant.

To further assess the incremental predictive validity of the SAPROF protective factors over the HCR-20 risk factors, and of the interaction between risk and protective factors over the independent total scores on both tools, hierarchical logistic regression analysis was carried out on each of the three follow-up times. As can be seen in Table 2 Step 1 provided a significant model with the HCR-20 dynamic factors as best predictor of violent recidivism for all three follow-up periods. By adding the SAPROF in Step 2 the model improved significantly for both the three year and the long-term follow-up: adding the protective factors provided incremental predictive utility over the risk factors alone. At three year follow-up the dynamic protective factors were the only significant predictor in the model, at long-term follow-up the static protective factors were also significant. Step 3 revealed a significant increase in the predictive capacity of the model at three year follow-up: the interaction between the HCR-20 and the SAPROF total scores contributed uniquely to the predictive validity and increased the predictive power of the model compared to the model that only incorporated the risk factors and protective factors independently. However, no significant increase in the model was found for the one year and long-term follow-up. This varying result together with the fact that the indices for the SAPROF dynamic factors in the model changed from positive to negative when the HCRxSAPROF interaction was added, was reason to believe there was possible multicollinearity between the HCRxSAPROF interaction and the SAPROF factors. When tested for this indeed a variance of inflation (VIF) of 3.06 was found (r = .82, p < .001), which points to slight multicollinearity and possibly unreliable results from the logistic regression analysis when the interaction was added in Step 3 (the VIF for the HCR-20 and the interaction of both tools was 1.11; r = -.31, p < .001).

Table 2. Logistic Regression Analyses Testing the Incremental Predictive Validity of the Interaction between Risk- and Protective Factors over Static and Dynamic Protective Factors, and Static and Dynamic Risk Factors

Model	1 year follow-up				3 year follow-up				long-term follow-up			
	β	Wald	Odds ratio	Model fit	β	Wald	Odds ratio	Model fit	β	Wald	Odds ratio	Model fit
Step 1				χ^2 (2) = 23.87***				χ^2 (2) = 19.88***				χ^2 (2) = 16.78***
HCR-20 static	0.15	1.19	1.16		0.13	2.58	1.14		-0.02	0.09	0.98	
HCR-20 dynamic	0.37**	9.97	1.44		0.17**	9.13	1.19		0.16***	13.55	1.18	
Step 2				χ^2 (4) = 26.79*** $\Delta\chi^2$ (2) = 2.92				χ^2 (4) = 26.79*** $\Delta\chi^2$ (2) = 6.91*				χ^2 (4) = 32.64*** $\Delta\chi^2$ (2) = 15.86***
HCR-20 static	0.15	1.13	1.16		0.12	1.93	1.13		-0.06	0.70	0.95	
HCR-20 dynamic	0.18	1.17	1.19		-0.01	0.01	0.99		-0.02	0.06	0.98	
SAPROF static	-0.03	0.01	0.97		0.23	0.99	1.25		0.42*	5.01	1.52	
SAPROF dynamic	0.20	2.58	1.22		0.17*	4.81	1.18		0.17**	7.82	1.18	
Step 3				χ^2 (5) = 27.78*** $\Delta\chi^2$ (1) = 0.99				χ^2 (5) = 33.01*** $\Delta\chi^2$ (1) = 7.08**				χ^2 (5) = 33.87*** $\Delta\chi^2$ (1) = 1.24
HCR-20 static	0.24	2.09	1.27		0.30**	6.96	1.35		0.02	0.03	1.02	
HCR-20 dynamic	0.30	2.14	1.36		0.18	2.10	1.20		0.06	0.32	1.06	
SAPROF static	-0.47	0.79	0.63		-0.23	0.65	0.79		0.27	1.31	1.30	
SAPROF dynamic	-0.17	0.24	0.84		-0.26	2.47	0.77		0.02	0.02	1.02	
HCR-20 x SAPROF	0.01	1.18	1.01		0.02**	7.48	1.02		0.01	1.27	1.01	

Note. The coding of the SAPROF was reversed in order to have higher scores reflect lower protection; χ^2 = Model fit; $\Delta\chi^2$ = Model improvement compared to previous Step; $N = 188$; *** = $p \leq .001$, ** = $p < .01$, * = $p < .05$.

Table 3. Final Protection Judgment versus Final Risk Judgment

Protection | Risk	Low	Moderate	High
Low	0	18	41
Moderate	15	81	13
High	16	4	0

Note. Final protection and risk judgments on the SAPROF and the HCR-20 were made according to the Structured Professional Judgment method; *N* = 188.

Final judgments

Table 3 shows the ratings on the Final Protection Judgment in relation to those on the Final Risk Judgment. Table 4 shows the recidivism rates for the different levels of protection and risk. In general, patients with the highest risk levels recidivated the most. Regardless of risk level, patients with at least a *moderate* level of protection were 10 times less likely to recidivate within the first year after discharge compared to those with *low* levels of protection. At three year follow-up the patients with *moderate* or *high protection* were about four / five times less likely to recidivate than the *low protection* group and at long-term follow-up two / four times less likely.

Table 4. Recidivism Rates in % at different Protection Levels for each Risk Group

	1 year				3 year				long-term (M = 11 year)			
Protection | Risk	**Low**	**Mod**	**High**	**All**	**Low**	**Mod**	**High**	**All**	**Low**	**Mod**	**High**	**All**
Low	-	11	24	20	-	28	44	39	-	39	66	58
Moderate	0	1	8	2	13	6	15	8	27	27	38	28
High	0	0	-	0	12	0	-	10	12	25	-	15
All	0	3	20	7	13	10	37	18	19	29	59	36

Note. Final protection and risk judgments on the SAPROF and the HCR-20 were made according to the Structured Professional Judgment method; - = no cases present with this combination of Final Risk Judgment and Final Protection Judgment; *N* = 188.

The value of a higher protection level appeared the greatest for the *moderate risk* and the *high risk* groups. In the *low risk* group there was nobody who also had *low protection* and the difference in recidivism rates between those with *moderate protection* and those with *high protection* was only apparent at long-term follow-up (twice as many recidivists in the *low protection* group). It can be observed in Figure 1A that within the *moderate risk* group for all three follow-up periods patients with *high* or *moderate protection* judgments recidivated less often then those with *low protection* judgments (OR = 10.53, 6.13 and 1.72). This difference between the *low protection* group and the joint *moderate / high protection* group is significant at one and three year follow-up (t (101) = 2.31, d > 0.46 , p = .023; t (101) = 2.94, d > 0.63, p = .004). Similarly, Figure 1B shows that within the *high risk* group for all three follow-up periods patients with *moderate protection* recidivated less often then those with *low protection* (OR = 3.88, 4.31 and 3.09), however these differences were not significant. Overall, especially within the *moderate risk* and the *high risk* group patients with higher levels of protection at discharge showed less violent recidivism.

Figure 1A. Survival Rates for the *Moderate Risk* Group divided by Final Protection Judgment Level for Different Follow-up Times (n = 103)

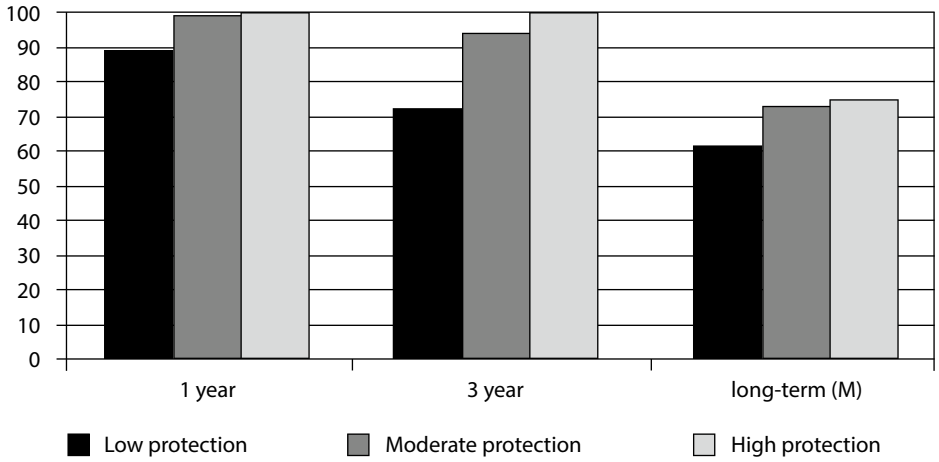
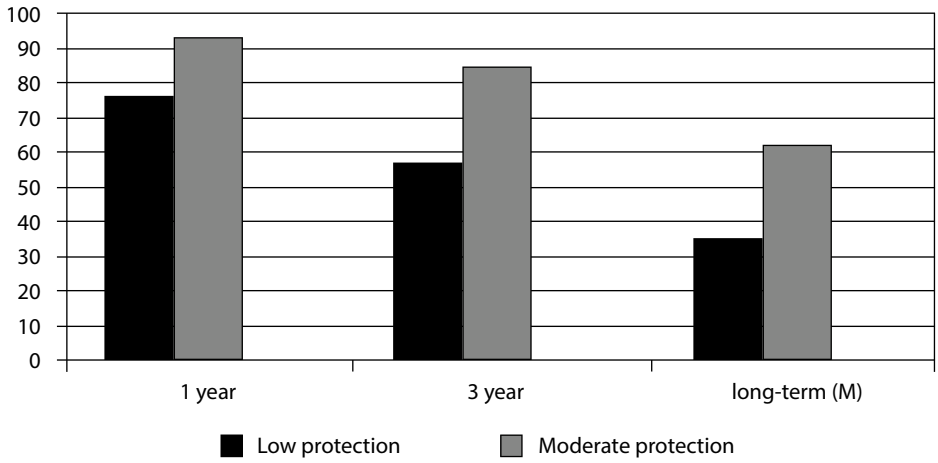


Figure 1B. Survival Rates for the *High Risk* Group divided by Final Protection Judgment Level for Different Follow-up Times (*n* = 54)



Discussion

Dynamics

This chapter presents an exploration of the combined use of the SAPROF and the HCR-20 in a mixed sample of violent and sexually violent forensic psychiatric offenders. No moderating effect of offending history was found for the relationship between the HCR-20 and SAPROF scores and violent re-offending. Results from the total sample demonstrate the ability of risk and protection levels to differentiate between those patients most likely to reoffend and those who stand a good chance to desist from violence. Good predictive validity was found for the protective factors in the SAPROF as well as for the risk factors in the HCR-20. Especially the dynamic factors of both tools proved to be good predictors of (desistance from) future violence, while the historical risk factors did not predict as well. This result is somewhat different from general findings on the predictive ability of historical and dynamic factors. In a review of different studies on the HCR-20 Douglas and Reeves (2010) found that median effect sizes for recidivism were slightly higher for the historical factors than for the dynamic factors. Since the HCR-20 and the SAPROF were developed especially to inform treatment interventions the good predictive validity of the dynamic factors in both tools is a meaningful finding for their potential value in forensic clinical practice. Improvements on these risk and protective factors during treatment could lead to changes in risk and protective factors and ultimately boost reductions in violence risk. However, this study did not evaluate changes in risk and protective factors between multiple time points during treatment and the effects these changes may have on violence reduction. Future studies will have to further investigate these risk and protective factors in a truly dynamic context (see Chapters 6 and 7).

Predictions over time

In addition to excellent predictive validities for short-term follow-up, this study also found moderate to large predictive validities for long-term follow-up. Interestingly, it was the dynamic factors more so than the historical factors of both tools that predicted well over time. This provides evidence that items defined as dynamic (i.e., those factors which are positively changeable during clinical intervention) predict subsequent recidivism even at a follow-up of up to 11 years. Several other studies also found good long-term predictive values for violent recidivism after discharge for the dynamic items in the HCR-20 (e.g., Douglas, Yeomans, & Boer, 2005; Pedersen, Rasmussen, & Elsass, 2010). Demonstrating the validity of the dynamic risk- and protective factors for the prediction of long-term violent outcome offers insights for clinical treatment, as this shows that factors which are changeable for the better can potentially have long-term positive effects on desistance.

Incremental predictive validity

One of the aims of this study was to investigate the incremental predictive validity of protective factors over the use of risk factors alone. Evidence for this incremental predictive validity was found from the comparative ROC analysis, which found better predictions for the combined HCR-SAPROF index than for the HCR-20, although this difference was only significant for long-term follow-up. These findings were corroborated by analyzing the data in a stepwise logistic regression. Although not significant for one year follow-up, for both three year and long-term follow-up statistically significant improvements to the model were found when the SAPROF was added. In addition, partial correlation analysis showed that for both three year and long-term follow-up the correlation between violent outcome and protective factors remained significant after controlling for risk scores. Ullrich and Coid (2011) also found that for released prisoners some protective factors were predictive of future violence even when controlling for risk level.

Interaction between risk and protective factors

In addition to incremental predictive validity of protective factors over risk factors for predicting desistance from violence, this study found indications for an interaction effect between both types of factors. Adding the interaction between risk and protective factors to the logistic regression analysis resulted in a significant increase in the model for the three year follow-up. However, mixed results were found for the different follow-ups and multicollinearity may have affected these findings.

A further analysis of the final judgments revealed clear effects of increased protection levels on reductions in violent outcome at all three follow-up times within the *moderate risk* and the *high risk* groups. The positive effect of protective factors was less strong for the *low risk* group. This indicates an interaction between protection and risk level and shows that protective factors are particularly important for moderate and high risk patients. It was quite surprising that the further differentiation of risk groups into protection level revealed such great differences in recidivism outcome given the fact that protective factors were already

taken into account when formulating the overall Final Risk Judgments. This leads to the contemplation that perhaps we do not take protective factors enough into account when forming our final risk judgments and that the positive side of the equation should possibly have a greater impact on our overall risk judgments, especially for moderate and high risk patients. Lodewijks, de Ruiter, and Doreleijers (2010) also looked at interaction effects in their study on the value of protective factors in the SAVRY for desistance in youth. In addition to incremental predictive validity of the protective factors over risk factors, they also found that the violence reducing effect of the protective factors was stronger for high risk groups than for low risk groups.

Generally clinicians and policy makers are most worried about the *moderate risk* and the *high risk* group of forensic psychiatric patients. Especially for these groups protective factors seem to play an important part in the likelihood of violent reoffending. As in this study (55%) the *moderate risk* group tends to be the largest group in forensic clinical practice (e.g., de Vogel & de Ruiter, 2006). At the same time clinicians are generally the least sure about this group in terms of risk management planning and release decision making. Violent recidivism rates are relatively low in the *moderate risk* group but still present. Douglas and Reeves (2010) reported an average recidivism rate of 12% over the *moderate risk* groups of 6 forensic samples. In comparison, decision making concerning the *high risk* group tends to be more clear-cut as this group often remains incarcerated. However, it has been argued that even among *high risk* groups the occurrence of false positives and unnecessary lengthy interventions is quite common (e.g., Fazel, Singh, Doll, & Grann, 2012). Both for the *moderate* and the *high risk* group introducing further refinement in the risk assessment by the addition of protective factors seems to be of great value in offering better guidance to clinical treatment and informing more accurate release decision making.

Limitations

The main shortcoming of this study is the retrospective design. All patients had left the hospital prior to the data collection in this study, therefore only written file information could be used. The big advantage of this design is that long-term official reconvictions for violence could be utilized as outcome measure. Although there is very likely a 'dark figure' of recidivism (violence which was not reported or which was not followed by charges and convictions; see Philipse, 2005) if only official reconvictions are included, the lengthy follow-up of this study is expected to have provided for sufficient time to detect seriously violent behavior. In this study only single post-treatment assessment data were included for each patient and the dynamic factors of both tools could only be analyzed in terms of their predictive ability. A further study on the changeability of the dynamic factors during treatment will focus more specifically on how treatment progress in dynamic risk and protective factors relates to reduced violent outcome after treatment (see Chapter 6). Future in depth prospective clinical studies will have to demonstrate the true potential value of the dynamic factors in the SAPROF and the HCR-20 for risk assessments at different stages during treatment and of the guidance this may offer for individualized clinical intervention. Another limitation was the fairly homogeneous sample of

male forensic psychiatric patients that was included in the present sample. The overall fairly high historical risk level may have influenced the predictive validity of the historical factors, although the significant predictive validity of these factors at one year follow-up suggests that the distribution was sufficient to also be able to find long-term effects. Future research should for example explore female samples, short-term treatment samples and patients with different types of offending backgrounds. Nine trained researchers worked on coding the files in the present study. Given the sample size this is a fairly high number of raters, which could be considered a limitation. However, good interrater reliability and good predictive validity were found, which strengthens the generalizability to clinical practice, in which the tools are generally used by many different raters. Finally, the multicollinearity that was observed in this study between the SAPROF and the HCRxSAPROF interaction may have affected the results of the interaction analyses. Research in other samples will have to address the interaction between the tools and test for multicollinearity again before conclusive statements can be made regarding interaction effects.

Recommendations and concluding remarks

Further studies into the additional value of protective factors for the assessment of future violence risk will have to consolidate the findings in this chapter. The clinical applicability and predictive validity of the SAPROF factors will have to be tested in various international forensic and non-forensic patient and offender samples. Especially clinical studies on the value of protective factors for treatment practice are encouraged. Ideally, prospective studies are carried out following a multi-phase community follow-up design to evaluate the true potential of more elaborate dynamic risk assessment including both risk and protective factors. In addition, the inclusion of the recently developed revision of the HCR-20, the *Historical Clinical Risk management-20 (Version 3)* (HCR-20^{V3}; Douglas, Hart, Webster, & Belfrage, 2013) is recommended as this tool aims to increase the dynamic ability and clinical applicability of risk assessment.

This chapter provides evidence for the good predictive validity of dynamic risk and protective factors over time and for the incremental predictive validity of protective factors in assessing (desistance from) violence risk. These results are promising for the clinical utility of dynamic risk- and protective factors for violence, providing new opportunities for risk-reducing interventions in psychiatric treatment.

6

Changes in dynamic risk and protective factors for violence during inpatient forensic psychiatric treatment: predicting reductions in post-discharge community recidivism

This chapter is a slightly revised version of:
de Vries Robbé, M., de Vogel, V., Douglas, K.S., & Nijman, H.L.I. (2014). Changes in dynamic risk and protective factors for violence during inpatient forensic psychiatric treatment: Predicting reductions in post-discharge community recidivism. *Manuscript accepted for publication in Law and Human Behavior.*

Chapter 6

Changes in dynamic risk and protective factors for violence during inpatient forensic psychiatric treatment: predicting reductions in post-discharge community recidivism

Abstract

Empirical studies have rarely investigated the association between improvements on dynamic risk and protective factors for violence during forensic psychiatric treatment and reduced recidivism after discharge. This chapter aimed to evaluate the effects of treatment progress in risk and protective factors on violent recidivism. For a sample of 108 discharged forensic psychiatric patients pre- and post-treatment assessments of risk- (HCR-20) and protective factors (SAPROF) were compared. Changes were related to violent recidivism at different follow-up times after discharge. Improvements on risk and protective factors during treatment showed good predictive validity for abstention from violence for short- (1 year) as well as long-term (11 years) follow-up. This chapter demonstrates the sensitivity of the HCR-20 and the SAPROF to change and shows improvements on dynamic risk and protective factors are associated with lower violent recidivism long after treatment.

Introduction

Improvements on dynamic risk and protective factors during clinical intervention are assumed to be valuable indicators for treatment progress in forensic psychiatric patients. As such, the routine evaluation of dynamic risk factors in structured violence risk assessment has provided (forensic) psychiatric treatment with a valuable monitoring tool for treatment progress in terms of violence risk reduction. Moreover, in clinical practice changeable factors provide good opportunities for violence prevention as they may inform treatment interventions and risk management strategies (Douglas & Skeem, 2005; Dvoskin & Heilbrun, 2001). Over the past two decades multiple structured violence risk assessment tools have been developed that contain dynamic factors, such as the *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2006), the *Short-Term Assessment of Risk and Treatability* (START; Webster, Martin, Brink, Nicholls, & Middleton, 2004) and the *Historical Clinical Risk mangement-20*

(HCR-20; Webster, Douglas, Eaves, & Hart, 1997). Many of these tools have demonstrated good predictive validity for violent behavior in clinical practice (see for example Chu, Thomas, Ogloff, & Daffern, 2013; Wilson, Desmarais, Nicholls, Hart, & Brink, 2013).

According to a recent survey by Singh (2013) of 2,135 clinicians from 44 countries, the HCR-20 is the most widely used and studied dynamic *Structured Professional Judgment* (SPJ) risk assessment tool for the structured assessment of violence risk in clinical practice. Studies on the dynamic factors of the HCR-20 have shown good predictive validities for violence at short- as well as long-term follow-up and have demonstrated their usefulness for treatment guidance and evaluation of violence risk (see Douglas, Blanchard, Guy, Reeves, & Weir, 2010; Guy, Packer, & Warnken, 2012; O'Shea, Mitchell, Picchioni, & Dickens, 2013). However, few studies have investigated the relationship between *changes* in dynamic risk factors and treatment progress or reductions in violence risk. Several studies demonstrated a correspondence between lower dynamic risk scores and lower security levels (Müller-Isberner, Webster, & Gretenkord, 2007; Tengström et al., 2006) and concluded that the *Clinical* and *Risk management* scales were a seemingly useful measure to gauge progress in forensic psychiatric in-patient treatment. Other studies demonstrated the changeability of the dynamic factors during treatment (Olsson, Strand, Kristiansen, Sjöling, & Asplund, 2013) and found associations between changes in *Clinical* and *Risk management* scores and short-term aggression (Douglas, Strand, & Belfrage, 2011; Michel et al., 2013).

While the value of dynamic risk factors for assessment and treatment guidance has been acknowledged by many scholars, little research has focused on the value of assessing changeable protective factors and few violence risk assessment tools incorporate notions of protection (de Ruiter & Nicholls, 2011; Ullrich & Coid, 2011). To complement risk focused dynamic assessment tools, a new dynamic SPJ tool was developed specifically for the assessment of protective factors: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009, 2012). This tool is intended to be used in conjunction with a risk-focused assessment tool such as the HCR-20 and includes individual protective factors as well as environmental support factors. Through evaluating dynamic protective factors in addition to risk factors the SAPROF provides balance to risk assessment and may offer guidance for treatment interventions aimed at improving personal, environmental and situational strengths.

The SAPROF is increasingly widely used in international clinical practice, however, the tool is still relatively new and the predictive value of its protective factors need to be investigated further in different patient and offender samples to confirm their generalizability. Initial studies have shown good predictive validities of the SAPROF factors for desistance from violence for short- to medium-term follow-up (1 year AUC = .85; 3 year AUC = .75) as well as for long-term follow-up (11 year AUC = .73) after discharge from clinical treatment for forensic psychiatric patients (de Vries Robbé, de Vogel, & de Spa, 2011; de Vries Robbé, de Vogel, & Stam, 2012). In addition, evidence was found for its predictive validity for not committing inpatient violence (AUC = .85) and self-harm (AUC = .77) during treatment (Abidin et al., 2013), and for predicting discharge (AUC = .81) from forensic psychiatric treatment (Davoren et al., 2013). Equally

good predictive validity results were found for patients with a history of violent offending as for patients with a history of sexual offending (de Vries Robbé, de Vogel, & Douglas, 2013). Moreover, when the SAPROF was added to assessments with the HCR-20 incremental predictive validity was found for recidivism in violent offending after treatment. This finding suggests that the SAPROF items are not merely inversely formulated risk factors but provide unique protection that counterbalances risks and promotes desistance from violent behavior.

Despite the good results for dynamic risk and protective factors in terms of predicting violent outcome and for the changeability of the risk- and protective factors in the HCR-20 and the SAPROF, little direct evidence has been reported that changes in risk and protective factors during treatment are indeed connected to lower recidivism rates in the long run after treatment. This chapter investigated the usefulness of the joint assessment of the HCR-20 and the SAPROF for measuring changes in dynamic risk and protective factors during treatment. The aim was to evaluate the predictive validity of treatment progress as measured by the tools (i.e., reductions in risk factors and improvements in protective factors) for treatment success. Treatment success was defined as no new convictions for violent offenses at short- as well as long-term follow-up after discharge from forensic psychiatric treatment. It was expected that participants who showed greater improvement in their risk and protective factor scores during treatment would show lower rates of violent recidivism after treatment. More specifically, it was hypothesized that dynamic risk factors and protective factors would change over time during treatment and that improvements on risk factors and protective factors would be negatively related to violent recidivism after treatment. As far as we are aware this is the first study that looks at changes in the HCR-20 dynamic risk factors and in the SAPROF protective factors during treatment and actual reductions in violent offending at different follow-up times after discharge in the community.

Method

Setting

This study was predominantly carried out at the Van der Hoeven Kliniek in Utrecht (83% of the sample), a forensic psychiatric hospital in The Netherlands. For a small part (17% of the sample) data collection took place at another Dutch forensic psychiatric hospital, the Van Mesdag Kliniek in Groningen. Treatment had a holistic approach and mainly employed cognitive behavioral interventions and a relapse prevention program. Both hospitals treat patients convicted of violent or sexually violent offending for which the court found them not fully responsible due to their psychopathology. Often in addition to a period of detention, these patients who are initially considered to be at high risk are sentenced to mandatory in-patient treatment ('terbeschikkingstelling'). The main goal of this treatment is to reduce violence risk. The court-order is in effect for as long as deemed necessary by the court, with the aim to rehabilitate patients safely back into society. The necessity of prolonged treatment is re-evaluated every 1 to 2 years by means of a thorough evaluation of treatment progress and risk of violence.

Participants

108 male patients were included in the study, 44 had a history of general violent offending and 64 of sexually violent offending. The average treatment length at the hospital was 5.65 years (*SD* = 2.26, range = 1-15) and average follow-up after discharge was 11.28 years (*SD* = 6.05, range = 3-24). Mean age at release was 33.20 (*SD* = 7.17, range = 21-56). Most of the participants were diagnosed with personality disorders (66%) or traits (19%), particularly cluster B, while about 15% of the participants had been diagnosed with a psychotic disorder (e.g., schizophrenia). Comorbidity with a history of substance abuse was present for 68% of the individuals.

Measures

HCR-20. The HCR-20 contains 20 risk factors: 10 *Historical* factors, five dynamic *Clinical* factors and five dynamic *Risk management* factors. The dynamic factors aim to provide risk evaluations sensitive to personal and situational changes. Items are scored on a three-point scale (0-2), with higher scores reflecting the presence of a risk factor. Very recently the HCR-20 has been revised into the HCR-20 Version 3 (HCR-20^{V3}; Douglas, Hart, Webster, & Belfrage, 2013). The revision of the HCR-20 offers additional possibilities for assessing changes during clinical treatment. This study still used the HCR-20 Version 2.

SAPROF. The SAPROF contains 17 protective factors organized within three scales: *Internal* factors, *Motivational* factors and *External* factors. Besides the first two factors, all other factors are dynamic and thus potentially changeable during treatment. The factors are rated on a three-point scale (0-2), with higher scores indicating a protective factor is present for the person in his or her assessed situation. After rating all protective factors, the most important factors for the individual can be highlighted as either *Key* (providing a lot of protection) or *Goal* (offering promising potential for interventions), which can be helpful in the formulation of the overall final judgments. The marking of *Keys* and *Goals* is not specifically evaluated in this study.

In addition to rating the presence of the 17 SAPROF protective factors and the 20 HCR-20 risk factors, a *Final Protection Judgment* and a *Final Risk Judgment* are composed by integrating and combining the protective factors and risk factors that are present for the assessed situation. For the purpose of this study total scores were composed for the HCR-20, the SAPROF and their subscales. In addition, a total risk minus total protection score was calculated: the HCR-SAPROF index. This index, the risk score corrected for available protection, is an experimental measure that is seen by the authors as the best way to account for the presence of both risk and protective factors, which evaluators can then take into account in forming their final summary risk ratings. The calculation of total scores is done for measurement in research, in clinical practice the composed final judgments are the main assessment outcome. This chapter primarily focuses on changes in risk- and protective factors and thus on the scores on both tools. In addition, an analysis on the final judgments is also included.

Procedure

The tools were coded retrospectively from patient files, which consisted of biographical information, psychological and psychiatric assessment reports, court reports on treatment progress and case notes on treatment plans and treatment evaluations. Nine trained psychologists coded the SAPROF and the HCR-20 based on the available file information. Training involved a one day workshop in both tools, followed by the coding of several practice cases which were discussed during consensus meetings. Interrater reliability of the HCR-20 and the SAPROF was examined for 19 post-treatment assessments by means of reliability analysis using the intraclass correlation coefficient (ICC) with two-way random effect variance model and consistency type, single measure (McGraw & Wong, 1996). Interrater reliabilities were ICC = .75 for the HCR-20 total score (Historical scale ICC = .84, Clinical scale ICC = .62, Risk management scale ICC = .55) and ICC = .75 for the SAPROF total score (Internal scale ICC = .44, Motivational scale ICC = .84, External scale ICC = .73). Ratings of the HCR-20 and the SAPROF were performed at two time points: at the start of treatment (pre-treatment ratings) and at the end of treatment (post-treatment ratings). Pre-treatment ratings were performed based on available case history file information including personality- and psychiatric assessment reports and treatment notes from the first treatment phase up to 12 months after admission. Pre-treatment assessments were done while raters were blind to any subsequent treatment notes and outcomes and were carried out for a hypothetical situation of discharge without further treatment. Post-treatment ratings were carried out subsequently, based on all available case information at discharge from treatment, including treatment progress reports and treatment evaluations. Pre- and post-treatment ratings were carried out by the same rater. No previous clinical HCR-20 or SAPROF assessments were available and all raters were blind to violent recidivism outcome data.

Statistical analyses

For the purpose of measuring change during treatment, pre- and post-treatment (sub)scale total scores on the HCR-20 and the SAPROF were compared by means of paired samples *t*-tests. For all comparisons the Cohen's *d* effect size for the change over time was calculated by subtracting the pre-treatment total score from the post-treatment total score and subsequently dividing by the mean of both SD's. Critical values for Cohen's *d* are: $d \geq .80$ = large; $.50 \leq d < .80$ = moderate (Cohen, 1988). To compare the improvements in risk- and protective factor scores during treatment between long-term *Recidivists* and *Non-recidivists* independent samples *t*-tests were utilized. Again effect sizes were calculated by means of Cohen's *d*. Bonferroni corrections were applied for the number of comparisons in the analyses. Stepwise binary logistic regression analyses were carried out to study the incremental predictive validity of the post-treatment assessment scores over the pre-treatment assessment scores on both the HCR-20 and the SAPROF for the different follow-up times. To control for time at risk, cox regression analyses were also utilized for the long-term follow-up. In addition, stepwise binary logistic regression analyses were carried out for the pre- and post-treatment final protection and risk judgments.

To explore the predictive value for violent recidivism of changes on the tools during treatment and control for age and base-line risk level (HCR-20 pre-treatment Historical scale scores, including psychopathy level) further stepwise binary logistic regression analyses were carried out. To control for the possible effects of variations in long-term follow-up time the length of the follow-up was added as a covariate for the long-term analyses. Odds ratio effect sizes demonstrated the strength of the relationship between changes on the total scores of both tools and violent recidivism. To further assess the predictive validity of treatment progress for violent recidivism after treatment, Receiver Operating Characteristics (ROC; Mossman, 1994; Rice & Harris, 2005) analyses were carried out with violent recidivism as outcome for the HCR-20 change scores and non-recidivism in violence as outcome for the SAPROF change scores. AUC values between .70 and .75 are generally considered moderate to large, while values of .75 and above are viewed as large (Douglas et al., 2010).

Table 1. Descriptive Statistics Pre-treatment, Post-treatment and *Change* Scores (*N* = 108)

Assessment tool	*M*			*SD*			Range		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
HCR-20 total	28.16	23.46	-4.71*	5.00	6.11	4.18	16/39	12/37	-15/6
Historical	13.22	13.59	+0.36*	3.11	2.95	1.07	6/19	7/19	-3/4
Clinical	6.00	3.86	-2.14*	1.75	2.27	2.23	1/10	0/8	-8/3
Risk management	8.92	6.06	-2.86*	1.31	2.41	2.28	4/10	2/10	-8/2
SAPROF total	5.56	13.51	+7.95*	3.05	6.07	5.29	0/14	1/27	-4/21
Internal	2.12	3.81	+1.69*	1.31	1.78	1.28	0/6	0/7	0/5
Motivational	2.32	6.07	+3.75*	2.00	3.82	3.60	0/8	0/13	-5/13
External	1.12	3.67	+2.55*	1.00	1.68	1.61	0/4	1/9	-1/6
HCR-SAPROF index	22.61	9.95	-12.66*	7.50	11.40	8.91	2/37	-14/36	-34/10

Note. Paired samples t-test: * = $p \leq .001$.

Outcome

Violent recidivism after treatment was defined as any *new conviction* after discharge for a violent (sexual or non-sexual) offense; that is *actual, attempted or threatened violence* (Webster et al., 1997). Outcome data were retrieved from criminal records collected from the Judicial Documentation register of the Dutch Ministry of Justice. This study defined all reconvictions for violence committed during a follow-up of 12 months after discharge from treatment as *short-term* recidivism. Criminal records showed that six out of the 108 discharged patients (6%)

were reconvicted for a violent offense committed within 1 year after discharge and 33 patients (31%) were convicted during the maximum average follow-up period of 11 years. Comparison was made between participants who violently recidivated after treatment and participants who managed to abstain from committing new violent offenses.

Results

Table 1 shows the mean total and subscale scores on the HCR-20 and the SAPROF for the sample. The average HCR-20 total score at pre-treatment was 28.16, while at post-treatment this was 23.46. The mean SAPROF total score was 5.56 at the start of treatment and 13.51 at discharge. Together this resulted in an average combined violence risk score of the HCR-20 total minus the SAPROF total (HCR-SAPROF index) of 22.61 at the beginning of treatment and 9.95 at the end of treatment. To be able to analyze the effects of changes in dynamic risk- and protective factor scores during treatment on recidivism rates after treatment, *Change* scores were calculated for all scales by subtracting pre-treatment scores from post-treatment scores (see Table 1).

Changeability of dynamic factors

Comparison of the pre- and post-treatment scores (see Table 1) by way of paired samples *t*-tests showed a significant decrease during treatment in the total HCR-20 scores (t (107) = -11.70, d = 0.84, $p < .001$) and in both dynamic subscale total scores: *Clinical* factors (t (107) = -9.95, d = 1.06, $p < .001$) and *Risk Management* factors (t (107) = -13.06, d = 1.54, $p < .001$). A slight increase in the *Historical* factors total score was observed (t (107) = 3.54, d = 0.12, p = .001). In addition, paired samples *t*-tests on pre- and post-treatment SAPROF scores showed a significant increase in SAPROF total scores over time (t (107) = 15.63, d = 1.74, $p < .001$) and in all three SAPROF subscale total scores: *Internal* factors (t (107) = 13.72, d = 1.09, $p < .001$), *Motivational* factors (t (119) = 10.84, d = 1.29, $p < .001$) and *External* factors (t (107) = 16.45, d = 1.89, $p < .001$).

Next, we separated the sample by outcome: those participants who did not recidivate with a violent offense throughout the entire follow-up time (the *Non-recidivists* group, n = 75) compared to those participants who did get reconvicted for a new violent offense after treatment (the *Recidivists* group, n = 33). Table 2 shows the pre-treatment, post-treatment and *Change* scores for the HCR-20 and the SAPROF for the *Non-recidivists* group and the *Recidivists* group. At pre-treatment base level risk- and protective factors scores did not differ significantly between the two groups. However, at discharge future recidivists had higher scores on both dynamic HCR-20 subscales and lower scores on all three SAPROF subscales compared to those participants who turned out to be long-term desisters. After Bonferroni correction, these differences were significant for the Clinical risk scale and for the Internal and Motivational protection scale, as well as for the total SAPROF and HCR-SAPROF index post-treatment scores.

Table 2. Comparison between *Non-recidivists* (*n* = 75) and *Recidivists* (*n* = 33) for Pre-treatment Ratings, Post-treatment Ratings and *Change* Scores on the HCR-20 and the SAPROF

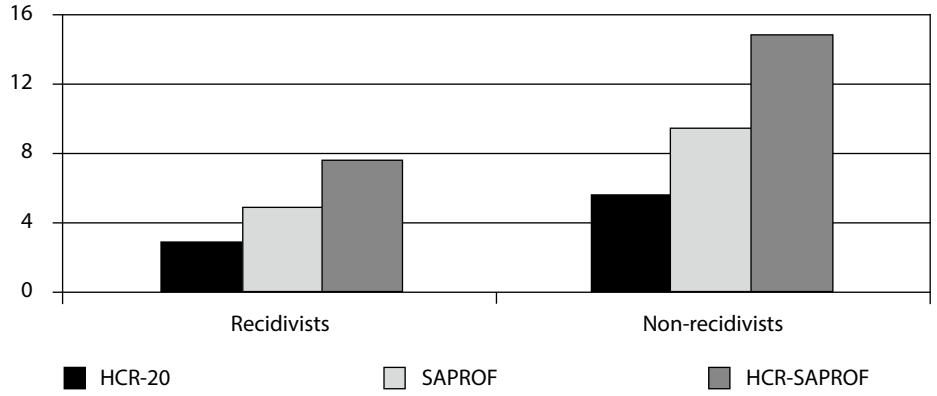
Assessment tool		Pre	Post	Change
HCR-20 total	*Non-recidivists*	27.95	22.45**	-5.49**
	Recidivists	28.66	25.74**	-2.92**
Historical	*Non-recidivists*	13.09	13.45	+0.36
	Recidivists	13.52	13.89	+0.37
Clinical	*Non-recidivists*	5.99	3.41***	-2.58**
	Recidivists	6.01	4.88***	-1.13**
Risk management	*Non-recidivists*	8.84	5.65**	-3.19*
	Recidivists	9.09	6.97**	-2.12*
SAPROF total	*Non-recidivists*	5.77	15.12***	+9.35***
	Recidivists	5.08	9.85***	+4.78***
Internal	*Non-recidivists*	2.27	4.23***	+1.96***
	Recidivists	1.76	2.85***	+1.09***
Motivational	*Non-recidivists*	2.34	7.05***	+4.71***
	Recidivists	2.28	3.86***	+1.58***
External	*Non-recidivists*	1.15	3.91*	+2.76*
	Recidivists	1.06	3.12*	+2.06*
HCR-SAPROF index	*Non-recidivists*	22.18	7.34***	-14.84***
	Recidivists	23.58	15.88***	-7.70***

Note. Difference scores between *Non-recidivists* and *Recidivists*: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

By means of independent samples *t*-tests, comparisons were made between *Non-recidivists* and *Recidivists* in terms of changes during treatment on the HCR-20 and the SAPROF (sub) scales. The SAPROF total score showed to have improved significantly more during treatment for the *Non-recidivists* group (*M Change* = 9.35, *SD* = 4.98, range = -2.13 – 21.00) than for the *Recidivists* group (*M Change* = 4.78, *SD* = 4.61, range = -4.25 – 14.88), t (106) = 4.49, d = 0.95, $p < .001$. This effect was largely due to improvement on the dynamic *Internal* and *Motivational*

items. While SAPROF scores showed to increase more during treatment for *Non-Recidivists*, at the same time HCR-20 scores showed to decrease more for the *Non-recidivists* (*M Change* = -5.49, *SD* = 3.97, range = 2.00 – -15.00) than for the *Recidivists* (*M Change* = -2.92, *SD* = 4.15, range = 6.00 – -12.00), *t* (106) = -3.06, *d* = 0.63, *p* = .003, although this difference was not significant after Bonferroni correction. Accordingly, the combined total score of both tools (the HCR-SAPROF index) also was reduced significantly greater during treatment for the *Non-recidivists* (*M Change* = -14.84, *SD* = 8.29, range = 1.91 – -34.00) than for the *Recidivists* in a violent offense (*M Change* = -7.70, *SD* = 8.35, range = 10.25 – -26.88), *t* (106) = -4.11, *d* = 0.85, *p* < .001. The changes in HCR-20 and SAPROF scores during treatment for *Non-recidivists* and *Recidivists* are shown in Figure 1.

Figure 1. Absolute *Change* Scores between Pre- and Post-treatment Ratings on the HCR-20, SAPROF and HCR-SAPROF index for Long-term *Recidivists* versus *Non-recidivists*



Post-treatment scores versus pre-treatment scores

To test the incremental predictive validity of post-treatment scores over pre-treatment scores, stepwise binary logistic regression analyses were carried out. For the risk factors analysis, the pre-treatment HCR-20 total score was entered in Step 1, while the post-treatment HCR-20 total score was entered in Step 2. For the 1 year follow-up HCR-20 post-treatment score did not significantly increase the violence prediction model, however for the long-term follow-up a significant increase in prediction was observed ($\Delta\chi^2$ (1) = 9.84, *p* = .002). For the protective factors, the SAPROF pre-treatment total score was entered in Step 1 and subsequently the post-treatment SAPROF total score was entered in Step 2. The addition of the SAPROF post-treatment score in Step 2 significantly increased the prediction model for both 1 year ($\Delta\chi^2$ (1) = 5.59, *p* = .018) and long-term follow-up ($\Delta\chi^2$ (1) = 18.64, *p* < .001).

In order to control for time at risk for the long-term follow-up, cox regression analysis (survival analysis) was also utilized as an alternative approach to the long-term predictive validity analysis. Again, for the risk factors pre-treatment HCR-20 scores were entered in Step 1, while post-treatment assessment scores were added in Step 2. Results revealed a significant increase in the long-term violence prediction model when the post-treatment assessment scores were added ($\Delta\chi^2$ (1) = 7.12, p = .008), similar to the findings observed in the logistic regression analysis uncontrolled for time at risk. For the protective factors analysis, first pre-treatment SAPROF total scores were entered in Step 1, then post-treatment SAPROF total scores were added in Step 2. Again results were similar to those found in the logistic regression uncontrolled for time at risk: the long-term prediction model significantly improved when post-treatment scores were added ($\Delta\chi^2$ (1) = 13.77, p < .001).

This study mainly focused on the changes in risk and protective factor scores during treatment. However, as both the SAPROF and the HCR-20 are SPJ tools and thus the overall conclusions from risk assessments with these tools are reflected in the final protection- and final risk judgments, it was deemed informative to carry out an additional analysis on the changes in final protection judgments and final risk judgments observed between pre- and post-treatment ratings. The stepwise binary logistic regression analysis carried out for the final protection judgments revealed similar results as those found for the total SAPROF scores: a significant increase to the prediction model from the post-treatment final protection judgments compared to the pre-treatment ones at both 1 year follow-up ($\Delta\chi^2$ (1) = 3.92, p = .048) and long-term follow-up ($\Delta\chi^2$ (1) = 8.63, p = .003). The same was true for the final risk judgments: post-treatment final risk judgments significantly increased the prediction model at both 1 year follow-up ($\Delta\chi^2$ (1) = 11.02, p = .001) and long-term follow-up ($\Delta\chi^2$ (1) = 9.94, p = .002). Odds ratios for the final risk judgments at discharge were 11.38 and 3.08, respectively, indicating that on average patients with final judgments that were rated one risk category higher than other patients (moderate versus low, or high versus moderate) were 11 times more likely to recidivate violently within one year after treatment and three times more likely to recidivate in a violent offense in the long run.

Predictive validity of change scores

To be able to better interpret the results of further analyses on the predictive validity of the change scores (post-treatment scores minus pre-treatment scores) for reductions in violent outcome, first stepwise binary logistic regression analyses were carried out for the change scores controlling for the influence of base-line risk level and age. The pre-treatment HCR-20 Historical scale total score and age at release were entered as covariates in Step 1 of the analyses and HCR-20 *Change* or SAPROF *Change* scores were added in Step 2 of the analyses. For the long-term follow-up, in addition, the follow-up time itself was added as a covariate in Step 1. This was done in order to also control for the influence of how much follow-up time had been available for the participants in the different groups. As was also observed in the pre-/post-treatment regression analyses, HCR-20 *Change* scores were not significantly predictive of violent recidivism at 1 year follow-up (even when the covariates were not

controlled for), but were significantly predictive for long-term follow-up, also after controlling for the covariates (OR = 1.15). This indicates that for example the mean observed reduction on the HCR-20 over the course of treatment of 5 points (as shown in Table 1) means a $1.15^5 = 2.01$ times lower likelihood of violent recidivism in the long-term after treatment. SAPROF *Change* score predictions were significant for 1 year follow-up as well as for long-term follow-up, even after controlling for all covariates (OR = 1.26; 1.16, respectively). These findings indicate that for the 1 year follow-up an increase of 5 points on the SAPROF would lead to a $1.26^5 = 3.18$ times reduced likelihood of recidivism within 1 year after treatment, while an increase of the average observed change in protection of 8 points (as shown in Table 1) indicates a $1.26^8 = 6.35$ times reduced likelihood. Similarly, the results for the long-term follow-up indicate that an increase of 5 points on the SAPROF makes someone $1.16^5 = 2.10$ times less likely to violently recidivate within the average follow-up time of 11 years, while an increase of 8 points on the SAPROF would mean a $1.16^8 = 3.28$ times reduced likelihood of violent recidivism in the long run.

Table 3 shows the results from the ROC-analyses for *Change* scores between pre- and post-treatment ratings on the different measures for 1 year follow-up after treatment as well as for long-term follow-up (average 11 years). As Table 1 shows, *Change* scores on the HCR-20 reflect a decrease in risk scores during treatment, while *Change* scores on the SAPROF reflect an increase in protective factors during treatment. The amplified protective factors taken together with the diminished risk factors makes for the total treatment progress (the HCR-SAPROF *Change* index). Table 3 shows how the treatment *Change* scores are related to desistance. SAPROF *Change* scores showed good predictive validity for non-recidivism in violence, with large AUC values for both 1 year and long-term follow-up (AUC = .78; .75, respectively). All SAPROF *Change* subscales showed significant predictive validity for desistance from violence. The progress on the *Motivational factors* appeared to be the strongest predicting SAPROF *Change* subscale (AUC = .79; .76, respectively).

The predictive validity of the HCR-20 *Change* scores was not significant for short-term follow-up, but moderately significant for long-term follow-up (AUC = .63; .68, respectively). Table 3 shows that the *Clinical* factors scale was the strongest predicting HCR-20 *Change* subscale (AUC = .67; .70, respectively). Overall, the combined total *Change* score of the HCR-SAPROF index was a strong predictor of no reconvictions of violence (AUC = .75; .74, respectively).

Table 3. Area Under the Curve Values for HCR-20 and SAPROF (Sub)scale *Change* Scores between the Start and the End of Treatment (*N* = 108)

Assessment tool	1 year	CI	Long-term	CI
HCR-20 total *Change*	.63	.45-.81	.68**	.57-.79
Historical factors *Change*	.39	.12-.66	.52	.40-.64
Clinical factors *Change*	.67	.51-.84	.70***	.59-.81
Risk management factors *Change*	.69	.52-.87	.65*	.53-.76
SAPROF total *Change*	.78*	.64-.92	.75***	.65-.86
Internal factors *Change*	.75*	.59-.90	.69***	.58-.80
Motivational factors *Change*	.79*	.62-.95	.76***	.65-.86
External factors *Change*	.60	.41-.79	.63*	.52-.74
HCR-SAPROF index *Change*	.75*	.61-.89	.74***	.63-.84

Note. Numbers reflect treatment improvement scores (decrease in risk factors and increase in protective factors) related to non-recidivism in violence; CI = Confidence interval; * = $p < .05$, ** = $p \leq .01$, *** = $p \leq .001$ (two-tailed).

Discussion

Treatment progress and treatment success

The relationship between *changes* in risk assessment scores and reductions in violence risk during treatment has rarely been studied, let alone the relationship between changes in risk and protection and violent recidivism after discharge from forensic institutions. This chapter demonstrated the changeability of the dynamic factors in the HCR-20 and the SAPROF during treatment and their usefulness for measuring development in forensic patients related to reduced violent recidivism. When assessment scores for future recidivists were compared to those for non-recidivists, no significant differences were found between the two groups at the beginning of treatment. However, non-recidivists seemingly improved more during treatment: they developed substantially more protective factors and showed a greater decrease in dynamic risk factors. At the end of treatment, protective factor total scores were significantly greater for the non-recidivists and dynamic risk factor total scores significantly lower, indicating that the patients who changed the most while in treatment (i.e., those who showed the greatest improvements in risk and protective factors) were the most resilient to violent offending.

Predictive validity analyses demonstrated that indeed post-treatment risk and protection scores added significant incremental predictive validity to pre-treatment risk and protection scores. For the long-term follow-up, these effects were present regardless of time at risk. The same results were found for the incremental predictive validity of the post-treatment final protection judgment and final risk judgment over the pre-treatment final judgments. If the overall judgment of the level of risk went down during treatment, so did the likelihood of violent recidivism. Similarly, treatment *change* scores on the dynamic protective factors and the dynamic risk factors was a significant predictor of future violence: the more improvement during treatment was assessed, the less recidivism after treatment was observed.

The positive effect of treatment change on desistance was present for short-term follow-up (1 year) as well as for long-term follow-up (average 11 years). Thus, those who changed the most during treatment still showed significantly lower violent recidivism rates long after treatment had ended. Theoretically, one could debate the usefulness of dynamic indicators for predicting longer-term desistance from violence, as the changeable nature of these factors also makes them susceptible to influences for the worse after treatment. However, the findings in this chapter exemplify that treatment changes can have fairly stable long-term positive effects on abstention from violence. For the change scores on the HCR-20, long-term predictions were even slightly better than short-term ones. This result was surprising given that short-term predictions generally are easier to make and risk assessments often provide more accurate predictive validity for short-term follow-up. A previous study on the predictive validity of the post-treatment assessment scores on the HCR-20 and the SAPROF in a similar sample to the present study showed stronger predictive validities for short-term predictions than for long-term ones (see Chapter 5).

The finding that change scores have relatively stable predictive validities across follow-up times suggests that, at least for this specific subgroup of patients, improvements in risk and protection levels during forensic psychiatric treatment of offenders at high risk of violent recidivism may have long-term effects in making society safer. Due to individual cases of recidivism getting much attention in the media, the general public opinion on the usefulness of treatment of offenders at high risk has become quite sceptical. The positive results on the changeability of risk- and protective factors for violent offending observed in this study may therefore present a valuable finding in support of the potential effectiveness of forensic psychiatric treatment. Although these findings are promising, they need to be replicated in other samples before solid conclusions can be drawn.

The changeability during treatment of the dynamic HCR-20 risk factors that was observed in this study is in line with results from a recent study by Olsson and colleagues (2013) on reductions in violence risk scores during treatment. They found that repeated assessments for forensic psychiatric patients demonstrated a significant decrease in most HCR-20 dynamic risk factors during treatment, regardless of many psychopathological and demographical characteristics of the patients. The results in the present study on the predictive validity of changes in risk scores were similar to those demonstrated in a recent study by Michel and colleagues (2013) among civil and forensic psychiatric patients with schizophrenia living

in the community. They found a significant relationship between short-term collateral- or self-reported aggressive behavior and changes on many of the dynamic *Clinical* and *Risk management* items. In the present study it was especially the positive changes during treatment on the HCR-20 *Clinical* scale (e.g., *Unresponsive to treatment*) and improvements on the SAPROF dynamic *Internal* scale (e.g., *Coping*) and *Motivational* scale (e.g., *Attitudes towards authority*) that were good predictors of desistance from violent behavior after treatment.

Limitations

The main limitation of this study lies in the retrospective design. Although this design made it possible to link treatment progress to long-term treatment outcome, it also means that data collection was done based on patient files rather than daily clinical observation. Especially the *Internal* SAPROF items have shown to be more difficult to code from file than from daily interaction in clinical practice. Nevertheless, since extensive file information was available, including descriptions from clinical observations, it was possible to code all dynamic items. A further limitation lies in the outcome measure of new convictions for violence. Although official reconvictions are the most objective outcome measure available, it is likely that not all interpersonal violence is detected and prosecuted and eventually leads to new convictions. Therefore, it is probable that the violent outcome data in this study were an underrepresentation of the actual violence recidivism. The low recidivism base-rate observed for the 1 year follow-up increases the risk of spurious findings. However, since the short-term findings are consistent with the long-term findings and with findings in the general literature, the low recidivism base-rate is not expected to have affected the findings to a major extent. Referring to the 1 year follow-up timeframe as short-term is somewhat arbitrary. Some researchers have described a one month follow-up as short-term (e.g., Chu et al., 2011), others used 6 months as short-term (e.g., Grevatt, Thomas-Peter, & Hughes, 2004), others again have referred to a follow-up time of 12 months as short-term, similar to the present study (e.g., Ullrich & Coid, 2011).

Another limitation of this study could be the methodology employed to observe changes between pre- and post-treatment assessments. As the same raters carried out the assessments at both time-points, for the post-treatment assessments raters were not blind to what had happened during the previous years in treatment. This poses the risk of a confirmation bias, that is, more positive post-treatment ratings when patients seemingly did well in treatment. Similarly, change scores are at danger of reflecting regression to the mean (bias caused by poorly informed pre-treatment and better informed post-treatment, resulting in apparent 'change') rather than reflecting actual change in risk and protection during treatment. The heavy reliance on change scores in this study would be worrisome if the change scores would be used as the outcome measure, without relating this to actual recidivism. However, if the reported changes between pre- and post-treatment assessments would be significantly enlarged by the confirmation bias or regression to the mean, the positive findings on the predictive validity of the changes for (no) violent recidivism after treatment would most likely not have been observed. As the change scores in this study demonstrated to be strongly

related to desistance from violent recidivism, they are likely to reflect actual changes, rather than artifactual change. If anything, the possible bias resulting from this methodology likely weakened the findings rather than amplified them. An alternative to get around the confirmation bias problem would be coding the files with two different raters, one doing the pre-treatment assessment and one doing the post-treatment assessment. However, this would pose another possible bias: the fact that observed difference may be due to discrepancies between raters rather than to actual changes in risk and protective factors during treatment for the assessed individual.

A further limitation concerns the generalizability of the findings in this study to other international patient and offender samples. This study investigated the changes in risk assessment scores for a high risk sample of predominantly personality disordered patients who were treated in a long-term forensic inpatient program. In terms of psychopathology, in many other countries, like for example the United States, a large part of this sample (high prevalence of personality disorders and substance abuse versus relatively low prevalence of psychotic disorders) would likely have ended up in the prison system rather than in a forensic psychiatric hospital (see de Ruiter & Trestman, 2007). Whether similar changes as demonstrated in the present study would be observed in other patient and offenders samples in different treatment settings, remains to be evaluated in future studies. Previous studies on the predictive validity of assessments with the HCR-20 and the SAPROF in different samples found similar results for Dutch forensic psychiatric patients as for other international patient and offender populations regarding the HCR-20 (e.g., de Vogel, 2005; Douglas et al., 2010; Douglas & Reeves, 2010) and the SAPROF (e.g., de Vries Robbé et al., 2013; Abidin et al., 2013). However, replication studies in other samples and settings are highly recommended, especially with regards to the SAPROF and with regards to a further exploration of the relationship between changes during treatment and desistance from violence.

Lastly, although this study demonstrates the usefulness of the HCR-20 and the SAPROF as evaluation tools of relevant changes in patient and environmental factors, it does not provide insight into what treatment efforts have generated these changes. A causal relationship between treatment efforts and improvements on risk and protective factors can not be concluded from this study. Moreover, whether the investigated tools would themselves be able to serve as effective guidelines for treatment and thus manage to influence change could not be demonstrated in this study.

Recommendations and concluding remarks

The findings in this chapter suggest that the HCR-20 dynamic risk factors and the SAPROF protective factors could be useful to measure meaningful change in risk and protection and potentially provide for attainable treatment targets in clinical practice. This implies the HCR-20 and the SAPROF could be useful in guiding effective violence reduction efforts. The eye-opening notion that positive changeable factors may be able to play an important part in reducing recidivism risk may usher a great change in treatment focus. Whether treatment atonement guided by the HCR-20 and SAPROF factors does indeed lead to more successful

interventions and less violent outcome, remains to be seen. The true treatment and risk management guidance potential of the SPJ use of the HCR-20 and the SAPROF can only be evaluated in prospective clinical studies. Studies on the effectiveness of using the dynamic HCR-20 and SAPROF factors for the guidance of clinical interventions in different (forensic) psychiatric populations are highly recommended. Several currently ongoing prospective clinical studies on the value of the HCR-20 and the SAPROF for daily practice aim to provide more insight into the usefulness of these tools in treatment. Further studies would ideally employ a multi-phase prospective community follow-up design with control groups to be able to link treatment efforts to improvements in risk assessment and violence risk outcome. It is encouraged to include the revised HCR-20^{V3} (Douglas et al., 2013) in these studies as this revision aims to increase the dynamic ability and clinical applicability of the HCR-20.

This chapter aimed to investigate the relationship between progress on risk and protective factors and successful community reintegration. The dynamic factors in the HCR-20 and in the SAPROF demonstrated to be changeable during treatment and improvements on these factors showed to be predictive of desistance from future violence at long-term follow-up after treatment. This connection between dynamic factor changes and treatment success is promising for the value of dynamic risk assessment tools for evaluating treatment progress, predicting successful treatment outcome and guiding treatment interventions in psychiatric practice. Furthermore, these findings are supportive of the apparent effectiveness of forensic psychiatric treatment in reducing the likelihood of violent reoffending in a high-risk offender population. Future studies will have to investigate the true potential of the dynamic risk and protective factors for the actual atonement of treatment.

7

Risk and protective factors for inpatient aggression

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Chapter 7

Risk and protective factors for inpatient aggression

Abstract

Dynamic risk and protective factors for violence risk serve to assess the violence risk level of (forensic) patients and offer guidance to clinical interventions. This chapter addresses the differences in HCR-20 and SAPROF scores between forensic psychiatric treatment stages and the predictive validity of the tools for inpatient violence in different groups of patients. For 399 multi-disciplinary coded risk assessments on 185 forensic psychiatric patients, comparisons were made between assessment scores at different treatment stages and aggressive incidents during treatment. For later stages of treatment less risk factors and more protective factors were observed and predictive validities were higher. The HCR-20 and the SAPROF scores both showed good overall predictive validity for violent incidents. The combination of risk and protective factors was a good predictor of inpatient aggression for patients with violent offending histories as well as for patients with sexual offending histories, and for patients with major mental illnesses as well as for those with personality disorders. Particularly strong results were found for male patients. For female patients and patients with high psychopathy scores results were somewhat less convincing. This chapter demonstrates the differences in risk and protective factor scores between treatment stages and the predictive value of the HCR-20 and the SAPROF for violent incidents across different groups of patients. Clinical practice could benefit from these findings by aiming interventions at improving dynamic risk and protective factors and by routinely evaluating treatment progress with these tools.

Introduction

Violence risk assessment has emerged as an increasingly valuable specialty to assist clinicians in forecasting the likelihood of violence, understanding its causes and preventing its (re) occurrence (Skeem & Monahan, 2011). Thorough assessment of risk and protective factors for violence is vital for risk appraisal and violence prevention in clinical practice. Well established Structured Professional Judgment (SPJ) tools generally incorporate dynamic factors, aiming to enable risk evaluations that are sensitive to personal and situational changes. The inclusion of

changeable or dynamic factors empirically related to violence risk brings forth a valuable use of risk assessment: the guidance of clinical interventions. Dynamic factors provide opportunities for violence prevention as they may inform treatment plans and risk management strategies intended to diminish violence risk (de Ruiter & Nicholls, 2011; Douglas & Skeem, 2005). After determining which important dynamic risk and protective factors are present, mental health care professionals can employ or target these specific factors in treatment. Periodic re-assessment can provide insight into changes in risk and protection. To improve the short- to medium term prediction of aggression within forensic inpatient settings it is viable to use risk assessment measures that are sensitive to important clinical changes (Chu, Thomas, Ogloff, & Daffern, 2013). Thus, dynamic risk assessment serves three main purposes: 1) assessment of current risk level; 2) provision of guidance to treatment interventions; and 3) evaluation of treatment progress.

The dynamic *Clinical* and *Risk management* factors of the *Historical Clinical Risk management-20* (HCR-20 Version 2; Webster, Douglas, Eaves, & Hart, 1997) have been demonstrated to be useful in clinical practice for the assessment of violence risk and guidance of treatment for many different samples of patients (see Guy, Packer, Warnken, 2012; Douglas, Blanchard, Guy, Reeves, & Weir, 2010). Several studies have shown the changeability of the dynamic *Clinical* and *Risk Management* factors during treatment, the relationship between changing risk assessment scores and treatment progress (Müller-Isberner, Webster, & Gretenkord, 2007; Tengström et al, 2006) and the positive effect of changes in risk factors on reduced violent behavior (Douglas, Strand, & Belfrage, 2011; Michel et al., 2013).

A relatively understudied aspect of risk assessment is that of protective factors for violence risk (de Ruiter & Nicholls, 2011; Fougere & Daffern, 2011). It has been argued that protective factors offer balance in risk evaluations and are essential for risk assessment and treatment guidance (Miller, 2006; Rogers, 2000). Studies on risk assessment in adolescent samples have reported good results for the clinical utility and predictive validity of protective factors for violence prevention (Lodewijks, de Ruiter, & Doreleijers, 2010; Lösel & Farrington, 2012; Rennie & Dolan, 2010). Studies on strength factors in adult samples have found good predictive value for inpatient aggression (Wilson, Desmarais, Nicholls, & Brink, 2010; Desmarais, Nicholls, Wilson, & Brink, 2012) and for violent recidivism in discharged prisoners (Ullrich & Coid, 2011).

Given the focus on risk factors in the HCR-20, recently an additional tool was developed which specifically assesses protective factors for violence risk in adults: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009, 2012). The protective factors in the SAPROF are predominantly dynamic and have shown to be good predictors of inpatient violence and self-harm (Abidin et al., 2013), discharge from psychiatric treatment (Davoren et al., 2013) and violent recidivism after treatment (de Vries Robbé, de Vogel, & de Spa, 2011). Moreover, the combined use of the HCR-20 risk factors and SAPROF protective factors has demonstrated incremental predictive validity over risk factors alone (de Vries Robbé, de Vogel, & Douglas, 2013) and improvements in SAPROF scores have shown to be related to reduced violent behavior (see Chapter 6).

Present study

Further prospective clinical validation aims to investigate the relationship between the combined risks-strengths assessment and treatment phasing, and to study the predictive validity for aggressive incidents in clinical practice across different groups of patients. More insight in these topics is vital for evaluating the usefulness of the HCR-20 in combination with the SAPROF for guiding treatment initiatives and risk management decision making. To our knowledge comparison of the predictive validity of dynamic risk and protective factor scores at different stages of treatment and for different types of patients within the same inpatient psychiatric setting has not yet been reported on. The aim of this study was twofold. First, the aim was to assess the differences in dynamic risk and protective factor scores between different stages in forensic psychiatric treatment. It was expected that as patients progressed through the various stages of treatment, dynamic risk and protective factors would improve accordingly. That is, risk factors would be lower and protective factors would be higher for later stages of treatment. The second aim was to assess the predictive validity of the HCR-20 and the SAPROF for aggressive incidents during clinical treatment, differentiating between different treatment stages and different groups of patients. It was hypothesized that the HCR-20 and the SAPROF would be related to violence during all stages of treatment and that this relationship would be present for different groups of patients.

Method

Setting

The study was carried out at the Van der Hoeven Kliniek in Utrecht, a forensic psychiatric hospital in The Netherlands. This hospital treats patients convicted of violent or sexually violent offending, for which the court found them not fully responsible due to their psychopathology. Generally, patients are admitted after a period of imprisonment. Patients are considered at high risk of reoffending and are therefore sentenced to mandatory inpatient treatment ('terbeschikkingstelling - tbs'). The main goal of treatment is to reduce violence risk. The Van der Hoeven Kliniek follows a cognitive behavioral and relapse prevention model through an eclectic approach based on personal and social responsibility. Among the many aspects of treatment are psychiatric support, individual psychotherapy, group-based interventions, (psycho-)education, social network involvement, work skills development, and engagement in structured leisure activities. All activities aim to assist with a safe and successful reintegration into society. Treatment consists of four main stages: 1) Intramural treatment without leaves; 2) Intramural treatment with supervised leaves to the community; 3) Intramural treatment with unsupervised leaves to the community; and 4) Transmural treatment – living in private or hospital housing in the community while supervised by a hospital community treatment team. The court-order is in effect for as long as deemed necessary by the court, with the aim to rehabilitate patients safely back into society. The necessity of prolonged treatment is periodically being re-evaluated by the hospital by means of a thorough evaluation of

treatment progress and risk of violence, which is communicated to the court. The current average treatment length at the hospital from admission to discharge is about 7 years.

Participants

This study included 399 assessments of 185 forensic psychiatric patients. The majority of the sample was male (79%). Mean age at assessment was 41 (*SD* = 9.71, range = 21-73). Of the 185 patients 70% had a history of general (non-sexual) violent offending, while 30% had a history of (predominantly) sexually violent offending. Most of the patients (89%) were diagnosed (score of 2 on HCR-20 item H9) with at least one personality disorder (particularly cluster B), while 53% of the patients were diagnosed (score of 2 on HCR-20 item H6) with a major mental illness (primarily psychotic disorders, such as schizophrenia). Of the patients diagnosed with a major mental illness 81% were also diagnosed with at least one personality disorder (score of 2 on HCR-20 items H6 and H9). Comorbidity with a history of serious problems with substance use was present in 69% of the cases. A high score on psychopathy (*Psychopathy Checklist-Revised* (PCL-R; Hare, 2003) score ≥ 30) was present for 18% of the patients. Of the 399 assessments, 13% were carried out for the Intramural situation (no leaves), 29% for the Supervised leave situation, 20% for the Unsupervised leave situation and 38% for the Transmural situation (living outside the hospital).

In most international forensic psychiatric settings (e.g., in the United Kingdom or in North America), patients predominantly suffer from major mental illnesses (see de Ruiter & Trestman, 2007) and most clinical studies on HCR-20 have been carried out on populations with predominantly psychotic disorders. The present study compared predictive accuracy of risk assessment results for patients with a primary diagnosis of a personality disorder (a score of 2 on H9 in the absence of a score of 2 on H6) and patients with a primary diagnosis of a major mental illness (a score of 2 on H6 regardless of H9 score). In addition, comparisons were made for patients scoring high and low on psychopathy, for patients with a history of violent offending versus those with a history of sexual offending and for men versus women. Finally, separate analyses were carried out for different stages of treatment.

Measures

HCR-20. The *Historical Clinical Risk mangement-20* (Webster et al., 1997) is currently the most widely used SPJ tool for the structured assessment of violence risk in forensic psychiatric practice (Singh et al., 2013). The HCR-20 contains 20 risk factors: 10 *Historical* (H) factors, five dynamic *Clinical* (C) factors and five dynamic *Risk Management* (R) factors (see Table 1a for a list of the risk factors). The items are scored on a three-point scale (0-2), with higher scores reflecting the presence of a risk factor. PCL-R scores were available to code the item *Psychopathy*. The 10 H factors of the HCR-20 retain their high scores once coded as present at any time, while the 10 dynamic C and R factors are presumed to be changeable and expected to decrease as treatment progresses.

SAPROF. The *Structured Assessment of Protective Factors for violence risk* (de Vogel et al., 2009, 2012) is an SPJ tool specifically for the assessment of protective factors for violence risk. The tool is intended to be used in conjunction with a risk-focused assessment tool like the HCR-20. It contains 17 protective factors organized within three scales: five *Internal* factors, seven *Motivational* factors and five *External* factors (see Table 1b for a list of the protective factors). The factors are rated on a three-point scale (0-2), with higher scores indicating a protective factor is present. The first two internal SAPROF factors are static and generally do not change during treatment. The other factors are all dynamic and thus potentially changeable. Factors 3 through 14 are dynamic factors which are expected to increase during treatment as these are mostly internal, motivational and social network factors that may benefit from (psychotherapeutic) interventions. The last three factors concern protection from the treatment team, housing supervision and the court order, which are vital protective factors that are present for all patients during mandatory clinical treatment and are not expected to change until the end of treatment, when they actually decrease as the mandatory treatment is dropped.

In addition to rating the presence of the 20 HCR-20 risk factors and the 17 SAPROF protective factors, a concluding *Final Risk Judgment* is made by integrating and combining the protective factors and risk factors that are present for the individual in his or her situation. In this study the Final Risk Judgment was made on a five-point scale (low, low-moderate, moderate, moderate-high, high). For comparison reasons, total scores were composed for the HCR-20, the SAPROF and their subscales and for the total risk factors score minus the total protective factors score, which was labeled as the *HCR-SAPROF index*. This index, the risk score corrected for available protection, is seen as the closest total score equivalent to the Final Risk Judgment as it reflects risk level while taking into account the level of protection that is present. The calculation of total scores is done purely for research purposes, in clinical practice only final judgments are composed.

Procedure

The HCR-20 and the SAPROF were coded prospectively in clinical practice for routine assessment purposes. In addition to the knowledge about the patients from daily interaction, hospital files were consulted in the assessment process. Hospital files consist of biographical information, psychological and psychiatric assessment reports, court reports on treatment progress and case notes on treatment plans and treatment evaluations. Ratings of the HCR-20 and the SAPROF were carried out in multi-disciplinary teams that each consisted of three evaluators: 1) a researcher / psychodiagnostic worker; 2) a treatment supervisor responsible for the patient; and 3) a sociotherapist working as group leader on the patient's ward. Each assessment is first carried out individually and independently by each of the three evaluators. Subsequently, the evaluators discuss the assessment in a consensus meeting of 1-1.5 hours. During this meeting consensus scores are agreed upon for all risk- and protective factors in the tools and for the Final Risk Judgment. In addition, at the consensus meeting risk scenarios and risk management plans are discussed. Prior to being allowed to take part in these clinical risk assessments, all treatment staff are trained in the use of the HCR-20 and the SAPROF in one day workshops. Through intensively discussing the assessment of each case with multiple

raters, consensus meetings provide a continuous feedback loop and therewith a constant training in the exact meaning of the different risk- and protective factors in the tools. Good results were previously found for the interrater reliability of the Dutch HCR-20 and SAPROF (see Chapters 3 and 4). In this study the consensus ratings are used for all analyses.

Statistical analyses

To determine the correlations between the HCR-20 and the SAPROF Pearson's correlation analysis was used. Spearmans rho correlation analysis with Bonferroni correction was applied for the item level correlations. Pearson point-biserial correlation analysis was used to examine the correlations between the scores on the different tools and incidents of aggression during the year following the assessment. In order to evaluate the overall difference in scores between the four treatment stages ANOVA analysis was carried out with post-hoc comparisons with Tukey HSD correction for the differences in scores between consecutive treatment stages. For all pairwise comparisons Cohen's d effect sizes were calculated. Critical values for Cohen's d are: $d \geq .80$ = large; $.50 \leq d < .80$ = moderate (Cohen, 1988). For this comparative analysis, only one assessment per patient was included for each treatment stage in order to prevent bias from repeated assessments. This resulted in 249 assessments over the four different stages of treatment: 42 for Intramural, 72 for Supervised leave, 47 for Unsupervised leave and 88 for Transmural.

Since treatment can roughly be divided into a more internally focused part and a more externally focused part, in further analyses all assessments from the first two treatment phases were combined (N = 167) and compared to the joint assessments from the last two treatment phases (N = 232). In order to assess the predictive validity for (no) violent incidents of the HCR-20 and the SAPROF individually and of the combined HCR-SAPROF index, *Receiver Operating Characteristics* (ROC; Mossman, 1994; Rice & Harris, 2005) analyses were conducted resulting in *Area Under the Curve* (AUC) values. AUC values of .70 and above are considered moderate to large, AUC values of .75 and above are considered large (Douglas et al., 2010). For the purpose of determining significant differences between AUC values, comparative analyses were carried out using the ROCTools statistical software for the analysis of ROC curves (Allaire & Cismaru, 2007). This program applies the DeLong, Delong and Clarke-Pearson (1988) method for comparing correlated ROC curves values (different tools, same sample) and the Hanley-McNeil Z-statistic method (Hanley & McNeil, 1983) for comparing independent ROC curves (same tools, different samples).

The 399 risk assessments included in this study concerned 185 individual patients. Multiple assessments were available for 66% of the patients (range = 1-4 assessments per patient). For the comparative analyses between risk assessment scores at different stages of treatment, only one assessment per patient was used for each treatment stage. For the ROC analysis initially only one assessment per patient (the first available assessment) was included as well (N = 185). However, when comparison was made with results from the ROC analysis on the full sample including multiple assessments per patient (N = 399), no significant differences in predictive accuracy were observed (see Results). Therefore, in all subsequent ROC analyses the full sample was included.

Table 1a. Descriptive Statistics HCR-20 (*N* = 399 assessments)

Items HCR-20	*M*	*SD*	Range
Total score HCR-20	25.93	5.07	12-37
Historical scale	15.43	2.85	7-20
Clinical scale	4.82	2.06	0-10
Risk Management scale	5.69	1.67	1-10
H1. Previous violence	1.99	.07	1-2
H2. Young age at first violent incident	1.43	.58	0-2
H3. Relationship instability	1.88	.35	0-2
H4. Employment problems	1.65	.59	0-2
H5. Substance use problems	1.43	.86	0-2
H6. Major mental illness	1.29	.82	0-2
H7. Psychopathy	.79	.75	0-2
H8. Early maladjustment	1.70	.54	0-2
H9. Personality disorder	1.78	.58	0-2
H10. Prior supervision failure	1.48	.79	0-2
C1. Lack of insight	1.35	.54	0-2
C2. Negative attitudes	.78	.72	0-2
C3. Active symptoms of major mental illness	.42	.73	0-2
C4. Impulsivity	1.28	.68	0-2
C5. Unresponsive to treatment	.99	.52	0-2
R1. Plans lack feasibility	.80	.50	0-2
R2. Exposure to destabilizers	1.31	.53	0-2
R3. Lack of personal support	1.23	.57	0-2
R4. Noncompliance with remediation attempts	.72	.57	0-2
R5. Stress	1.64	.51	0-2

Table 1b. Descriptive Statistics SAPROF (*N* = 399 assessments)

Items SAPROF	M	SD	Range
Total score SAPROF	17.80	4.01	7 - 30
Internal scale	3.32	1.65	0 - 9
Motivational scale	7.69	2.60	1 - 14
External scale	6.76	0.79	4 - 10
HCR-SAPROF index	8.13	8.36	-15 - 28
1. Intelligence	.66	.63	0-2
2. Secure attachment in childhood	.60	.62	0-2
3. Empathy	.50	.56	0-2
4. Coping	.70	.52	0-2
5. Self-control	.84	.54	0-2
6. Work	1.42	.66	0-2
7. Leisure activities	.66	.71	0-2
8. Financial management	1.33	.66	0-2
9. Motivation for treatment	1.14	.61	0-2
10. Attitudes towards authority	1.15	.59	0-2
11. Life goals	.46	.57	0-2
12. Medication	1.60	.58	0-2
13. Social network	.72	.58	0-2
14. Intimate relationship	.18	.43	0-2
15. Professional care	2.00	.05	1-2
16. Living circumstances	1.87	.34	1-2
17. External control	2.00	.00	2-2

Outcome

Data on incidents of aggression was collected from daily hospital reports up until 12 months after the assessment. In order to ensure similar follow-up times for all patients, only assessments for which sufficient follow-up time was available were included in the study. The minimal follow-up time was set at 10 months. All incidents of physical aggression (e.g., hitting, pushing) or threatening verbal aggression (e.g., comments such as 'Next time I will

kill you' or 'You better watch out or I will hurt someone') which resulted in confinement in a recovery or seclusion room for some period of time and/or which resulted in criminal charges were included. The overall observed aggressive incident rate during the year following each assessment was 11%. Aggressive incident rates were higher for the initial stages of treatment (Intramural 27%; Supervised leaves 15%) than for the further stages of treatment (Unsupervised leaves 10%; Transmural 3%). Psychopathic patients had the highest incident rate (21%).

Results

Tables 1a and 1b show the mean total, scale and item scores on the HCR-20, the SAPROF and the HCR-SAPROF index. The correlation between the HCR-20 total score and the SAPROF total score was r = -.69 (p < .001). The highest inter-item correlations between the HCR-20 and the SAPROF were between risk item R3 *Lack of personal support* and protective item 13 *Social network* (r_s = -.75), and between risk item C5 *Unresponsive to treatment* and protective item 9 *Motivation for treatment* (r_s = -.61).

Table 2. Mean HCR-20 and SAPROF Scores for Different Treatments Stages (N = 249)

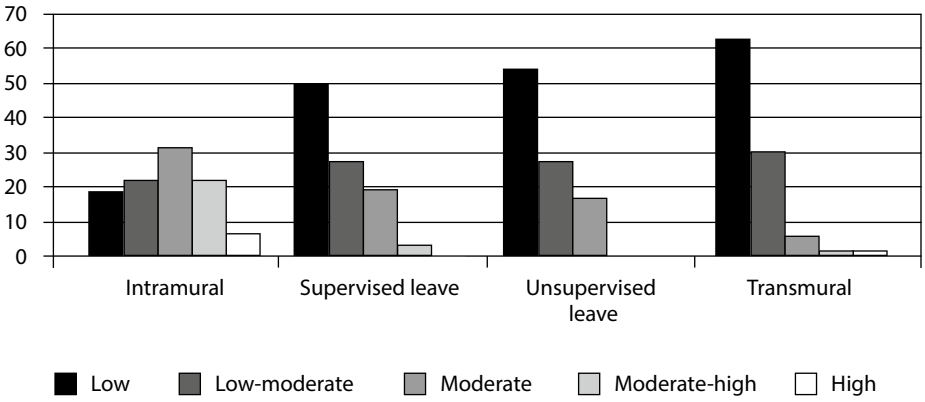
Treatment stage	Intramural N = 42	Supervised leave N = 72	Unsupervised leave N = 47	Transmural N = 88
Total score HCR-20	30.80	26.97	24.94	24.69
Historical scale	15.91	15.77	15.44	15.22
Clinical scale	7.31	5.29	4.11	4.05
Risk Management scale	7.60	5.93	5.40	5.44
Total score SAPROF	12.63	17.59	19.51	19.09
Internal scale	1.76	2.96	3.84	3.77
Motivational scale	4.27	7.75	8.72	8.55
External scale	6.52	6.85	6.94	6.73
HCR-SAPROF index	18.17	9.38	5.42	5.60

Comparison of assessment at different treatment stages

Table 2 shows the average total scores for the HCR-20, the SAPROF and the HCR-SAPROF index for each of the four treatment stages. HCR-20 scores were lower for patients in the further stages of treatment (F (3,245) = 20.79, p < .001), while SAPROF scores were higher

for further stages of treatment (F (3,245) = 40.69, $p < .001$). As HCR-20 scores decreased and SAPROF scores increased, consequently violence risk scores for the HCR-SAPROF index also lowered between the stages of treatment (F (3,245) = 35.70, $p < .001$). Differences between the consecutive Intramural stage and Supervised leave stage showed a significant decrease in HCR-SAPROF index scores (t (112) = -6.99, $d > 1.43$, $p < .001$). In turn, scores for the Supervised leave stage were significantly lower compared to those for the Unsupervised leave stage (t (117) = -3.09, $d > 0.59$, $p = .014$). Differences between the final two stages were not significant. Figure 1 presents the Final Risk Judgments per treatment stage, in which a similar decreasing risk pattern is observable.

Figure 1. Final Risk Judgments at Different Stages of Treatment in Percentages ($N = 249$)



Predictive validity

The correlation between the total scores on the tools and incidents of violence was $r_{pb} = .31$ ($p < .001$) for the HCR-20, $r_{pb} = -.27$ ($p < .001$) for the SAPROF and $r_{pb} = .32$ ($p < .001$) for the HCR-SAPROF index. Table 3 shows the results from the ROC-analyses for the total scores on (the subscales of) the HCR-20 and the SAPROF, as well as for the HCR-SAPROF index and the Final Risk Judgment. Predicted outcome was aggressive incidents during the year following the assessment. The first analysis concerned one assessment for each patient, which showed good predictive validity for both the HCR-20 and the SAPROF. Next, these results were compared to those from an analysis with multiple assessments per patient. Table 3 shows that the results for the multiple assessment analysis were equally good to those for the analysis that included only one assessment per patient, no significant differences were observed. Subsequently, the predictive accuracy was compared for the first treatment stages (Intramural and Supervised leave) and the last treatment stages (Unsupervised leave and Transmural treatment). The predictive validities of assessments for patients in the later stages of treatment were higher than those of assessments in the earlier stages. Comparative analyses on the AUC values

between the first and the last treatment stages showed a significant difference in predictive validity between treatment stages for the HCR-20 ($Z = 2.40$, $p < .05$) and for the HCR-SAPROF index ($Z = 2.03$, $p < .05$), but not for the SAPROF and the Final Risk Judgment. Especially the HCR-20 H items ($Z = 3.51$, $p < .001$) and R items ($Z = 2.11$, $p < .05$) performed better during the further treatment stages. Although the total HCR-SAPROF index score overall had the highest predictive accuracy, comparative analyses on the AUC values showed no significant differences between the HCR-SAPROF index and the Final Risk Judgment for either treatment phase group.

Table 3. Predictive Validity for Violent Incidents during Treatment ($N = 399$ assessments, 1 year follow-up)

	1 assessment per patient	**Total**	**Intramural + Supervised**	**Unsupervised + Transmural**
N **% incidents**	**N = 185** **13%**	**N = 399** **11%**	**N = 167** **19%**	**N = 232** **6%**
Total score HCR-20	**.77*** **	**.79*** **	**.68****	**.85*** **
Historical scale	.66*	.69***	.60	.84***
Clinical scale	.78***	.76***	.69***	.75**
Risk Management scale	.68**	.70***	.58	.75**
Total score SAPROF	**.76*** **	**.75*** **	**.66****	**.78*** **
Internal scale	.72***	.71***	.63*	.70*
Motivational scale	.72***	.73***	.64*	.77***
External scale	.52	.52	.48	.57
HCR-SAPROF index	**.79*** **	**.80*** **	**.70*** **	**.85*** **
Final Risk Judgment	**.74*** **	**.75*** **	**.69*** **	**.78*** **

Note. The values for the HCR-20, the HCR-SAPROF index and the Final Risk Judgment concern violent incidents, the values for the SAPROF concern no incidents of violence; Final judgments are made on a five-point scale; * = $p < .05$, ** = $p < .01$, *** = $p \leq .001$ (two-tailed).

Results are presented separately in Table 4 for different groups of patients: male patients with a history of violent offending (MV), male patients with a history of sexual offending (MS), female patients (F), patients with a major mental illness (MMI), patients with a personality disorder (PD) and patients with a high score (≥ 30) on the PCL-R. Overall, results for the different tools were fairly comparable across patient groups. Best predictive validities were found for

the MS group, lowest predictive validities were found for the female patients. No significant differences were found between patients with a primary diagnosis of MMI and patients with a primary diagnosis of PD. Nor were significant differences found for patients with high scores on the PCL-R versus those without, despite the fact that several of the HCR-20 and SAPROF subscale scores were not significant predictors for the high psychopathy group. Comparison of total score AUC values for the tools revealed no significant differences in predictive accuracy between male and female patients. However, the HCR-20 R scale showed a significantly lower predictive value for females ($Z = 2.27$, $p < 0.05$). When comparing the predictive accuracy of the tools for male patients with a history of violent offending versus those with a history of (also) sexual offending, a significant difference was found for the HCR-20: the total score performed significantly better for the sexual offender group ($Z = 2.21$, $p < 0.05$). The predictive accuracy of the SAPROF, the HCR-SAPROF index and the Final Risk Judgment were not significantly different between any of the compared groups. For most groups of patients the total score of the HCR-SAPROF index showed slightly higher AUC values than the Final Risk Judgment, however these differences were not significant for any of the groups.

Predictors of violence at the item level

Out of the 20 HCR-20 factors 11 showed significant individual predictive validity for aggressive incidents (AUC's ranging from .59 to .72), 4 historical and 7 dynamic factors: H2 Young age at first violent incident, H5 Substance use problems, H7 Psychopathy, H10 Prior supervision failure, C1 Lack of insight, C2 Negative attitudes, C4 Impulsivity, C5 Unresponsive to treatment, R1 Plans lack feasibility, R2 Exposure to destabilizers, R4 Noncompliance with remediation attempts. Best predicting HCR-20 items were: C2 Negative attitudes, C4 Impulsivity and R4 Noncompliance with remediation attempts. In general the risk items C4 Impulsivity and C2 Negative attitudes were strong predictors for most groups. For the female patients H2 Young age at first violent incident was also a good predictor, for male patients H7 Psychopathy, for the sexual offenders H6 Major mental illness, for the personality disordered H5 Substance use problems, and for those patients scoring high on psychopathy C1 Insight and R4 Noncompliance with remediation attempts were the best risk predictors.

For the SAPROF, the last three factors virtually did not differentiate, as during mandatory inpatient clinical treatment these are always coded as present. Of the remaining 14 factors 8 dynamic factors demonstrated to be significant individual predictors of inpatient aggression (AUC's ranging from .60 to .72): 4 Coping, 5 Self-control, 6 Work, 7 Leisure activities, 8 Financial management, 9 Motivation for treatment, 10 Attitudes towards authority, 12 Medication. Best predictors were: 4 Coping, 5 Self-control, 6 Work and 10 Attitudes towards authority. The protective factors 5 Self-control and 6 Work generally performed well across groups in predicting inpatient violence, while for women 1 Intelligence was most predictive, for the sexual offender group 4 Coping and for the MMI group 10 Attitudes towards authority.

Table 4. Predictive Validity for Violent Incidents during Treatment (*N* = 399 assessments, 1 year follow-up)

	Violent ♂	**Sexual ♂**	**Total ♂**	**Total ♀**	**Major mental illness**	**Personality disorder**	**High psycho-pathy**
N **% incidents**	**N = 189** **12%**	**N = 122** **10%**	**N = 311** **11%**	**N = 88** **10%**	**N = 209** **12%**	**N = 185** **10%**	**N = 73** **21%**
Total score HCR-20	**.73*** **	**.89*** **	**.80*** **	**.75***	**.81*** **	**.77*** **	**.76****
Historical scale	.64*	.78**	.69***	.72*	.68**	.72**	.61
Clinical scale	.72***	.81***	.76***	.77**	.80***	.71**	.77**
Risk Management scale	.70**	.81***	.74***	.56	.69**	.73***	.64
Total score SAPROF	**.72*** **	**.84*** **	**.76*** **	**.71***	**.79*** **	**.68***	**.76****
Internal scale	.69**	.77**	.72***	.67	.73***	.69**	.63
Motivational scale	.70**	.77**	.74***	.71*	.77***	.66*	.78***
External scale	.49	.65	.54	.43	.52	.50	.60
HCR-SAPROF index	**.76*** **	**.88*** **	**.82*** **	**.74***	**.82*** **	**.75*** **	**.79*** **
Final Risk Judgment	**.71*** **	**.84*** **	**.76*** **	**.72***	**.72*** **	**.78*** **	**.71***

Note. The values for the HCR-20, the HCR-SAPROF index and the Final Risk Judgments concern violent incidents, the values for the SAPROF concern no incidents of violence; Final judgments are made on a five-point scale; High psychopathy: PCL-R score ≥ 30; * = $p < .05$, ** = $p < .01$, *** = $p \leq .001$ (two-tailed).

Discussion

This study aimed to investigate the differences in risk assessment scores and predictive validities thereof for aggressive incidents between stages of forensic psychiatric treatment. Furthermore, the study compared the predictive validity of the HCR-20 and the SAPROF across different groups of patients. Overall, assessment scores were found to be more positive and better predicting for later stages of treatment. Predictive validity results were found to be fairly consistent across the various patient groups.

Differences between stages of treatment

As was expected, on average the HCR-20 total risk scores decreased with further treatment stages, while the total scores on the SAPROF protective factors increased as treatment progressed. Altogether the HCR-SAPROF index showed a clear pattern of reduction through the different stages of treatment. A similar result was found for the dynamic HCR-20 factors in a study by Müller-Isberner and colleagues (2007), who demonstrated an orderly correspondence between decreased dynamic risk factor scores and lower security levels in forensic inpatient psychiatry and concluded that the C and R scales were useful measures to gauge progress in forensic psychiatric inpatient treatment. Tengström and colleagues (2006) also found that HCR-20 scores were positively correlated with patients' level of security.

Although the present study does not have a longitudinal prospective repeated assessment design and thus true within-patient changeability of the factors could not be demonstrated, the differences in group level assessment scores between treatment stages are a strong indicator of the dynamic abilities of the HCR-20 and the SAPROF. An HCR-20 study by Belfrage and Douglas (2002) compared three repeated assessments for forensic psychiatric inpatients with six months time-intervals in between and demonstrated significant changes in C and R scores between each assessment. In a follow-up of this study Douglas and colleagues (2011) found significant changes in C scores between four consecutive assessments. They differentiated between subgroups of patients that showed different change patterns in C scores and demonstrated a clear correspondence between the changes in each group and variations in violent behavior. In a prospective multicentre study of discharged patients with schizophrenia living in the community Michel and colleagues (2013) demonstrated the changeability of all dynamic risk factors in the HCR-20 between repeated assessments at five different time-points. They found that changes on three of the C items and on three of the R items were related to changes in aggressive behavior. In a recent retrospective multiphase file study on a similar patient sample as the present study, the within-patient changeability of the dynamic HCR-20 and SAPROF factors was demonstrated by comparing ratings at the start and at the end of forensic psychiatric treatment (see Chapter 6). Improvements on risk and protective factor scores during treatment were found to be predictive of less violent recidivism after discharge from treatment. This finding provided evidence for the relationship between treatment change and violent recidivism: the more that patients changed for the better on their risk and protective factors during treatment, the more successful their rehabilitation.

Predictive accuracy for inpatient aggression

This study shows the predictive value of a combined risk and protection assessment of violence for incidents of interpersonal aggression during treatment. Both the HCR-20 risk factors and the SAPROF protective factors showed good predictive validity. Five historical risk factors, seven dynamic risk factors and eight dynamic protective factors demonstrated significant individual predictive validity for aggressive incidents during treatment. Interestingly, a previous prospective clinical study by de Vogel and de Ruiter (2006) which looked at the predictive validity of the HCR-20 in a comparable inpatient Dutch forensic psychiatric sample,

revealed virtually the same risk factors as significant predictors of inpatient physical violence. A recent study by Abidin and colleagues (2013) found very similar results for the predictive validity of the SAPROF items: all eight significantly predictive SAPROF items in the present study were also found to be predictive of inpatient aggression in the Abidin study, however they found four additional factors that were significant. They also looked at the HCR-20 and found overlapping factors with the present study as best predictors.

A meta-analysis of different risk assessment tools by Campbell, French and Gendreau (2009) found better results for static than dynamic risk factors in terms of predicting inpatient violence. On the contrary, a recent study by Wilson, Desmarais, Nichols, Hart and Brink (2013) on repeated assessments of forensic psychiatric inpatients demonstrated that dynamic risk factors significantly predicted institutional violence, even after controlling for static risk factors. The present study also demonstrates mixed results in terms of static versus dynamic predictors. Overall, the dynamic scales showed better predictive values than the static historical scale of the HCR-20. However, for the Unsupervised leaves/Transmural group, the H scale showed to be the best predictor of inpatient aggression.

Previous retrospective file studies found a significant improvement in predictive accuracy when the HCR-20 was combined with the SAPROF for both violent (see Chapter 3) and sexual offenders (see Chapter 4). This prospective clinical study did not demonstrate a significant difference between the predictive validities of both tools and between the total score on each tool and the combined HCR-SAPROF index. Nevertheless, for most patient groups the combined score showed the best predictive values. In general, the combined total score of the HCR-SAPROF index also performed slightly, although not significantly, better than the Final Risk Judgment. This result differs from a recent finding in a meta-analysis by O'Shea, Mitchell, Picchioni and Dickens (2013) including 20 independent studies on the predictive efficacy of the HCR-20 for aggression in psychiatric facilities, that overall the Final Risk Judgment had the highest mean effect size for the prediction of inpatient aggression. In addition, they reported that studies did not appear to have equal efficacy across different patient groups: effect sizes were generally greater in samples suffering from psychiatric disorders compared to samples that included more patients with personality disorders. When comparing MMI and PD samples in the present study a similar trend was found, however differences in predictive accuracy between the two groups were not significant. Neither were significant differences found between patients with high psychopathy scores and patients with lower scores. For patients with high psychopathy scores the HCR-20 H scale and R scale as well as the SAPROF Internal scale were not significantly predictive of inpatient aggression, but since the HCR-20 C scale and the SAPROF Motivational scale were good predictors, the overall rating of the HCR-SAPROF index showed good predictive validity for the high psychopathy group.

The female sample showed slightly lower predictive values than the male sample in this study. Although the HCR-20 H and C scales performed well, the R items performed poorly for the female patients and significantly less good than for the men. The SAPROF Internal scale was also not able to predict significantly for the female sample, although SAPROF item 1 *Intelligence* was the best predictor for women. Nevertheless, the total scores of the HCR-20

and the SAPROF were significant predictors of inpatient aggression for female as well as male patients and no significant differences were found between the predictive validities of the total tool scores between the male and the female sample. Future studies should aim to include bigger female samples in order to be able to draw more solid conclusions regarding the differences in psychometric properties of the HCR-20 and the SAPROF between men and women. Recently, a new additional tool was developed especially for the assessment of female specific risk factors, to be used in accordance with the HCR-20: the *Female Additional Manual* (FAM; de Vogel, de Vries Robbé, van Kalmthout, & Place, 2012). It is recommended that future HCR-20 and SAPROF validation studies with female samples also include the FAM in order to evaluate whether this addition would increase the predictive accuracy of risk assessment for women.

To our surprise in the present male sample both the HCR-20 and the SAPROF were more accurate predictors of general inpatient aggression for the sexual offenders than for the violent offenders. For the HCR-20 this difference was significant. This is an interesting finding as generally (additional) specific sexual offender tools are used in order to assess violence risk in sexual offenders, such as the *S*VR-20 (Boer, Hart, Kropp, & Webster, 1997) or the STABLE (Fernandez, Harris, Hanson, & Sparks, 2012). While these sexual offending tools are valuable for assessing sexual violence risk in the community and for guiding interventions aiming to reduce sexual violence risk (see for example Hanson & Morton-Bourgon, 2009), the HCR-20 and the SAPROF seem suitable for the assessment of general violence during treatment and guidance in targeting general violent behavior in sexual offenders. Previous studies on the SAPROF and the HCR-20 in discharged samples of forensic psychiatric patients found equally strong predictive accuracy for general violent recidivism after discharge for patients convicted of sexual offending as patients convicted of violent offending (see de Vries Robbé et al., 2013). In addition, the SAPROF protective factors demonstrated good predictive validity for sexually violent recidivism as well as general violent recidivism in sexual offenders (see Chapter 4). Therefore, inclusion of protective factors like those in the SAPROF in the assessment and treatment guidance of sexual offenders may offer a meaningful addition to the risk assessment of sexual offenders.

In general, all scales performed better for the later stages of treatment, indicating that clinicians in this study were better able to distinguish between those patients likely to become violent at the later treatment stages. Especially for the HCR-20 H and R items predictive accuracy was better for the Unsupervised leaves – Transmural stage. The H items were insufficiently able to differentiate between violent and non-violent patients during the earlier stages of treatment. At the same time raters were unable to meaningfully assess the R items during the first treatment stages. A study by Dernevik, Grann and Johansson (2002) also found that the predictive validity of the HCR-20 was better for lower security management conditions than for the high security stage. When patients have reached the later treatment stages perhaps clinicians have come to know them better and have learned from their past behavior during early treatment stages. As a result they may be better able to predict who might become violent again. It may also be the case that in a more restricted and controlled

inpatient setting risk factors are less likely to result in actual aggression due to the fact that supervision and risk management are more intensive and access to triggers like substances and external bad influences is limited. Thus, it is possible that certain risk factors may have a smaller effect on aggressive behavior during the earlier treatment stages, but become more manifest again when risk management is less stringent. Although differences were not significant for the protective factors, these also had a stronger effect during the further stages of treatment. Since the Unsupervised leaves and Transmural treatment phases are the first real independent re-entering into the community and thus offer delicate practice-ground for rehabilitation, the finding that the risk assessment tools work well for these stages is important for risk management and community reintegration strategies.

It has been argued that when risk assessment tools are used in clinical practice to guide treatment, this inevitably leads to lower predictive validities (Pedersen, Rasmussen, & Elsass, 2012). The general aim of treatment is to prevent violence from occurring, therefore risk management strategies generally become more stringent when risk levels increase (Hart, 1998). As a result, the predicted violent outcome is less likely to happen and thus the predictive accuracy of the risk assessment is negatively affected. In the treatment setting of the present study risk assessment plays an important part in hospital decision-making regarding treatment phasing and risk management planning. In general, preventive risk management strategies seem to be effective, given the low overall aggressive incident base-rate of 11% in this high-risk forensic psychiatric population compared to the incident rates described in other studies (see for example Nicholls, Brink, Greaves, Lussier, & Verdun-Jones, 2009). In addition, the aggressive behavior that was observed in this study rarely resulted in serious physical injury. Despite the seemingly gainful treatment efforts, the predictive values of the HCR-20 and the SAPROF for violent incidents were still good, especially for the patients in the further stages of treatment. This leads us to believe that perhaps treatment should consider risk assessment results even more carefully and adjust risk management strategies accordingly.

Limitations

As this was a true prospective clinical validation study, only the risk assessments that were available from clinical practice could be used. Since time between repeated assessments was variable and for many patients successive assessments with sufficient follow-up were not available, in the present study it was not possible to analyze within-patient treatment changes. Instead, assessments for different stages of treatment were studied on a group level. When multiple assessments of different patients are viewed together, on a group level the decrease of risk factors and increase of protective factors appears to take place gradually as treatment progresses. However, this movement in scores is not always as gradual as it seems. In fact, in clinical practice instead of a continuous improvement during treatment, often ups and downs are observed. In addition, when patients move into a new treatment phase they initially face more challenges related to their increased freedom and independence, which may temporarily put a strain on risk and protective factors. Regardless, on average risk factors showed to be lower and protective factors showed to be higher in the further stages of treatment.

The fact that only assessments were included that were carried out in one hospital with a fairly homogeneous high-risk forensic psychiatric patient population poses a limitation in terms of generalizability. After an initial analysis including only one assessment per patient, comparison was made with results from a subsequent analysis on the larger sample including multiple assessments for some patients. Since results for the 'clean' one assessment per patient sample were virtually identical to those for the full sample, it was concluded that including multiple assessments per patient had little effect on the findings in this study. Therefore, it was decided to include the full sample in all subsequent analyses for the different groups of patients and consider each assessment as independent. The use of multiple assessments for some patients may however have affected the results from the different patient group analyses to some degree. The smaller the subsample, the greater the influence of repeated measures for one individual may be. Nevertheless, it was decided that the increased sample size advantage outweighed this possible limitation.

A further limitation may be that the means of gathering outcome data in this study may not have been entirely free of bias. Since it is general policy that all aggressive incidents which are followed by a sanction of seclusion are reported in the daily hospital bulletin we can be reasonably sure that most serious incidents were analyzed in the study. However, in clinical practice it sometimes remains somewhat arbitrary at which point an incident of aggressive behavior reaches the threshold which makes clinicians decide on the necessity of seclusion as an intervention. Some patients may be sanctioned to seclusion more easily than others for similar types of behavior. In addition, the more freedom a patient has to move freely outside the hospital without supervision, the more often aggressive behavior may go unnoticed. It is therefore expected that the reported incident rate of patients in the transmural phase is by definition lower than that of the patients who are unable to leave the hospital grounds. However, even during the transmural stage, supervision is quite intensive through regular contact with the patient, network meetings and unannounced house-calls. Therefore, most fairly serious incidents are likely to be reported at some point, either by the police, by the patient's network or by the patient him- or herself.

Finally, in terms of research design it could be argued that the high number of different raters involved in the many risk assessments in this study poses a limitation. However, this is how these tools are used in clinical practice and the inclusion of different raters from various disciplines could in fact also be a strength of the study rather than a limitation. The advantage of multidisciplinary consensus ratings is that, although all essential patient information should be documented in the files, raters often have different knowledge about a patient from their own perspective and relation to the patient. De Vogel and de Ruiter (2006) demonstrated that multidisciplinary consensus ratings showed better predictive values compared to individual ratings. In addition, consensus meetings provide a valuable platform for generating treatment plans and sharpening risk management strategies. Moreover, they provide an opportunity for ongoing feedback and training on how the different factors in the tools are intended to be coded. Therefore, multidisciplinary assessments are considered best-practise in managing violence risk (Haque & Webster, 2012). A future study on the present data will focus more on the differences between the individual assessments by raters from different disciplines.

Recommendations and concluding remarks

This chapter presents good results for the predictive accuracy of inpatient aggression by a combined violence risk assessment including both HCR-20 risk factors and SAPROF protective factors. Differences in dynamic risk and protective factor scores were observed between changing stages of treatment. In order to be able to conclude that improvements in risk assessment scores during treatment indeed positively affect reductions in violent behavior, future prospective clinical studies should include repeated assessments of risk and protective factors carried out at set time-intervals and compare the observed within-patient treatment progress to violent outcome. It is advised to include risk as well as protective factors as their combined use has shown to offer empirical as well as clinical advantages. In addition, it is recommended to apply the revised HCR-20 Version 3 (HCR-20^{V3}; Douglas, Hart, Webster, & Belfrage, 2013) in future clinical studies, as the aim of this revision of the HCR-20 was to make the tool more clinically applicable and increasingly valuable for treatment guidance. Ideally, prospective research in clinical practice should also attempt to routinely document detailed descriptions of specific treatment efforts that take place with specific groups of patients, in order to be able to draw conclusions about what interventions successfully targeted specific risk or protective factors for specific groups of patients and whether this resulted in reduced levels of violent behavior. Although this type of research is not easily accomplished, it is a necessary step that needs to be taken to further improve the clinical utility of these promising tools for the assessment of violence risk in forensic clinical psychiatry.

8

General discussion

Chapter 8

General discussion

Abstract

This chapter highlights the main findings from this thesis in terms of interrater reliability, concurrent validity, predictive validity and changeability of the SAPROF. Based on these findings a conceptualizing framework of protective factors is presented. Several topics are discussed: the difference between risk factors and protective factors, theories about the working of protective factors, different mechanisms of protection and a risk-protection model. The chapter continues by discussing the strengths and limitations of this thesis, the clinical implications of the findings and recommendations for future research on protective factors for violence risk.

Introduction

This thesis concerns the empirical validation of the SAPROF as a tool for the structured assessment of protective factors for violence risk. Although an evaluation of the practical value of a risk assessment tool is ultimately the best measure of what makes a tool useful for risk assessments in treatment, studying the psychometric properties of the SAPROF is an essential step in its validation process. Through combining several papers concerning review and empirical studies on protective factors this thesis aims to provide insight into the background and psychometric properties of the SAPROF. In particular, the thesis focuses on the changeability of the protective factors during treatment and the predictive validity for violence both during and after treatment. Chapters 1 and 2 provide an introduction to the SAPROF and protective factors for violent and sexual offending. Chapters 3 through 6 concern the validation of the SAPROF in different retrospective samples based on file studies with discharged violent and sexual offenders. Chapter 7 has a prospective study design and seeks to provide insight into clinical assessments at different stages during forensic psychiatric treatment.

This general discussion will first describe the main findings of this thesis. Next an elaboration is presented about the possible mechanisms through which protective factors might work to enhance the desistance of violence risk. In the following, the strong points and limitations of this thesis are discussed. Finally, suggestions are given for ways in which treatment programs could take more account of protective factors for violence and for areas of further investigation which future research could address in order to provide more insight into the potential value of the assessment of protective factors for the prevention of violence in different patient and offender samples.

Main findings

The following paragraphs summarize the main empirical findings from the different studies in this thesis on the value of the SAPROF protective factors for violence risk assessment.

Interrater reliability

The interrater reliability of the SAPROF was assessed in different studies. Good interrater reliability was found for the SAPROF scores for a sample of violent offenders (ICC = .88) as well as for a sample of sexual offenders (ICC = .85). These results are vital for the applicability of the tool for the assessment of violence risk in clinical practice, as this means possible variation in scores found between assessments at different time points during treatment is likely to reflect actual change. In addition, good interrater reliability also implies better applicability of the tool for use in multidisciplinary consensus assessments in clinical practice. Given the strong reliability possible variations in item scores that may be present between raters are likely due to a difference in information or knowledge about a particular patient and not subject to personal interpretation of the items in the tool. Mental health professionals from different treatment disciplines all have their own perspective on a given case and bring slightly different information to the risk assessment consensus table, possible variability in item scores may lead to valuable insights and provide for important input for discussions among clinicians regarding a given case. This is one of the main reasons why in clinical practice multidisciplinary assessments in consensus are beneficial over single-rater assessments. De Vogel and de Ruiter (2006) demonstrated that risk assessments have better predictive validity when they are carried out in consensus. Other benefits of multi-rater assessments are for example: the continuous feedback loop between raters which ensures proper interpretation of the risk assessment guidelines and high quality assessments; and the opportunity consensus meetings provide for discussing risk formulation, violence scenarios, treatment interventions and risk management strategies.

Concurrent validity

In several of the studies in this thesis the concurrent validity between the SAPROF and the HCR-20 and SVR-20 was analyzed. Overall, the correlation between the SAPROF protective factors and the HCR-20 risk factors was substantial (r = -.76, retrospectively; r = -.69, prospectively), while the correlation with the SVR-20 was less strong (r = -.39, retrospectively). Both correlations were negative as expected, given the fact that the SAPROF focuses on positive factors. As the SVR-20 is more historical/static in nature, it was anticipated that the correlation with the predominantly dynamic/changeable SAPROF would be weaker. The strong correlation with the HCR-20 may prompt some to believe that both tools are virtually each other's reverse. However, although some items may represent the opposing end of a risk domain, in general the tools measure different concepts and serve a different purpose. Later in this chapter a further elaboration is described on the difference between risk factors and protective factors.

Predictive validity

Sound evaluation of the predictive validity of the SAPROF for desistance from violent offending is an essential aspect of its validation. This thesis analyzed the predictive validity of the SAPROF for different violent outcomes: 1) official reconvictions for violence after discharge from treatment at different follow-up times (1 – 15 years); and 2) violent incidents during treatment within the 12 months following the assessment. Predictive validity for both types of outcomes was analyzed separately for different groups of patients.

The retrospective studies found good predictive validity of the SAPROF protective factors for violent recidivism after treatment, for short-term as well as long-term follow-up (AUC's = .85 - .73). Similar effects were found for violent offenders and for sexual offenders. Moreover, for sexual offenders good predictive validity was also found when the outcome specifically concerned sexual re-offending (AUC's = .76 - .71). These effect sizes are consistent with those found in a recent meta-analysis by Fazel, Singh, Doll and Grann (2012) on frequently used risk assessment tools for violence (AUC = .72) and sexual violence (AUC = .74). Overall, the protective factors Self-control, Coping, Work, Motivation for treatment and Attitudes towards authority were the best predictors. As expected, short-term follow-up (1-3 years) predictions were generally stronger than long-term ones, since behavior is more difficult to predict in the long run and dynamic items are susceptible to changes when patients live in the community after treatment has ended. However, the predominantly dynamic SAPROF items demonstrated surprisingly good predictions for long-term recidivism as well. Since the HCR-20 has more static vulnerability factors it was expected that for long-term follow-up the HCR-20 would outperform the SAPROF, however the opposite was actually the case: the dynamic factors showed to be the better predictors of future violence. The fact that the dynamic SAPROF factors were able to predict violent offending long after treatment had ended is an important finding from this thesis as this shows dynamic factors potentially have fairly stable long-term effects on desistance. Thus, if these factors could be changed for the better during treatment, this may potentially have a long-term positive effect on violence prevention.

In addition to good predictive validity found for the SAPROF individually, combining the SAPROF with the HCR-20 showed incremental predictive validity over that of the HCR-20 alone. Thus, adding the SAPROF to the assessment procedure with the HCR-20 provided significantly better predictions of future violence. This incremental predictive validity is also an important finding of this thesis as it shows the empirical added value of the protective factors in the SAPROF for the risk assessment of violent as well as sexually violent offending. Moreover, indications were found for an interaction effect between risk factors and protective factors and their relationship with violent re-offending. When groups of patients with similar final risk judgments were segregated according to level of protection, predictions of violent recidivism became increasingly accurate.

The prospective clinical study concerned a different outcome measure: incidents of verbal or physical aggression towards others during treatment within the year following the assessment. Despite this difference in outcome, the predictive validity for inpatient aggression of the SAPROF was practically equivalent to that found for violence reconvictions in the

retrospective studies (AUC = .75). Good predictive validity was found for the SAPROF across different groups of patients, including those with a history of violent offending, those with sexual offending backgrounds, males, females, psychiatrically disordered patients, personality disordered patients and patients with high levels of psychopathy. Interestingly, it was different protective factors that demonstrated to be the strongest predictors of desistance for the different groups of patients. Predictions demonstrated to be especially strong for the final stages of treatment. This finding was not surprising given the fact that the protective factor scores at the beginning of treatment were often lower as patients just started to develop their strengths. In the later stages of treatment it became clear that those patients who had acquired more protective factors showed less aggression towards others. The finding that protective factors showed good predictive validity for aggressive incidents during treatment exhibits their importance for clinical assessments and guidance of treatment interventions.

Changeability and treatment evaluation

This thesis also researched the changes in protective factor scores during treatment. In the prospective study assessments carried out for different stages of treatment were compared. Differences in total protective factor scores were observed between the various stages of treatment. Although changes within individual patients could not be studied from these clinically collected data due to too much fluctuation in follow-up times after each assessment, the observation that in general the assessments in the later treatment stages showed significantly more protective factors compared to those carried out in the earlier treatment stages, provides an strong indication for the changeability of the dynamic factors. In the retrospective studies the observation of within patient changes was possible by comparing pre- and post-treatment scores on the SAPROF factors. Improvements were demonstrated for most discharged patients. When the increase in protective factors was related to violent recidivism, it was shown that in fact the amount of progress on the dynamic protective factors was predictive of future violence (AUC's = .78 - .75). Regardless of their initial protective factors at the beginning of treatment and the final level of protection at discharge, those patients who developed more protective factors during their time in treatment recidivated least often. This demonstration of the relationship between the improvement of protective factors and recidivism prevention had not previously been investigated in other studies and is possibly the most important finding of this thesis. It suggests that the dynamic protective factors of the SAPROF are in fact changeable for the better during treatment and that this change is related to desistance from violence. Combined with the observation that the dynamic factors have long-term predictive validity for desistance from violence, these findings provide clear implications for treatment about the possible importance of enhancing protective factors.

Conceptualizing framework of protective factors

At the end of this thesis it seems suitable to reflect on theories and mechanisms of how protective factors influence desistance from violence risk. This section starts with an elaboration about the difference between risk factors and protective factors, as this is an often heard criticism of the protective factors approach. The section continues with a contemplation of possible theories about the working of protective factors. This is followed by a description of mechanisms of protection that underlie the desistance from violent offending. Finally, a risk-protection model is proposed which attempts to explain the relationship between risk factors, protective factors and violent behavior.

The difference between risk factors and protective factors

Are protective factors not merely the opposite of risk factors? This is a question that is often posed and it is a sound question to ask. In the search for specific protective factors for sexual offenders in Chapter 2, the 'opposing / healthy end of a risk domain' is even used as one of the means to find personal or situational aspects that could be considered protective. Yet, it was formulated that in order to be considered protective, strength factors have to exist as definable propensities rather than being no more than the absence of a risk factor. In fact, in some cases risk and protection are almost each other's opposite (e.g., Lack of personal support versus Social network), while in other cases they are not (e.g., the risk factor Major Mental Illness or the protective factor Medication). The issue of the mirroring of risk and protection could be approached at three different levels: 1) conceptual; 2) empirical; and 3) practical.

Conceptually the essence of protective factors is that they provide protection against present risk factors for violence or have a direct positive effect on well-being. Thus, protective factors are expected to contribute to the prevention of violence risk either directly or indirectly through diminishing the negative impact of risk factors (see also Mechanisms of protection). The more risk is present, the more protection is needed to prevent violence. Some protective factors lie at the opposing 'healthy' end of risk factors on the same domain and likely predominantly provide protection through targeting their opposing risk factor. For example, Self-control lies at the opposing end of the Impulsivity domain. Other factors do not have an obvious opposing risky counterpart and often provide protection against risk factors in general (these factors are also labeled as 'unique' or 'unipolar' protective factors, see Nagtegaal & Schönberger, 2013). For example, the items Life-goals, Leisure activities or Intimate relationship generally provide protection when they are present but do not necessarily pose a risk for violent behavior when they are not. However, the lack of some unipolar factors may also be viewed as a 'risk'. For example, Lack of social network, Non-compliance with treatment and Unemployment are descriptions of the absence of protective factors Social network, Motivation for treatment and Work. The unavailability of these factors likely implicates lower protection against violence risk in general. Nevertheless, without the presence of other risk factors they may not be risky in their own right. The notion here is that the mere absence of a protective factor does not necessarily make a risk factor, just like the absence of a risk factor

does often not make a protective factor. This points to a fundamental difference between the presence of protective factors and the absence of risk factors: the presence of a protective factor decreases the general level of violence risk as posed by different risk factors that are present, while the absence of a risk factor implies no additional risk on that specific domain, yet this does not necessarily result in an overall reduction of the level of violence risk.

Empirically, this thesis provides support for the argument that risk factors and protective factors are not the mere opposite. Although correlations between risk and protective factor total scores were fairly high in the negative direction (see the Risk-Protection Model), the finding of incremental predictive validity for violent recidivism in the various studies when protective factors were added to the risk factors provides a strong indication that in fact both types of factors are complementary to each other. Similarly, significant correlations were found between protective factors and violence, even after controlling for risk factor scores. In addition, the findings of an interaction effect between risk factors and protective factors, suggests that protective factors do indeed interact with risk factors in general besides solely counterbalancing individual bipolar risk factors. Furthermore, it was especially the changes on protective factors during treatment that were predictive of reductions in violence risk after treatment.

Besides the conceptual and empirical support for the importance of considering protective factors in addition to risk factors, the clinical importance of this additional approach can not be emphasized enough. The provision of balance in risk assessment through dynamic risk and protective factors provides for more objective observations of current functioning. Clinically the focus on strengthening protective factors and setting positive treatment goals offers hope and optimism among patients and clinicians and as a result enhances treatment motivation. The finding that changes on the dynamic protective factors are actually related to reductions in violent recidivism offers important potential for positive treatment guidance. Furthermore, the protective effect of external factors may provide guidance for risk management strategies and decision making regarding changes in security levels. This may also provide insight to the court concerning the importance of treatment continuation for some patients or the possibility of discharge from mandatory treatment under specific conditions for other patients.

Theories about the working of protective factors

The factors in the SAPROF vary in terms of content as discussed in Chapter 2, some are underlying personal propensities (such as Empathy, Coping or Attitudes towards authority), others are behavioral manifestations of these propensities (such as Work, Leisure activities or Intimate relationship), and several are situational factors (Professional care, Living situation and External control). It would be valuable to elaborate on theories about how exactly these different protective factors may reduce risk for recidivism and assist a person to desist from violent offending. Several theoretical desistance models provide possible explanations for the effectiveness of protective factors. Some of the main theories are described below.

The *Theory of Reasoned Action* (TRA, Fishbein & Azjen, 1975, 2010; supported by many empirical studies of multitudinous applications) may be able to act as an over-arching framework to understand the way in which protective factors enable desistance. Research into the TRA has determined that the strongest predictor of behavior is behavioral intention which is predicted in turn by three key elements: *behavioral beliefs* (the attitude that the individual holds towards the behavior in question), *normative beliefs* (what the individual believes that salient others think about the behavior in question) and *control beliefs* (the extent to which the individual believes he or she can control the behavior in question; similar to self-efficacy). The more strongly an individual has a favorable attitude towards a certain behavior, perceives pressure from others to perform the behavior, and believes he can perform the behavior, the stronger his behavioral intention will be and the more likely he is to perform the behavior. In terms of violent behavior, this could work to enable either offending or desistance. The TRA would predict that successful desisters would have negative personal attitudes towards offending, strong social networks that disapprove of crime and confidence in their ability to desist. These elements can in general be seen in the SAPROF protective factors as well. Serin and Lloyd (2009) proposed a model of desistance, which was seemingly influenced by the TRA. They noted that desistance from crime is part of a larger trend of psychological, behavioral and social adjustment – just as offending is multiply determined, so is desistance. In their theory, the main mechanism underlying desistance is 'reductions or reversals of dynamic risk factors' – which, given that some protective factors are at the opposing end of a risk domain, could also be stated as 'development and strengthening of protective factors'. However, Serin and Lloyd also noted that such shifts in criminogenic needs are not the full story – the process of desisting from crime is not simply the reversal of the process of entering it. They speculated that 'attitudes associated with desistance are distinct from risk factors' and may develop from 'taking stock' of the costs of crime. Some of the protective factors in the SAPROF are congruent with this model of change.

Another theory that may be helpful in explaining the working of protective factors is the *Good Lives Model* (GLM) of offender rehabilitation, which was developed as a strengths-based elaboration on the *Risk-Need-Responsivity model* (RNR) by Ward and colleagues (Ward & Brown, 2004; Ward & Mann, 2004). The GLM approach is based on the assumption that human behavior is motivated by Goods enhancing wellbeing and personal functioning. Providing pro-social routes to attaining Goods, may offer positive behavioral alternatives to offending behavior. For example, as the establishment of a romantic intimate relationship may increase the opportunity to achieve sexual Goods through consensual and reciprocal sexual activity, this will reduce the likelihood of attempting to find sexual gratification through inappropriate strategies like rape. According to the GLM, one of the best ways to lower offending recidivism rates is to equip individuals with the tools to live more fulfilling lives. Sense of belonging, achievement and hope may be accomplished through employment, leisure activities and social integration, which provide for positive and functional/desirable alternatives to criminal activity. These factors are also represented in the SAPROF. A similar approach is employed in the *Solution-Focused Treatment* model (SFT; De Jong & Berg, 2008), in which individuals are encouraged to explore and elaborate on positive personal goals (Wand, 2010).

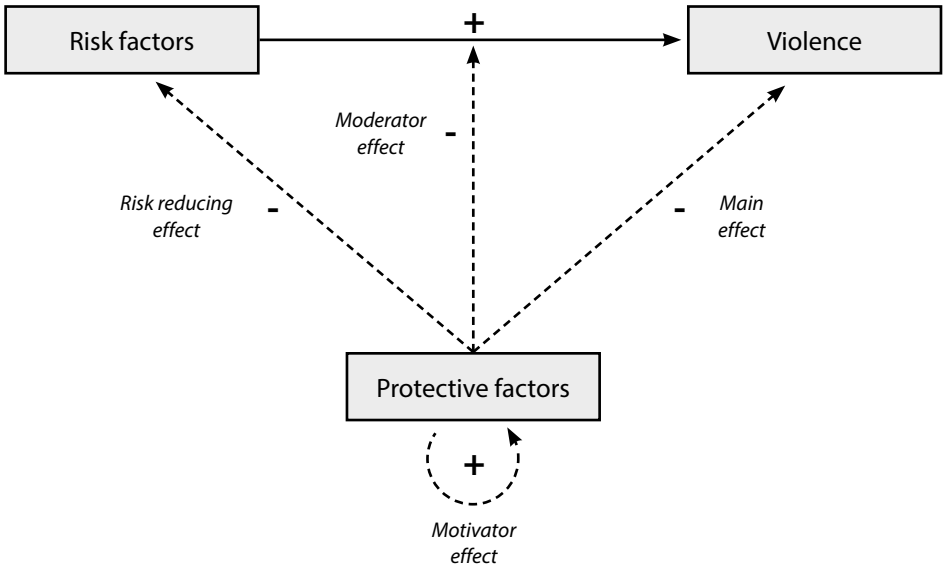
Besides promoting desistance through positive changes in cognitions, behavior and activities, protective factors can also offer support through environmental change. Changes in a person's environment greatly influence the likelihood of offending: restrictive conditions like court orders, or ultimately detention or inpatient treatment, reduce the opportunity to offend; supervision from parole officers or supervised housing may provide extrinsic motivation to not recidivate; and support from therapists, case managers or social network members may provide emotional and practical support and motivation to do well and desist. This importance of environmental factors is in line with the *Control theory* (Cochran, Wood, & Arneklev, 1994), which proposes that external factors such as religion can be regarded as an important socializing institution for promoting law abiding behavior. At the start of rehabilitation efforts, external factors may offer invaluable protection as the individual has not yet been able to develop personal strengths and work through important risk factors. The provision of external factors may in fact enable more internal psychological protective factors to develop (such as Coping and Self-control) by creating a relatively safe environment which is less influenced by temptations and triggers. Rehabilitation back to society should offer practice ground for developing more internal strengths and better societal integration. During this rehabilitation process environmental protection is gradually replaced by personal capabilities, social support and intrinsic motivation to desist. Although sometimes environmental protective factors may need to provide life-long assistance, ideally these environmental factors are eventually no longer necessary (i.e., treatment efforts can be finalized and/or court orders terminated).

Mechanisms of protection

Some of the protective factors in the SAPROF may be best explained by making reference to the TRA; predicting that their influence works by strengthening the intention to desist. Others may be best explained by the GLM; assuming that alternate behaviors may provide prosocial alternatives to achieve desired outcomes. Others again can be seen as external environmental protection. Regardless of the theories used to explain the working of protective factors, as described in Chapters 1 and 2 several mechanisms have been described about how protective factors may be related to risk factors and violent outcome (see also Fitzpatrick, 1997; Turbin, Costa, & Jessor, 2006). Building on these earlier models, figure 1 proposes an elaborated explanatory model with four main mechanisms on the working of protective factors that are hypothesized based on this thesis: the risk reducing effect, the moderator effect, the main effect and the motivator effect. After analyzing the results from the different studies in this thesis it seems most likely that these different mechanisms are not mutually exclusive but co-occur simultaneously.

Risk reducing effect. Some of the protective factors in the SAPROF appear to have a diminishing effect on risk factors (the *risk reducing effect*). By lowering risk factors these protective factors indirectly contribute to a reduced likelihood of violence. The most obvious example of this is the protective factor Medication, which may influence risk factors like active symptoms of major mental illness or impulsivity. Another example is the positive effect of Professional care on responsiveness to treatment and exposure to destabilizers.

Figure 1. A Proposed Explanatory Model on the Mechanisms of Protection



Moderator effect. Other factors seem to be having a predominantly mitigating effect on the relationship between risk factors and violence (the buffering or *moderator effect*) and thus influence the likelihood that specific risk factors lead to violent outcome. Examples of this are the influence of Self-control on violence risk enhancing factors like substance use problems or negative attitudes, or the risk restraining factor External control that ensures that risk factors like noncompliance with remediation attempts or plans lacking feasibility do not lead to enhanced violence risk.

Main effect. Some factors actually have a positive effect on life for people in general and offer overall protection. These factors thus appear to directly bring forth a reduced likelihood of violent behavior (the direct or *main effect*). Factors like Work, Leisure activities or Life goals appear to have such a direct effect on desistance. When protective factors have a main effect on desistance, they provide protection in general for the total amount of risk that is present rather than influencing specific risk factors.

Motivator effect. In addition to the risk reducing, the moderator and the main effect that protective factors can have, a final mechanism is proposed here: the *motivator effect*. The motivator effect entails the positive and stimulating influence that protective factors may have on each other. Certain protective factors may be able to enhance other protective factors. For example, the presence of the historical protective factors Intelligence and Secure attachment in childhood may provide a stronger base for the development of many other protective factors such as Empathy, Work, Social network and Motivation for treatment. In fact many protective factors seem to have a positive influence on each other.

In addition to these risk reducing effects of protective factors, Fitzpatrick (1997) proposed an additional model of mediation. In this model protective factors mediate the relationship between risk factors and violence. Risk factors may negatively influence protective factors and as a result all above mentioned positive mechanisms of protective factors may be weakened. Thus, this model is in fact the reverse of the *risk reducing effect* of protective factors that is explained above and could also be described as the *protection reducing effect* of risk factors. This possible protection reducing effect of risk factors and as a result, lowered diminishing influence of protective factors on violence, is not included in Figure 1 as this model takes protective factors as the starting point.

Although some factors clearly influence violence risk through one of these mechanisms, most factors seem to actually work through different mechanisms simultaneously. The factor Social network for example provides a violence reducing effect through different routes: 1) Social network may have a risk reducing influence on risk factors such as stress (the network may provide a stable environment in which the patient feels safe and stress levels are lowered); 2) at the same time Social network may act as a moderator in diminishing the effect of a factor such as lack of insight (the network may help a patient to stay away from alcohol, even if the patient continues to deny that drinking may be a problematic risk enhancing factor); 3) Social network may even have a direct main effect on reduced violence risk as people in general are happier when they have strong social ties and feel support from their network, thus resulting in reduced violence risk; and finally 4) Social network (supportive social relations) may enhance Treatment motivation, which in turn may have a positive effect on Attitudes towards authority, Medication compliance or Coping. In fact, when one considers most protective factors carefully, they appear to have a violence risk reducing effect through multiple mechanisms either simultaneously or through different mechanisms for different people or at different times.

Naturally, it will be clinically useful to unravel these mechanisms for each factor in order to be able to effectively adjust violence risk reducing treatment through enhancing specific protective factors. This thesis primarily studied *main effects* and to a lesser extent *moderating effects* between groups of factors and violence. Further explorations of these effects and of the *risk reducing effect* and the *motivator effect* will have to be carried out in future studies. Such studies on the exact mechanisms behind the interactions between different risk and protective factors would preferably include multiple large prospective datasets.

Risk-Protection Model

The present thesis did not have an in-depth focus on specific protective factors and thus little can be concluded about the exact mechanisms through which the individual protective factors in the SAPROF affect desistance. The different studies in this thesis did find evidence for the direct relationship between groups of factors and violence in general. Most of the time the overall risk or protection that is present does not stem from just a single factor, but is the combined effect of many factors that are related to one another. All protective factors together have to provide enough support to counterbalance the presence of all risk factors together

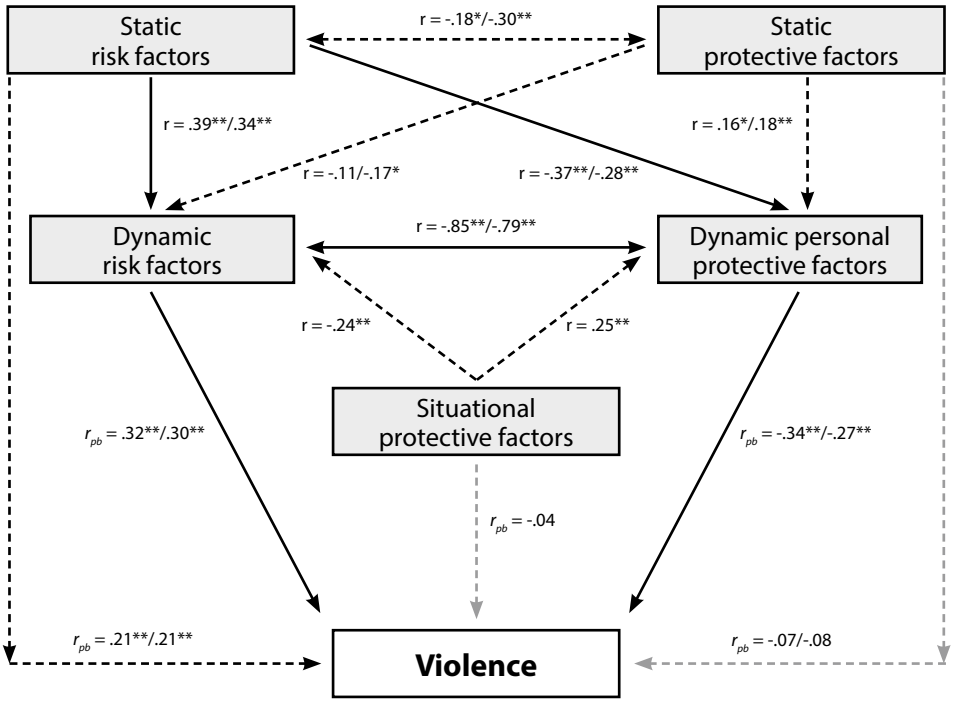
in order to prevent violent behavior. This also implies that individual protective factors that may have been present at the time of past violent behavior may in fact have provided some protection at the time, but on their own they were unable to balance out the risk factors that were present then and were incapable of preventing violence from happening. However, this does not mean that factors which were present at the time of past offenses are unimportant for the prevention of future violence.

Based on the findings in this thesis an overarching model is presented here on how groups of risk factors and protective factors are related and influence violence risk: the *Risk-Protection Model*. In this model a distinction is made between historical factors and changeable dynamic factors and between personal factors and situational factors. Figure 2 presents the Risk-Protection Model. It describes the relationship between historical risk factors (HCR-20 H1-H10), dynamic risk factors (HCR-20 C1-C5 + R1-R5), historical protective factors (SAPROF 1-2), personal dynamic protective factors (SAPROF 3-14), situational dynamic protective factors (SAPROF 15-17), and violent behavior. Figure 2 displays the overall correlational findings from: a) the retrospective sample (with official violent recidivism at one year after discharge as outcome measure), and b) the prospective sample (with violent behavior in treatment during the year following the assessment as outcome measure). Pearson's correlations between groups of factors are presented, as well as point-biserial correlations between the various groups of risk and protective factors and violent outcome.

As can be observed, based on the findings in this thesis some groups of factors appear to be more strongly related to each other than others. The static risk factors show to be related to both the dynamic risk and dynamic personal protective factors; however, their relationship with violence is less strong. The two static protective factors are related to the dynamic factors to a lesser extent, however prospectively their relationship with the static risk factors was more apparent. Their relation to violence at one year was quite weak, however for the retrospective sample this was much stronger at long-term follow-up (r_{pb} = -.22, not displayed in Figure 2). The dynamic risk factors and the dynamic personal protective factors were very strongly related to each other in both samples and both had a substantial correlation with violence, making them the most promising targets for intervention. Last, there are the situational protective factors which also have an influence on the dynamic risk factors and the dynamic personal protective factors (only correlations are shown for the retrospective sample as hardly any differentiation was present in the situational factors prospectively because all patients were under mandatory inpatient treatment). Their relationship with violence at one year was weak, however this was better for long-term follow-up (r_{pb} = -.15, not displayed in Figure 2). As it was often difficult to foresee what the situational protection would be like after discharge from treatment, the retrospective ratings of the situational protective factors are not very reliable and their relationship with other factors and violence difficult to investigate. Theoretically however, one would expect a strong correlation between the situational protective factors and reduced violence, especially in case of mandatory inpatient treatment. Nevertheless, this effect will likely remain hard to prove since randomized clinical trials instituting situational protection for some but not for others would be unethical.

Overall, the Risk-Protection Model demonstrated here, may provide some new insight into how different groups of factors are potentially related. Obviously, these findings need to be replicated in different samples and settings before conclusions could be drawn from this to inform clinical practice. For now however, the model may provide some initial foundation for the effects that different types of risk factors and protective factors may have on violence.

Figure 2. A Correlational Risk-Protection Model: Correlations between Risk Factors, Protective Factors and Violent Behavior as Found in the Empirical Studies in this Thesis (*N* = 188 / 399)



Note. Correlations presented concern findings from: a) retrospective file studies; and b) prospective clinical studies; Correlations with violence are presented for 1 year follow-up retrospectively after discharge or prospectively during treatment; ** = $p \leq .01$, * = $p < .05$ (two-tailed); Substantial correlations are indicated with a solid line (mean $r > .30$), weaker correlations with a dotted line ($.10 < r < .30$) and non-significant correlations with a gray dotted line ($r < .10$).

Strengths and limitations of this thesis

Strengths

This thesis has several strong assets. By combining retrospective file studies and prospective clinical data a dual focus is presented which demonstrates the predictive value of the tools for violent reoffending after treatment as well as for aggression during treatment, both of which are regularly anticipated outcomes of risk assessments in clinical practice. A strength of the retrospective studies in this thesis is the long-term follow-up after treatment, which makes it possible to evaluate the value of risks and strengths for desistance long after treatment. Another important consideration in this thesis is the investigation of the incremental predictive validity of a combined risk-protection assessment compared to risk-only evaluations, which brings empirical support for the increased accuracy of the combined assessment. Furthermore, the inclusion of different groups of patients in this study provides valuable back-up for the generalizability of the findings in this study to other patient and offender populations. But perhaps the strongest point of this thesis is the comparison of treatment changes to violent outcome, which is a seldom studied yet essential component of the validation of dynamic risk assessment tools that provides testimony of their value for treatment evaluation and for providing guidance to interventions and risk management.

Limitations

Besides these strengths this thesis also has several limitations which should be acknowledged. Although the value of the SAPROF was evaluated for different patient samples in this thesis, some of the compared groups were quite small and all patients included were Dutch high-risk tbs-patients with severely violent histories and psychopathology, for whom extensive information was available. For a large part the data was collected at one forensic psychiatric hospital, the Van der Hoeven Kliniek, which is also the setting where the SAPROF was developed. Given the fact that the SAPROF is integrated well in risk assessment practice at this hospital, it is essential that these findings will be replicated in other settings before conclusions can be drawn about their generalizability. Whether similarly good results will be found internationally for forensic outpatients, patients in general psychiatry, violent and sexual offenders without disorders, patients/offenders on probation and so on, remains to be seen. Further studies will have to investigate the psychometric properties of the SAPROF for these different patient and offender samples.

Another limitation of this thesis is the retrospective design of the community follow-up studies. Although this design enables valuable long-term follow-up, it also complicates data collection as assessments were rated from file information and missing data could often not be retrieved. In addition, retrospectively it was sometimes hard to foresee what the situational protective factors would be like after discharge from treatment. Moreover, the treatment received by the patients in these studies may not entirely reflect the most state-of-the-art current treatment practice, as patients on average left the hospital over 10 years ago. An advantage of this however, is that risk management and release decision making were not as

well informed as is the case nowadays, which caused some patients to be discharged despite their high recidivism risk. If presently a similar study were to be executed in a prospective follow-up design, it would be likely that the distribution in final risk judgments would be lower given the fortunate reality that high risk patients are currently rarely being released without proper risk management procedures in place. Although this is of course a positive development for the safety in society, the reduced differentiation in risk levels of discharged patients will likely complicate research findings.

A further limitation of the retrospective design is the use of official reconvictions as outcome measure, which may produce room for error as much of the violence that occurs after discharge from treatment may go unnoticed or may not lead to reconvictions. Although the most severe violent offenses are likely to be noted and eventually recorded, other incidents may not have become formally registered. As a result, the official recidivism base-rates reported in the retrospective studies in this thesis are probably an underrepresentation of the actual violent outcome and some patients in the retrospective studies may have been wrongfully indentified as non-recidivists while they actually did commit new violent offenses. This may have weakened the predictive validity findings in these studies. The outcome measure in the prospective study may also have been influenced by the fact that some behavior may go unnoticed, especially in the further stages of treatment when patients live in the community but are still supervised by the treatment team. Also, prospectively little differentiation was present in the situational factors as all patients in this study were currently still in mandatory inpatient treatment. Thus no variability was available to show the added value of the situational protective factors for reduced violence risk.

The analysis of the final judgments brings forth another limitation. When formulating the overall Final Risk Judgment, both the risk factors and the protective factors are integrated into the final judgment. True incremental predictive validity of the protection over the Final Risk Judgment should be measured by comparing final risk judgments with and without inclusion of protective factors. However, once raters are used to incorporating protective factors in their final risk judgments it simply becomes impossible to formulate judgments without inclusion of protective factors as raters are unable to 'turn protective factors off' in their mind when coding. An alternative study design with two different raters coding the risk assessment for each case, one with and one without inclusion of the SAPROF would theoretically be able to avoid this problem. However, this would bring forward another possible limitation: the problem that observed differences may be due to discrepancies between raters rather than to the effects of the tools that are used. Given the inclusion of the SAPROF protective factors in the overall Final Risk Judgment in the present retrospective design, it was actually quite surprising that the further differentiation of risk groups into protection level in Chapter 5 revealed such great differences in recidivism outcome. This leads to the contemplation that perhaps we don't take protective factors enough into account when forming our final risk judgments and that the positive side of the equation should possible have greater impact on our overall final risk judgments.

Similarly, in Chapter 6 pre- and post-treatment assessments were carried out by the same raters. Thus, at post-treatment assessment raters were not blind to what had happened during the years in treatment. This poses the risk of confirmation bias, that is, more positive post-treatment ratings when patients seemingly did well in treatment. However, if such an effect would indeed be present and the reported changes between pre- and post-treatment assessments would be significantly enlarged by the confirmation bias, the finding that these changes were predictive of (no) violent recidivism after treatment would not have been observed. If anything, this methodology likely weakened the findings rather than amplified them. The alternative to get around this problem of non-blind post-treatment assessment would again be coding the files with two different raters, one doing the pre-treatment assessment and one doing the post-treatment assessment. However, this would pose the same problem as described above that observed difference may be due to discrepancies between raters rather than to actual changes in protective factors during treatment for the assessed individual.

Finally, an important limitation of this thesis is that, although changes in assessment scores were evaluated and related to violent recidivism, the causes of these changes were not investigated. Although the findings in Chapter 6 seem to be promising indications for the potential changeability of the dynamic protective factors, the study did not look at what may have produced the observed changes. Without a control or comparison group it is impossible to draw conclusions regarding the efficacy of treatment, let alone that of specific components of treatment. Whether interventions focusing on strengthening protective factors actually provide meaningful and are able to sort the proposed desistance enhancing effect remains something that requires further investigation in future studies.

Implications for clinical practice

Clinical applicability

Although this thesis mainly focuses on the empirical value of the SAPROF, the real potential of this addition to violence risk assessment lies not in the more accurate prediction of violence but in the clinical applicability of the dynamic protective factors and their potential for violence prevention. This is true for most SPJ tools (see also Haque & Webster, 2013), and consideration of protective factors can thus further the goals of the SPJ approach (see Douglas, Hart, Webster, & Belfrage, 2013, p. 35). Protective factors may clinically be valuable in several different ways: 1) they enhance treatment motivation and alliance; 2) they further individualize the assessment process; 3) they improve the assessment of current risk level or assessment of risk level for an intended new situation, sensitive to personal and situational changes; 4) they provide guidance to treatment interventions; and 5) they enable evaluation of treatment progress.

Enhancing treatment motivation. The SAPROF entails fairly straight forward dynamic protective factors which make sense to clinicians. The optimistic focus of the tool makes it likeable by mental health professionals and the focus on positive treatment goals appears to stimulate patients to show more interest in the risk assessment process and their personal risks and strengths, which enhances treatment motivation. Sharing the results with the patient of an assessment that incorporates both risks and strengths and that in addition to highlighting risk factors also focuses on protective factors that are in place or could serve as positive treatment goals, may provide beneficial for treatment. Although in general it is recommended to be descriptive when reporting on the results from the assessment, sometimes it may be helpful to go over the assessment in detail with the patient or even let the patient rate his or her own risk and protective factors and compare these personal ratings with those made by the treatment team. This can stimulate discussions about the importance of specific factors and the need for change on critical domains of risk and protection. Including a strengths-orientation in the assessment process and in the treatment goals derived from this, is generally more appealing to patients and may enhance treatment alliance and firm up a behavioral intention to desist. Positive reframing may increase responsivity and make treatment more effective and efficient. While these are good arguments to encourage a greater focus on protective factors in treatment, naturally protective factors should be targeted in addition to risk factors rather than replacing them. Well-established risk factors should still define essential targets of any treatment program, in line with the RNR model.

Individualizing the assessment process. This thesis shows the usefulness of protective factors for the assessment of a range of different types of patients, while at the same time different factors appear to be most important for different groups of patients. In addition to these group differences, individual differences in risk and protective factors are observed. Every patient is unique in his or her personal risk and protection profile, which makes their risk of violence different from that of others. By using the 'key' factors to point out the most important protective pillars for the individual patient that are present in his or her specific situation for which the assessment is carried out, and by highlighting personal 'goal' factors to indicate the most important treatment goals for the patient, the assessment procedure becomes more individualized. For example, for one patient it may be the items Self-control, Work and Social network which are the most important protective factors, while for another patient it may be Motivation for treatment, Medication and Life goals which are the key-factors in preventing violence risk.

Improving dynamic risk assessment. As the dynamic SAPROF factors concern the assessed anticipated situation, it becomes possible to carry out an assessment for multiple hypothetical future situations and compare the ratings. For example, when a patient is currently in the situation that he has unsupervised leaves from inpatient forensic psychiatric treatment, but clinicians contemplate increasing liberties to unsupervised leaves from the hospital, a double assessment could be made. By comparing the scores on the protective factors for the supervised leaves situation with those for the unsupervised leaves situation, it becomes clear what protective factors may be reduced in the unsupervised leaves situation

and whether this step forward in the treatment process is feasible at this point. If the patient in question for example has a history of substance abuse, his self-control may be rated as high in the supervised leaves situation, but potentially as moderate or even low for unsupervised leaves, causing his treatment team to question whether he is ready for unsupervised leaves. As a result, the treatment team may contemplate on instating different risk management strategies in the unsupervised leaves situation, such as urine controls or agreements on the time of day the patient is allowed to leave unsupervised. Similarly, it is possible to compare assessment ratings for the currently assessed situation with those for a hypothetical situation 'what if the patient were to be discharged right now'. In fact, such an additional rating of the items for the hypothetical situation in which all treatment would be dropped instantly has become routine assessment practice at the Van der Hoeven Kliniek where the SAPROF was developed, as it provides insight into the continuing need for treatment or readiness for discharge. This clear picture of what protection will be lost when treatment is ended prematurely is very helpful for clinicians when they appear in court and are asked by the judge to argue why the patient in question is not ready yet for discharge and treatment needs to be prolonged, or alternatively, why they feel that the patient can safely be discharged and which conditions need to be in place to ensure a safe return to society.

Providing treatment guidance. As most protective factors in the SAPROF are amendable during treatment and improvements on the dynamic factors have shown to be related to reductions in violence risk, the SAPROF provides for potential strengths-based treatment goals that could guide clinical intervention. After determining which dynamic protective factors are likely the most important treatment goals for the assessed patient or client, mental health care professionals should attempt targeting these specific factors in treatment. Attaining the positive goals through clinical interventions and risk management strategies presents interesting potential for violence prevention.

Enabling treatment evaluation. Improvements on dynamic risk and protective factors during clinical intervention are assumed to be valuable indicators for treatment progress in forensic psychiatric patients. Repeated assessments can be used as evaluation of the success of imposed treatment interventions, providing a measurement of treatment effectiveness. This thesis demonstrates clear changes in protective factor scores during treatment and a strong relationship between improvements in protective factor scores and desistance from violent offending. This effect has seldomly been studied before in risk assessment research. In other words, the SAPROF items could be used to evaluate meaningful treatment progress that is related to violence prevention. As such, routine evaluations with the SAPROF may offer (forensic) psychiatric treatment a valuable monitoring tool for treatment progress in terms of violence risk reduction.

Incorporating protective factors in treatment

Besides reducing dynamic risk factors, the treatment of violent and sexual offenders aims to improve dynamic protective factors by developing skills or instating prosthetics that bolster a patient's strengths in areas where he or she has psychological, behavioral or environmental

deficits. There are numerous ways in which treatment could aim to enhance protective factors and many are currently already in widespread use in clinical practice. Although many positively oriented treatment approaches could also be derived from a risk focused assessment, the explicit focus on protective personal and environmental characteristics and prosthetics that help prevent violence provides additional inspiration for implementing strengths-based interventions.

Internal positive characteristics that do not exist naturally may be teachable in treatment. By specifically focusing in treatment modules on the development of personal skills and attitudes, improvements in internal factors may become manifest over time and protect against violent offending. For instance, specific interventions may focus on improving attitudes such as treatment motivation and acceptance of rules and agreements, which may be essential preceding factors for enhancing other personal strengths and for the success of treatment in general. Other interventions may attempt to improve certain skills, such as work skills, specific leisure activity skills, coping skills, social skills or self-control, which may be viable personal assets to develop that enhance stable functioning, stimulate prosocial interaction and enable a stable work situation or leisure activities.

In addition to attempting to improve skills and attitudes, rehabilitative interventions could also aim to further promote the development of protective structures and the integration of patients and clients in society. By stimulating them to take part in specific programs aimed at becoming more embedded in the community, mental health professionals could assist in building strong protective domains that may provide long-lasting support outside the treatment setting. For instance, guiding patients in finding a suitable and stable work situation in the community may provide for valuable daily structure and life-fulfillment. Assisting patients to become involved with structured social leisure activities such as joining a sports team or church group may promote social integration and social control. Stimulating patients in rebuilding their social networks through strengthening family ties or opening up to new friendships may enhance active social support from family and friends and acceptance of this support by the patient.

More treatment related interference could also provide a valuable preventive effect against relapse in violent behavior. Many risk reduction focused therapeutic interventions, such as relapse-prevention, addiction training, or aggression regulation training, in fact also focus on developing personal skills. In addition, it may be valuable to also take a specific focus in therapy on seeking prosocial alternatives for risky behavior to attain personal goals, as is recommended in the Good Lives Model approach. Psychiatric treatment could also provide an important protective effect through the prescription of medication. When medication is properly adjusted and the patient is adherent, renewed chemical balance may provide effective protection.

Finally, it may also be possible to instate more (compulsory) environmental protection. The practical, social and psychological support offered by mental health professionals is often an invaluable protective factor for patients with mental health problems. Especially in mandatory forensic treatment external or situational protective factors can provide an

essential prosthetic for a lack of internal and motivational protective factors for individuals treated or incarcerated for violent or sexual offending, even those with high-risk profiles or patients whose risk reducing treatment efforts have shown little success. For example, supervision from the treatment team may provide for an important prosthetic for a lack of self-control or medication compliance, supervised housing could offer social control and support with daily problems and finances, and ultimately a court order could mandate treatment adherence, disallow contact with victims or even limit the freedom of patients to the extent of incarceration or mandatory admission to inpatient treatment. In terms of continued support from professionals, careful consideration during the final stages of treatment of how to gradually reintegrate patients back into society and organize suitable aftercare programs may be key factors to successful reintegration.

Although many of the interventions described here are commonly being used in clinical practice even when a specific protective factors assessment approach is not yet employed, the routine evaluation of such positive factors may inspire new positive interventions and stimulate further development of reintegration and prevention focused approaches. As such, striving to further develop dynamic protective factors for violence risk may provide for additional guidance of treatment interventions and risk management strategies.

Recommendations for future research

The positive findings of the current thesis aim to inspire other researchers to further investigate the empirical value and clinical applicability of protective factors for violence risk assessment.

Replication and comparison of empirical findings

It is essential for the SAPROF validation process that the findings from this thesis are replicated in various international patient and offender samples. It is recommended that specific studies will be carried out for subgroups of patients, clients and offenders from a wide range of settings and that results for these groups are reported separately, such as for both genders, for distinct psychopathologies or disabilities, for various violent offending histories, for different judicial measures, for certain age groups, and for varying levels of intervention. Furthermore, it would be valuable to study diverse outcomes in these studies and to evaluate the combined use of the SAPROF with various risk focused tools for different types of offending behavior. It may also provide useful to compare the results for the SAPROF with other tools that incorporate notions of strength or protection to some extent, such as the *Short-Term Assessment of Risk and Treatability* (START; Webster, Martin, Brink, Nicholls, & Middleton, 2004, 2009), the *Structured Outcome Assessment and Community Risk Monitoring* (SORM; Grann et al., 2000), the *Inventory of Offender Risk, Needs, and Strengths* (IORNS; Miller, 2006) the *Level of Service / Case Management Inventory* (LS/CMI; Andrews, Bonta, & Wormith, 2004), the *Dangerousness Understanding, Recovery and Urgency Manual* (DUNDRUM Quartet; Kennedy, O'Neill, Flynn, &

Gill, 2010), or the recently developed *Structured Dynamic Assessment Case-management - 21 item* (SDAC-21; Serin & Wilson, 2012).

This type of empirical validation research on the SAPROF has recently been carried out and is currently still ongoing in various international research studies. A recently published Irish study by Abidin and colleagues (2013) studied the predictive validity of the SAPROF for inpatient violence to others and self-harm and found strong results for both types of outcome (AUC = .85 and .77, respectively). A further study by Davoren and colleagues (2013) also found positive results for the prediction of treatment discharge (AUC = .81). A large scale national study in the United Kingdom including all discharged *medium secure* forensic psychiatric patients in England and Wales over a period of 12 months in a prospective community follow-up research design found good predictive validity of the SAPROF for violent re-offending within 6 months after discharge and for readmissions to prison (AUC = .76 and .73, respectively; Doyle, Coid, & Shaw, in preparation). This study also included multiple repeated assessments at set time intervals after discharge, which in the near future aims to provide more insight into the effects of change on the dynamic factors after discharge. Other studies involving the SAPROF are currently being carried out or planned in the United Kingdom, Germany, Belgium, Sweden, Norway, Denmark, Switzerland, Spain, Portugal, Italy, Canada, United States, Australia, New Zealand and others.

Investigation of clinical value

As mentioned above, in order to be able to draw conclusions regarding the true supplementary value of the dynamic factors for guiding individualized treatment interventions through focusing specifically on strengthening the dynamic protective factors, it is vital that future studies include an evaluation of the effects of this additional positive approach in treatment. The resulting improvements on the dynamic factors that are observed during treatment should be related to reductions in the likelihood of violent behavior. Indeed, Haque and Webster (2013) argue that the forensic mental health field is in need of an increased understanding about which interventions are effective to prevent violent recidivism and how they work to promote desistance. Ideally, the results of interventions targeting specific dynamic protective factors are studied in prospective treatment evaluations followed by a period of community follow-up after treatment, preferably by means of randomized controlled trials and including re-assessments at set time intervals. This kind of treatment evaluation research is necessary in order to be able to conclude whether attending more to protective factors in treatment would indeed sort an even greater desistance enhancing effect. Through the careful observation of treatment effects by means of repeated measures of the dynamic risk and protective factors over time (for example before and after specific interventions), hopefully insight will be gained about what protective factors work for which patients/clients/offenders. This could also lead to a better understanding about the potential for change of specific risk and protection domains and how factors on these domains may be developed or influenced effectively in treatment.

Testing proposed models. In order to gain more insight into the mechanisms behind protective factors, it would be valuable to test the proposed models in Figure 1 and Figure 2. By acquiring more knowledge regarding the working of different protective factors, the interaction between risk factors and protective factors and how the different factors relate to desistance from violence, it may become possible to develop more effective interventions directed at enhancing specific protective factors. Better knowledge of the interaction between risks and protection could also lead to more advanced preventive risk management strategies, targeting specific risk factors. Therefore, further studies investigating protective factor mechanisms are encouraged and the implementation of the findings from such studies in treatment practice is highly recommended.

Routine Outcome Monitoring. Repeated measure studies could also provide more information on the usefulness of dynamic risk assessment tools for the evaluation of treatment progress in general. *Routine Outcome Monitoring* (ROM) seems to be the present-day term for the search of the holy grail of the effective components in violent offender treatment. Attempting to instate routine treatment evaluation by means of dynamic risk and protective factors surely offers great potential for evaluating individual treatment progress as the main objective of treatment is violence reduction. However, the routine collection of this data should preferably not be used by policy makers to attempt to benchmark hospitals and allocate funding according to the treatment progress observed in these tools. Although objectively the connection of risk reduction and funding may appear logical, putting this into practice may endanger the treatment and risk assessment integrity. Despite the moral, ethical and professional interests and obligations mental health care professionals have to carry out risk assessments as well informed and truthful as possible, there might be a risk that financial dependency on accomplishing progress will influence risk assessment practice. As assessments would be carried out with a different perspective (striving to demonstrate progress in stead of accurately assessing risk) they are at risk of being rated too positive in order to exhibit the desired 'progress'. As a consequence, violence prevention may no longer be the main objective of risk assessments carried out in clinical practice, which would actually defeat the purpose of the assessment.

The positive focus in treatment. Besides studying the empirical clinical value of protective factors in risk assessment, the implementation process and the qualitative benefits of the enhanced focus of positive factors may also be a valuable topic of research. The positive influence that protective factor assessments may have on the focus in treatment, on the communication with patients, on the motivation for treatment of both mental health professionals and patients, and as a result on the general treatment climate, are important clinical side-effects which may in itself warrant the additional focus on protective factors. In order to investigate this potential effect, patients could be involved in the research through seeking their opinion of possible enhanced treatment motivation and evaluations of the treatment climate. Patients could even be invited to assess their own risk factors and protective factors for violence in order to gain insight into the risk assessment process. In a preliminary study carried out with forensic psychiatric patients in their final stages of treatment at the Van der Hoeven Kliniek patients were asked to rate themselves on the risk factors and protective

factors of the HCR-20 and the SAPROF. Besides the interesting differences this revealed in the opinions on some items between staff and patient ratings and on the overall final judgments on the level of violence risk, which provided for meaningful discussions between the patients and their treatment teams, the exercise itself sparked an interest in most patients in the risk assessment process and their understanding of the importance of specific risk and protective factors, which in turn inspired increased treatment motivation. By focusing on the positive assessment of protective factors in addition to the risk factors, patients seemed more motivated to think about their own violence risk constructively and evaluate their treatment progress more critically together with their treatment teams.

Further recommendations

SAPROF adaptations. A yet to be further uncovered area of interest is the potential value of protective factors for juvenile offenders. Theoretically, it could be argued that protective factors may be even more important in violence prevention for young offenders as they are still in development and generally more susceptible to influences from the environment and social relations. Several studies on juveniles have focused on the importance of protective factors in violence risk assessment of adolescents. Lodewijks, de Ruiter and Doreleijers (2010) demonstrated that the few protective factors included in the *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum, Bartel, & Forth, 2006) had good predictive validity for desistance from violent re-offending among juveniles. Moreover, they found incremental predictive validity of the protective factors over the risk factors in the SAVRY. Klein and colleagues (2012) found positive results for the value of the SAPROF protective factors for juvenile sexual offenders. The increasing desire over the past years of clinicians working in the treatment of juvenile offenders for a more elaborate assessment of protective factors as offered in the SAPROF, inspired the development of a SAPROF Youth Version (SAPROF-YV; pilot version: de Vries Robbé, Geers, de Vogel, Hilterman, & Stapel, 2013). A pilot version of this SAPROF-YV has recently been developed in The Netherlands and is currently being evaluated. The final version of the SAPROF-YV is anticipated to be ready by mid 2014 and intended to be used in accordance with the SAVRY or related juvenile risk assessment instruments. Studies among youth samples with the SAPROF-YV will be an altogether new research area of interest. It will be useful to evaluate results with the SAPROF-YV alongside those with other tools for juvenile offenders which also incorporate strengths or protective factors, such as the SAVRY for medium term assessments of violence risk in youth, the *Short-Term Assessment of Risk and Treatability: Adolescent Version* (START:AV; Viljoen, Cruise, Nicholls, Desmarais, & Webster, 2013) for short-term assessments, and the *Assessment Intervention Moving on* (AIM-2; Print et al., 2009) or the *Desistence for Adolescents who Sexually Harm* (DASH-13; Worling, 2013) for the assessment of sexual violence risk and protective factors in juvenile sexual offenders. In addition to the development of the SAPROF-YV, mental health professionals working with patients with learning disabilities (LD) have proposed an adaptation of the adult SAPROF for use with LD populations. An LD adapted version of the SAPROF (SAPROF-LD) is currently being constructed by colleagues in the United Kingdom. It would be valuable to study the usefulness of this version in LD populations.

HCR-20^{V3}. A final recommendation for future research on the SAPROF is to investigate the combined risk-strength assessment with the recently revised HCR-20 Version 3 (HCR-20^{V3}; Douglas et al., 2013; Dutch translation: de Vogel, de Vries Robbé, Bouman, Chakhssi, & de Ruiter, 2013). This revision of the HCR-20 is viewed as an innovation in violent offender assessment and should be considered as the state-of-the-art of violence risk assessment. Besides improvements in the item content and the increased dynamic ability of the tool, the HCR-20^{V3} offers in-depth guidance to the integration of risk assessment, risk formulation and scenario planning, linking this to risk management and violence prevention. The SAPROF fits in very well with this comprehensive and prevention focused approach to violence risk assessment that is pursued by the HCR-20^{V3} and it is recommended to be used as an additional tool to the HCR-20^{V3} (see Douglas et al., 2013, p. 35).

Similarly, it would be valuable to investigate the combined risk-strength assessment with a Dutch SPJ risk tool which is also commonly used in The Netherlands, the HKT-30 (WRFP, 2003). As Dutch forensic psychiatric hospitals using the HKT-30 are now also implementing the SAPROF as a positive addition to their violence risk assessments it would be valuable to study the combined use of these tools. In line with the HCR-20, the HKT-30 is also currently being revised (HKT-R; Spreen, Brand, ter Horst, Willems, & Bogaerts, in preparation). Although the previous versions of these tools, the HCR-20 and HKT-30, were highly comparable in content and thus the additional value of the SAPROF to both tools was likely similar, the revisions of both risk tools have taken them further apart. The HKT-R appears to be reverting back to a more actuarial risk prediction approach, while the HCR-20^{V3} takes a step forward into linking SPJ assessment with risk management and violence prevention. It would be valuable to study the combined use of the SAPROF with each of these redesigned risk tools, as well as with other risk tools such as those for specific types of offenses, like sexual violence or spousal violence.

Conclusion

This thesis provides strong support for the value of the inclusion of protective factors in the assessment of violence risk. The protective factors of the SAPROF have shown to be strong predictors of desistance from violence and to contribute to enhanced assessment accuracy. More importantly, improvements in protective factor scores have demonstrated to be related to reductions in violent behavior. These findings provide promising opportunities for treatment evaluation and improved guidance of positive treatment interventions and risk management strategies. This thesis will hopefully contribute to a further refinement of violent and sexual offender risk management and treatment and as a result to a safer reintegration of patients and offenders back into the community.

Summary

Summary

Background and aims of the thesis

This thesis concerns protective factors for violence risk and a tool specifically developed to assess these factors in risk assessment: the *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2007; 2009). The aim of this thesis was to explore the potential additional value of protective factors for assessing violence risk and for guiding positive treatment interventions. More specifically, this thesis focuses on validating the psychometric properties and clinical applicability of the SAPROF for forensic psychiatric treatment.

Overall conclusions

The general conclusion of this thesis is that the SAPROF shows sound psychometric properties. The protective factors in the SAPROF show good predictive validity for no violent incidents during treatment as well as for desistance from violent re-offending long after treatment. Good results are found across different groups of patients. Two findings in this thesis are especially meaningful:

1. protective factors demonstrate to provide incremental predictive validity over risk factors in predicting violent recidivism, in other words future violent behavior can be assessed more accurately when protective factors are incorporated in the risk assessment;
2. improvements on protective factors during treatment show to be related to reductions in violent recidivism after treatment, in other words the more protective factors are developed during treatment the less likely in becomes that a person will recidivate after treatment.

These results provide strong support for the value of the SAPROF as a protection-focused tool which can bring balance and increased accuracy to violence risk assessment, offers potential for treatment evaluation and may provide positive guidance for effective treatment interventions and risk management strategies for violent and sexual offenders.

Chapter summaries

In **Chapter 1** the concept of protective factors is introduced and the potential value of protective factors for the assessment of violence risk and for guiding the treatment of patients and clients with violent offending histories is discussed. The literature on protective factors is reviewed and the SAPROF is explained. A case study is presented in order to illustrate the use of the SAPROF in clinical practice and exemplify the additional strengths-based approach to violence risk assessment.

Chapter 2 specifically focuses on protective factors for patients who have sexually offended. It provides a literature review on protective factors that support desistance from violent and sexual offending in sexual offenders. The chapter argues that the inclusion of notions of desistance and strengths may provide additional guidance to the assessment and

treatment of those who sexually offend. Based on the literature review a list of eight potential protective domains for sexual offending is proposed. Seven of these domains are largely covered in the SAPROF protective factors, suggesting the SAPROF may have potential value for the assessment of (sexual) violence risk in sexual offenders.

Chapters 3 and 4 present the first file study validation on the SAPROF for violent and sexual offenders. **Chapter 3** concerns a sample of patients with violent offending histories. Results show good interrater reliability for the SAPROF and demonstrate significant improvements in SAPROF scores during the course of treatment. At the end of treatment, significantly better SAPROF ratings are observed for successfully discharged patients than for readmitted patients. For the discharged patients good predictive validity for violent recidivism after treatment is found for the SAPROF total scores as well as for the final protection and risk judgments. Moreover, evidence is found for the incremental predictive validity of including both protective factors and risk factors (HCR-SAPROF) compared to assessing risk factors only.

Chapter 4 presents a file study on discharged patients with sexual offending histories. Results for the sexual offender sample show similarly positive findings as the violent offender sample in Chapter 3 in terms of interrater reliability and predictive validity. Good predictive validity of the SAPROF is demonstrated for violent as well as sexually violent re-offending of sexual offenders, both for short-term and for long-term follow-up after treatment. The SAPROF also shows to add incremental predictive validity to the HCR-20 and to the SVR-20 in the prediction of future (sexual) violence.

In **Chapter 5** the discharged violent and sexual offender samples from the previous two chapters are combined in order to be able to further demonstrate the value of a two-sided dynamic approach to violence risk assessment. The total sample concerns 188 discharged forensic psychiatric patients. Results show no evidence of a moderating effect of violent or sexual offending history on the relationship between protective factors and future violence, indicating that the SAPROF has a similar effect for both types of offenders. Predictive validity for (desistance from) violent re-offending is found to be good for both the SAPROF and the HCR-20. Especially the dynamic factors of both tools demonstrate good predictive validity, even for long-term follow-up. Moreover, incremental predictive validity is found when the protective factors are added to the risk factors. Results suggest the presence of an interaction effect between risk factors and protective factors.

Chapter 6 studies the changeability during treatment of the dynamic risk- and protective factors in the HCR-20 and the SAPROF in relation to violent recidivism after discharge. Pre- and post-treatment SAPROF and HCR-20 assessments are compared for 108 discharged patients. Especially the SAPROF change scores demonstrate good results in this study. Treatment progress as measured by improvements on the dynamic protective factors is found to be predictive of violent recidivism for the short-term (1 year) as well as long-term (11 year) follow-up after discharge from treatment. This finding indicates that improving protective factors during treatment may have long lasting risk reducing effects after treatment.

In contrast with the previous chapters in which the data was collected retrospectively from file information, **Chapter 7** focuses on prospective assessment data collected in clinical practice. The study includes 399 assessments on 185 forensic psychiatric patients, carried out in consensus by multidisciplinary teams. This chapter addresses the differences in HCR-20 and SAPROF scores between forensic psychiatric treatment stages and the predictive validity of the tools for aggressive incidents during treatment across different groups of patients. During the later stages of treatment less risk factors and more protective factors are observed. The HCR-20 and the SAPROF both show good predictive validity for inpatient aggression, with higher predictive validities found for the assessments during the further stages of treatment. Good results are found for different groups of patients: violent offenders, sexual offenders, males, females, patients with major mental illnesses, with personality disorders, and with high psychopathy scores. These results suggest that the risk factors in the HCR-20 and the protective factors in the SAPROF are generally predictive of inpatient violence across different groups of forensic psychiatric patients.

Chapter 8 concludes with an overall discussion of the main findings in this thesis, its strengths and limitations, the clinical implications of the findings and suggestions for further research. Theories and mechanisms on the working of protective factors are contemplated and a model is proposed of the interaction of risk factors and protective factors in predicting desistance from violent behavior.

Samenvatting

Samenvatting

Achtergrond en doelstellingen van het proefschrift

Dit proefschrift betreft onderzoek naar beschermende factoren voor gewelddadig gedrag en een instrument specifiek ontwikkeld om deze factoren te meten ten behoeve van de risicotaxatie van geweld: de *Structured Assessment of Protective Factors for violence risk* (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2007). De doelstelling van het proefschrift was het onderzoeken van de potentiële toegevoegde waarde van beschermende factoren voor het inschatten van de kans op toekomstig gewelddadig gedrag en voor het informeren van behandelinterventies in de forensische psychiatrie. Meer specifiek richt dit proefschrift zich op het onderzoeken van de psychometrische eigenschappen en klinische toepasbaarheid van de SAPROF in de forensisch psychiatrische behandeling.

Algemene conclusies

Over het algemeen worden in de verschillende studies in dit proefschrift goede psychometrische eigenschappen gevonden voor de SAPROF. De beschermende factoren in het instrument tonen aan voor verschillende groepen patiënten goede voorspellende waarde te hebben, zowel voor (geen) gewelddadige incidenten tijdens de behandeling als voor het (niet) terugvallen in gewelddadige recidive op kortere en langere termijn na de behandeling. Twee bevindingen in dit proefschrift zijn met name van belang:

1. beschermende factoren blijken significant toegevoegde voorspellende waarde te hebben op risicofactoren, oftewel toekomstig gewelddadig gedrag kan beter worden ingeschat als naast risicofactoren ook beschermende factoren in kaart worden gebracht;
2. vooruitgang op beschermende factoren tijdens de behandeling is gerelateerd aan een vermindering van gewelddadige recidive na de behandeling, oftewel hoe meer beschermende factoren worden opgebouwd tijdens de behandeling hoe kleiner de kans dat iemand recidiveert na de behandeling.

Deze resultaten leveren een sterke onderbouwing voor de waarde van de SAPROF als een op bescherming gericht risicotaxatie instrument dat bijdraagt een evenwichtigere en nauwkeurigere risicotaxatie, potentie heeft voor behandelevaluatie en mogelijkheden biedt voor het geven van positieve richtlijnen voor behandelinterventies en risicomanagement strategieën voor gewelddadige en seksuele delinquenten.

Samenvatting van de hoofdstukken

In **Hoofdstuk 1** wordt het concept beschermende factoren geïntroduceerd en wordt de literatuur met betrekking tot beschermende factoren besproken. Vervolgens wordt ingegaan op de potentiële waarde van beschermende factoren voor de risicotaxatie van geweld en voor het bieden van richtlijnen voor de behandeling van patiënten en cliënten die eerder gewelddadig zijn geweest. De SAPROF wordt toegelicht en het gebruik van het instrument in de klinische praktijk wordt aan de hand van een casus studie geïllustreerd.

Hoofdstuk 2 betreft een beschouwing specifiek over beschermende factoren voor patiënten die in het verleden seksueel gewelddadige delicten hebben gepleegd. Hierin wordt een overzicht gegeven van de literatuur over beschermende factoren die bijdragen aan het verminderen van seksueel en gewelddadig delictgedrag bij seksueel delinquenten. In dit hoofdstuk wordt beargumenteert dat aandacht voor de sterke kanten van mensen en voor factoren die de recidivekans verminderen waardevolle aanvullende richtlijnen kunnen bieden voor de risicotaxatie en behandeling van seksueel delinquenten. Vanuit een verkenning van de literatuur wordt een lijst opgesteld van acht potentiële domeinen van bescherming voor seksueel geweld. Zeven van deze domeinen worden belicht in verschillende beschermende factoren van de SAPROF, waaruit geconcludeerd wordt dat de SAPROF potentieel van waarde is voor de risicotaxatie van (seksueel) geweld bij seksueel delinquenten.

In **Hoofdstuk 3** wordt de eerste retrospectieve validatie studie naar de SAPROF beschreven. De onderzoeksgroep betreft uitgestroomde tbs-patiënten die veroordeeld en behandeld zijn geweest voor het plegen van geweldsdelicten. De resultaten van dit onderzoek laten een goede interbeoordelaarsbetrouwbaarheid zien voor de SAPROF en tonen een significante vooruitgang op de beschermende factoren gedurende de behandeling. Aan het einde van de tbs-behandeling worden significant betere SAPROF beoordelingen gevonden voor patiënten die hun behandeling succesvol hebben afgerond en uitstromen naar de maatschappij, dan voor patiënten die wegens onvoldoende behandelresultaat zijn overgeplaatst naar een andere kliniek. Voor de groep succesvol uitgestroomde patiënten wordt vervolgens goede voorspellende waarde gevonden voor gewelddadige recidive na de behandeling voor zowel de SAPROF totaalscore als voor het eindoordeel bescherming en het eindoordeel risico. Bovendien wordt bewijs gevonden voor de toegevoegde voorspellende waarde van het beschouwen van zowel beschermende factoren als risicofactoren (HCR-SAROF) ten opzichte van beoordelingen op basis van alleen risicofactoren.

In **Hoofdstuk 4** wordt een dossierstudie gepresenteerd over een groep uitgestroomde patiënten met een verleden van seksueel delictgedrag. De resultaten voor de seksueel delinquenten groep laten vergelijkbaar positieve resultaten zien als voor de groep geweldsdelinquenten in Hoofdstuk 3 met betrekking tot interbeoordelaarsbetrouwbaarheid en predictieve validiteit. Goede voorspellende waarde wordt gevonden voor nieuwe veroordelingen voor gewelddadig en seksueel gewelddadig gedrag, zowel voor korte- als voor lange-termijn follow-up na de behandeling van seksueel delinquenten. De SAPROF blijkt significant toegevoegde voorspellende waarde te hebben in aanvulling op de HCR-20 en de SVR-20 met betrekking tot de voorspelling van toekomstig (seksueel) geweld.

In **Hoofdstuk 5** worden de groepen uitgestroomde gewelds- en seksueel delinquenten uit de voorgaande twee hoofdstukken gecombineerd teneinde de waarde van een tweezijdige dynamische benadering van de risicotaxatie van geweld verder te onderzoeken. De totale onderzoeksgroep betreft 188 uitgestroomde forensisch psychiatrische patiënten. Er wordt geen modererend effect gevonden van een gewelds- of zeden achtergrond op de relatie tussen beschermende factoren en toekomstig geweld. Dit impliceert dat de SAPROF factoren waarschijnlijk een vergelijkbaar effect hebben voor beide typen delinquenten. Zowel de SAPROF als de HCR-20 laten een goede voorspellende waarde zien voor het (niet meer)

plegen van geweld. Met name de dynamische factoren in beide instrumenten tonen goede predictieve validiteit, zelfs voor lange-termijn follow-up. Daarnaast wordt toegevoegde voorspellende waarde gevonden wanneer de beschermende factoren aan de risicofactoren worden toegevoegd en komen aanwijzingen naar voren voor een interactie-effect tussen risico en beschermende factoren.

In **Hoofdstuk 6** wordt nader onderzoek gedaan naar de veranderbaarheid van de dynamische risico en beschermende factoren in de HCR-20 en de SAPROF tijdens de behandeling in relatie tot gewelddadige recidive na de behandeling. Voor 108 uitgestroomde patiënten worden taxaties met de SAPROF en de HCR-20 aan het begin en aan het eind van de behandeling vergeleken. Met name de verander-scores op de SAPROF laten goede resultaten zien in deze studie. Vooruitgang in de behandeling zoals gemeten aan de hand van verbetering op de dynamische beschermende factoren blijkt voorspellend te zijn voor geweldsrecidive op zowel korte- (1 jaar) als lange-termijn (11 jaar) na de behandeling. Deze bevinding laat zien dat het versterken van beschermende factoren tijdens de behandeling lang werkende risicoreducerende effecten kan hebben na de behandeling.

In tegenstelling tot de voorgaande hoofdstukken waarin de data retrospectief werd verzameld uit dossierinformatie, betreft **Hoofdstuk 7** prospectieve risicotaxatie data verzameld in de klinische praktijk. In deze studie worden 399 taxaties van 185 forensisch psychiatrische patiënten geanalyseerd, die uitgevoerd zijn in consensus door multidisciplinaire teams. Er blijken verschillen te zijn in HCR-20 en SAPROF scores tussen opeenvolgende fasen in de behandeling: in de latere fasen van behandeling worden minder risicofactoren en meer beschermende factoren waargenomen. De HCR-20 en de SAPROF laten beiden goede voorspellende waarde zien voor geweldsincidenten, met hogere voorspellende waardes voor de risicotaxaties in de latere fasen van de behandeling. Voor verschillende groepen patiënten wordt goede predictieve validiteit gevonden voor incidenten van interpersoonlijke agressie tijdens de behandeling: geweldsdelinquenten, seksueel delinquenten, mannen, vrouwen, patiënten met psychiatrische problematiek, met persoonlijkheidsproblematiek en met een hoge mate van psychopathie. Dit suggereert dat de risicofactoren in de HCR-20 en de beschermende factoren in de SAPROF over het algemeen voorspellend zijn voor gewelddadig gedrag binnen de behandeling van uiteenlopende groepen forensisch psychiatrische patiënten.

Hoofdstuk 8 besluit met een algemene discussie van de belangrijkste bevindingen uit dit proefschrift, de sterke punten en beperkingen van het onderzoek, de klinische implicaties van de resultaten en suggesties voor verder onderzoek. Theorieën en mechanismen met betrekking tot de werking van beschermende factoren worden besproken. Tevens wordt een model geïntroduceerd van de interactie tussen risicofactoren en beschermende factoren en hun relatie met verminderd gewelddadig gedrag.

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Appendixes

Appendix I - SAPROF coding sheet

Coding sheet SAPROF
Protective factors for violence risk

To be used only in combination with the HCR-20 / HCR-20^{V3}
or related structured risk assessment instruments

Name:	**Date:**
Age:	**Gender:** ❑ Male ❑ Female
Context risk assessment:	

Internal factors		**Score**	**Key**	**Goal**
1.	Intelligence		❑	
2.	Secure attachment in childhood		❑	
3.	Empathy		❑	❑
4.	Coping		❑	❑
5.	Self-control		❑	❑

Motivational factors		**Score**	**Key**	**Goal**
6.	Work		❑	❑
7.	Leisure activities		❑	❑
8.	Financial management		❑	❑
9.	Motivation for treatment		❑	❑
10.	Attitudes towards authority		❑	❑
11.	Life goals		❑	❑
12.	Medication ❑ n/a		❑	❑

External factors		**Score**	**Key**	**Goal**
13.	Social network		❑	❑
14.	Intimate relationship		❑	❑
15.	Professional care		❑	❑
16.	Living circumstances		❑	❑
17.	External control		❑	❑

Other considerations:

Final Protection Judgment and Integrative Final Risk Judgment *SAPROF + HCR-20 / HCR-20^{V3}*	**Protection** ❑ Low ❑ Low - Moderate ❑ Moderate ❑ Moderate - High ❑ High	**Risk** ❑ Low ❑ Low - Moderate ❑ Moderate ❑ Moderate - High ❑ High

Name assessor(s):	**Position:**

Appendix II - List of publications

Manuscripts

de Vogel, V., & de Vries Robbé, M. (2013). Risicotaxatie van geweld in de forensisch klinische praktijk. [Violence risk assessment in forensic clinical practice]. In P. van der Helm, U. Kroger, P. Schaftenaar, & J. van Vliet (Eds.), *Leefklimaat in de klinische forensische zorg* (pp. 313-327). Amsterdam: Uitgeverij SWP.

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de Vogel, V., de Vries Robbé, M., de Ruiter, C., & Bouman, Y.H.A. (2011). Assessing protective factors in forensic psychiatric practice. Introducing the SAPROF. *International Journal of Forensic Mental Health, 10,* 171-177.

de Vogel, V., de Vries Robbé, M., de Spa, E., & Wever, E. (2012). Tien jaar gestructureerde risicotaxatie in de forensisch klinische praktijk: Wat heeft het opgeleverd en waar zijn verbeteringen mogelijk? [Ten years of structured risk assessment in forensic clinical practice: What did we gain and what improvements are possible]. In: J.W. van den Berg, J. Mulder, & W. Smid (Eds.), *It takes two to tango. De synergie tussen wetenschappelijk onderzoek en klinische praktijk. Liber Amicorum Daan van Beek*. Utrecht: Forum Educatief.

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de Vogel, V., van den Broek, E., & de Vries Robbé, M. (2014). The use of the HCR-20^{V3} in Dutch forensic psychiatric practice. *Manuscript accepted for publication in the International Journal of Forensic Mental Health.*

de Vries Robbé, M., & de Vogel, V. (2009). Assessing protective factors for violence risk. *American Psychology-Law Society News, 29*, 11-12.

de Vries Robbé, M., & de Vogel, V. (2012). *SAPROF 2nd Edition manual updated Research chapter.* Utrecht: Van der Hoeven Stichting.

de Vries Robbé, M., & de Vogel, V. (2013). Beschermende factoren voor gewelddadig gedrag: De waarde voor risicotaxatie en behandeling. [Protective factors for violent behavior: The value for risk assessment and treatment]. In P. van der Helm, U. Kroger, P. Schaftenaar, & J. van Vliet (Eds.), *Leefklimaat in de klinische forensische zorg* (pp. 341-355). Amsterdam: Uitgeverij SWP.

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de Vries Robbé, M., de Vogel, V., Koster, K., & Bogaerts, S. (2014). Assessing protective factors for sexually violent offending with the SAPROF. *Manuscript accepted for publication, pending final revisions, in Sexual Abuse: A Journal of Research and Treatment.*

de Vries Robbé, M., de Vogel, V., & Stam, J. (2012). Protective factors for violence risk: The value for clinical practice. *Psychology, 3*, 1259-1263.

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Koster, K., de Vries Robbé, M., & de Vogel, V. (2012). Beschermende factoren bij seksuele delinquenten. Een retrospectieve studie naar de validiteit van de SAPROF bij ex-terbeschikkinggestelde seksueel delinquenten in de FPC Dr. S. van Mesdag en de Van der Hoeven Kliniek. [Protective factors for sexual offenders. A retrospective study of the validity of the SAPROF for discharged sexual offenders from two Dutch tbs-hospitals]. *GZ-psychologie, 6,* 8-15.

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Risk assessment tools

de Vogel, V., de Ruiter, C., Bouman, Y., & de Vries Robbé, M. (2007). *SAPROF. Richtlijnen voor het beoordelen van beschermende factoren voor gewelddadig gedrag. (Dutch version)*. Utrecht: Forum Educatief.

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About the author

Michiel de Vries Robbé was born in the small town of Garsthuizen in the far north of The Netherlands in 1979, and grew up with a windmill in his backyard. After moving to the city of Nijmegen in the east at age 12, he completed his high school at the Stedelijk Gymnasium Nijmegen in 1997. In search of adventure he decided to backpack through Australia and surrounding countries for a year. This turned out to be life changing, as on his travels he met his future Canadian wife. He went on to study Social and Clinical Psychology at the University of Groningen in The Netherlands. For his masters thesis on prejudice and personality he went back to Australia to do research at the Griffith University on the Gold Coast. Upon finishing his studies he followed his heart and moved to Calgary, Canada in 2003. After shoveling snow for a while, he worked as a sociotherapist at the Society for the Treatment of Autism. The following year he moved back to The Netherlands and found a research position at the Van der Hoeven Kliniek, a forensic psychiatric hospital in the city of Utrecht. He has been working there since, primarily doing research on violence risk assessment. He is co-author of the SAPROF for the assessment of protective factors, of the FAM for the assessment of risk factors for women and of the Dutch translation of the HCR-20^{V3}. Currently he is working on developing a youth version of the SAPROF, a tool for the structured assessment of protective factors for juveniles. In 2013 he was presented the Webster Young Scholar Award of the International Association of Forensic Mental Health Services for his accomplishments with regards to the research on protective factors for violence risk that is described in the different chapters of this thesis.