AN EXAMINATION OF DYNAMIC RISK, PROTECTIVE FACTORS, AND TREATMENT-RELATED CHANGE IN VIOLENT OFFENDERS

In Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in the Department of Psychology
University of Saskatchewan
Saskatoon

By
Richard Bryan Alexander Coupland

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107 Administration Place
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Canada

ABSTRACT

The present study was archival in nature and examined risk for recidivism, treatment-related changes in risk, protection against recidivism, treatment-related changes in protection, the relationship between risk and protective factors, and the prediction of positive community outcomes. A select set of risk- and protective-factor measures were used, including the Violence Risk Scale (VRS), the Historical Clinical Risk Management scheme-20 (HCR-20 version 2), the Structured Assessment of Protective Factors (SAPROF), and the PF List (an operationalized list of protective factors developed by the investigators). Participants included 178 federally incarcerated adult male violent offenders who participated in the Aggressive Behaviour Control treatment program at the Regional Psychiatric Centre (Saskatoon, SK) between 1998 and 2003. Participants were followed for an average of 9.7 years (*SD* 2.6) to assess community recidivism. Approximately 60% had at least one new violent conviction, 60% had at least one new nonsexual violent conviction, and 79% had at least one new conviction (i.e., any reconviction). Additionally, participants were followed for an average of 30.7 months (*SD* = 40.3) to assess institutional recidivism. Approximately 31% had at least one post-treatment major misconduct, 51% had at least one post-treatment minor misconduct, 12% had at least one post-treatment violent misconduct, and 56% had at least one post-treatment misconduct (i.e., any misconduct). Correlations between the risk measures scores support their convergent validity. Both the VRS and HCR-20 predicted all violent, nonsexual violent, and any recidivism. Dynamic variables on these tools generally added uniquely to the prediction of community recidivism over static variables. A similar but weaker pattern of results was observed for institutional recidivism. Additionally, treatment-related change scores on the risk measures added uniquely to the prediction of most recidivism outcomes, supporting the dynamism of these tools and the hypothesis that treatment-related changes translate to actual reductions in recidivism rates. Correlations between the protection measures' scores support their convergent validity. The protective factor tools, the SAPROF and PF List, similarly predicted community recidivism and, to a lesser degree, institutional recidivism. Dynamism of the protective factor tools was supported and change scores on these tools added incrementally to the prediction of recidivism outcomes. Large correlations were observed between the risk and protection scores, suggesting that part of the predictive accuracy of the protection measures may relate to measuring the absence of risk rather than the presence of protection. Alternative hypotheses are discussed.

Protection scores did not add incrementally to the prediction of recidivism over their respective risk scores. Risk, protection, and change scores were significant predictors of most positive community outcomes. Protection scores and risk change scores added incrementally to the prediction of positive community outcomes over their respective risk scores. As such, it appears that treatment-related changes may also represent increases in other positive community outcomes (beyond reduced reoffending) and that protection factors may have important benefits in risk assessment and treatment planning when other positive community outcomes are considered. Strengths, limitations, and implications are discussed.

ACKNOWLEDGEMENTS

My greatest thanks are extended to my doctoral supervisor, Dr. Mark Olver. His dedication to his students, his passion to see them succeed, and his gift of mentorship were paramount to my success in the program. His support, encouragement, and countless reference letters allowed me to pursue and accomplish goals that I had never imagined I would complete when I first started as his student.

I would like to thank my dissertation committee, Dr. Mansfield Mela, Dr. Megan O'Connell, Dr. Devon Polaschek, and Dr. Stephen Wormith for their shaping of this project, their support and encouragement, and their thorough review of this document. Further, I would like to express my immense gratitude to my undergraduate honors thesis supervisor, Dr. Peter Hoaken. It was his classes and research opportunities that sparked my interest to pursue clinical and forensic psychology at the graduate level.

I would like to offer a special thanks to my talented research assistants, Curtis Brad, Laura Garratt, Maralese Muller, John Myburgh, and Sam Riopka, for their late evenings and lost weekends. Without their countless hours of high quality coding and file extraction, I would not have been able to complete this project. I would also like to thank the following organizations: the Canadian Psychological Association Foundation (Student Research Grant), the Centre for Forensic Behavioural Sciences and Justice Studies (Graduate Student Research Award), and the Correctional Service of Canada.

I would like to express my gratitude to Ava Agar, Larisa Cornelius, Tyson Kurtenbach, Maegan Sharp, and Kristjan Sigurdson. Together we survived graduate school, looked out for each other, and supported each other. Your friendship was key to my success in the program and I cherish our shared memories.

Finally, I dedicate this dissertation to my brilliant and beautiful wife, Beth Davis. Her support, together with that of my loving parents, Harley and Shirlee Coupland, and the generosity of my in-laws, Brian and Ellen Davis, were instrumental to the completion of this document. I am forever grateful.

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Chapter 1.

An Examination of Dynamic Risk, Protective Factors, and Treatment-related Change in Violent Offenders

Violence is a serious problem throughout the world. It is unaffected by borders or social economic status. Violence has been noted as one of the leading causes of death for people ages fifteen to forty-four. Each year 1.6 million people lose their lives to violence; this equates to approximately 1424 deaths a day or one death a minute. Although it is estimated that half of these death may in fact be suicides, the figures remain staggering. Additionally, the monetary costs related to violence are in the billions. Healthcare expenses related to violence account for five percent of the gross domestic product (World Health Organization [WHO], 2002). In Canada, violent incidents account for one in five offences reported to the police (Dauvergne & Turner, 2009). In 2009, 443 000 violent incidents were reported to the police. Unfortunately, this is an underestimate of violent incidents in Canada as approximately 69% of violent incidents are not reported to police (Perreault & Brennan, 2009). The general social survey estimates that 1.6 million Canadians were victims of a violent incident in the prior 12-month period. This equates to approximately 6% of Canadians aged 15 or older experiencing violence each year. Additionally, a significant proportion of the victimized population (>25%) experienced multiple violent incidents in the same 12-month period. The authors note that 16.2% of individuals who have experienced a violent incident have also experienced a second violent incident within the same 12-month period, and 10% of victims have experienced three or more violent incidents in the same 12-month period. Luckily, 78% of victims report that the violent incident did not result in physical injury; however, victims reported that on average they were unable to return to their normal routine for 11 days following the violent incident.

Crime rates have been steadily decreasing in Canada since in 1991, which marked a peak in crime following steady increases through the 1960s, -70s, and -80s (Silver, 2006). Rates of violent crime have remained relatively stable since 2004 (Perreault & Brennan, 2009). Many demographic variables and their relationships with violence have also remained stable. Canada's Western and Prairie Provinces continue to report the highest rates of violence in provincial Canada. Victims of violence are more likely to be Canada's younger citizens. Individuals aged 15 to 24 years are at the highest risk for experiencing violent incidents. Similarly, individuals aged 18-24 years are also most likely to engage in violent behaviour with 90% of violent crime perpetrated by a male offender. Finally, rates of violence in Aboriginal populations is double that of non-aboriginal populations (Perreault & Brennan, 2009).

To gain a clearer picture of violence in Canada, it is also important to examine our violent offenders' likelihood to commit another violent act post-release from a correctional institution. Bonta, Rugge, and Dauvergne (2003) examined 22 000 violent offenders released during the 1994 to 1997 period. The authors reported a 13% violent reconviction rate using a two year follow-up. Similarly, Rice and Harris (1995) found comparable violent recidivism rates. The authors followed approximately 800 violent offenders for 10 years and found a 15% violent recidivism rate after 3.5 years of follow-up, 31% violent recidivism rate after 5 years of follow-up, and 43% violent recidivism rate after 10 years of follow-up with 29% of the population having committed a serious violent offence after 10 years. Bonta and colleagues (2003) also noted that male and aboriginal offenders were significantly more likely to reoffend violently and that most violent reconvictions occurred after the expiry of community supervision.

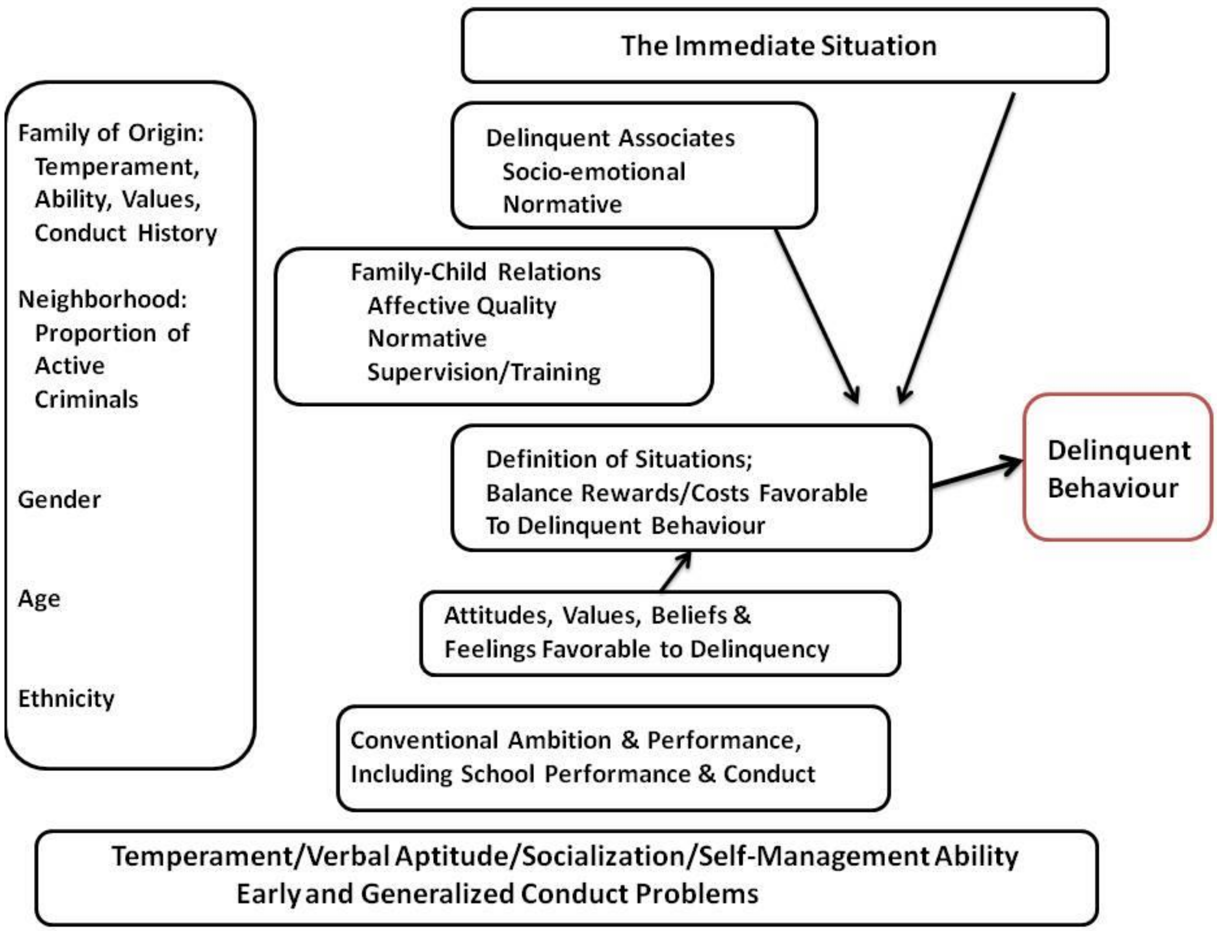
Given the magnitude of this problem both around the world and in Canada, a growing amount of research has been conducted in an attempt to elucidate the causes and prediction of violent offending as well as the creation of comprehensive violence risk assessment tools.

1.1 The Psychology of Criminal Conduct

A variety of models have been put forth in an attempt to understand criminal behaviour such as the two-path model of criminal violence (Harris, Rice, & Lalumiere, 2001) and biological models (see Andrews & Bonta, 2010a, ch. 5). Of particular importance to the development of risk assessment tools has been the general personality and cognitive social learning model (Andrews & Bonta, 2010a). The general personality and cognitive social learning model (see Figure 1.) incorporates distal and background dispositional factors (e.g., family of origin, temperament, gender, age, ethnicity, etc.) with factors influencing the immediate situation (e.g., temptations, facilitators, inhibitors, stressors, etc.). Together, these allow the reader to understand the factors that shape both the person (e.g., attitudes, values, beliefs, rationalizations, etc.) and the context of the immediate action (i.e. the reward/cost analysis of behaviours, and the outcome behaviour). Additionally, such an approach allows for the reader to recognize that there are multiple routes for an individual to become involved in crime. For example, the model recognizes that antisocial attitudes and criminal associates are strong risk factors; however, it does not assume that all young offenders have personalities oriented toward aggression and life long criminal conduct. Overall, the general personality and cognitive social learning model addresses the roles of well-established predictors, meanwhile emphasizing individual differences in the psychology of criminal conduct.

Figure 1.

The general personality and cognitive social learning model (Andrews & Bonta, 2010a, p. 137).



Of core importance to the general personality and cognitive social learning model is the role of the big four and central eight risk/need factors. Criminal history, antisocial personality, antisocial cognitions, and antisocial associates represent the big four risk/need factors, with the inclusion of family/marital concerns, substance abuse, school/work, and leisure/recreation representing the greater central eight (Andrews & Bonta, 2010a). Within the general personality and cognitive social learning model, the big four and central eight risk/need factors represent the core driving factors for continued engagement in criminal conduct (for a review see Andrews and Bonta, 2010a, ch. 2). Originally outlined in the 1980s, the big four and central eight risk/need factors became key to the field of risk assessment and the prediction of recidivism.

1.2 Risk Assessment

The purpose of risk assessment is twofold. Firstly, risk assessment tools estimate or appraise the likelihood that an individual will recidivate upon release into the community. The results of risk assessment thereby provide important information regarding security level, release planning, and applications for preventative detention. Secondly, and perhaps more importantly, risk assessment can aid in the prevention of future harm. This is known as prevention-based risk assessment. Such a model allows for the identification of an individual's risk factors as well as the proper implementation of risk management and intervention strategies (Douglas & Kropp, 2002).

Developments in the area of risk assessment have adopted different approaches. Initially, risk assessment was conducted using unstructured clinical judgement. However, after years of use it became clear that unstructured clinical judgement demonstrated weak or at least inconsistent predictive efficacy (e.g., Meehl, 1954; Mossman, 1994; Monahan, 1996; Wormith & Goldstone, 1984; Grove, Zald, Lebow, Snitz, & Nelson, 2000). Thus, appraisal and management of risk have become increasingly structured and accurate. Initial structured approaches to risk assessment primarily involved the incorporation of static variables (i.e., demographic or historical variables that are relatively unchanging, such as criminal history and age). A variety of static, actuarial measures have been developed and they generally demonstrate good predictive validity. For example, Campbell, French, and Gendreau (2009) demonstrated that the statistical information on recidivism (SIR; Nuffield, 1982; Bonta, Harman, Hann, & Cormier, 1996) and the Violence Risk Appraisal Guide (VRAG; Harris, Rice, & Quinsey, 1993) both show strong predictive validity for future violent reoffending, weighted $r = .22$, and $r = .32$ respectively. Despite static actuarial measures strong predictive validity, they are quite limited in their utility as they cannot inform changes in an offender's risk and they provide little information about an offender's problem areas and treatment needs (Wong & Gordon, 2006; Wong, Olver, & Stockdale, 2009). Additionally, any measure relying solely on static variables will produce a risk profile that is unchanging over time (Hoge & Andrews, 1996).

Advances in risk assessment over the past 15 years have involved incorporating dynamic risk variables. Wong and Gordon (2006) defined dynamic variables as "changeable or potentially changeable factors (such as substance abuse, impulsivity, and criminal attitudes) that can be influenced or changed by psychological, social, or physiological means such as treatment interventions" (p. 283). Thus, changes in the dynamic factors should be linked to changes in recidivism. Some example of prominent measures that use dynamic risk factors include, but are not limited to, the Violence Risk Scale (VRS; Wong & Gordon, 1999), the Historical Clinical Risk Managment-20 (HCR-20; Webster, Douglas, Hart, & Eaves, 1997), the Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995), and the Level of Service/Case Management Inventory (LS/CMI; Andrews, Bonta, & Wormith, 2004). In contrast to purely static tools, measures incorporating dynamic variables are based on the assumption that risk of violent reoffending can change and that dynamic variables can provide useful information about the treatment goals and needs of the offender. Research on dynamic variables has shown that they predict future recidivism equally as well as static variables but also allow for detection of changes in an offender's risk profile (Gendreau, Little, & Goggin, 1996; Olver, Wong, Nicholaichuck, & Gordon, 2007). A subset of the tools that include dynamic variables are discussed below.

1.2.1 VRS.

The VRS is an actuarial measure for the assessment of violence risk as well as treatment planning. It is comprised of six static variables and 20 dynamic variables with possible scores on each variable ranging from 0 to 3. The VRS is rated pre- and post-treatment with treatment-related change represented by progression through an integrated and modified stages-of-change model (Wong & Gordon, 1999). The stages-of-change model (or the transtheoretical model of behaviour change (TTM; Prochaska & colleagues, 1977 as cited in Prochaska & DiClemente, 2005)) was originally introduced for use in the health psychology field. However, the TTM has been demonstrated to be a valuable tool with a variety of offender populations such as adolescent offenders (Hemphill & Howell, 2000), female offenders (El-Bassel, Schilling, Ivanoff, Chen, Hanson, & Bidassie, 1998), offenders with substance misuse issues (El-Bassel et al., 1998), sex offenders (Tierney & McCabe, 2001; Olver et al., 2007), domestic batterers (Levesque, Gelles, & Velicer, 2000), violent offenders (Wong & Gordon, 2006), and general offenders (Polaschek, Anstiss, & Wilson, 2010).

In the VRS's modified application of this model, five sequential stages of the TTM show an offender's progression to behaviour change on each of the 20 dynamic variables. The first stage is known as precontemplation in which a person does not see their behaviour as a problem and has no intention to change said behaviour. The second stage is contemplation in which a person has begun to see that their behaviour is maladaptive; however, they have not yet attempted to use skills or strategies to change their behaviour. The third stage of the TTM is preparation. In this stage the person understands their behaviour is maladaptive and he/she is using cognitive and behavioral skills and strategies to attempt to change his/her behaviour; however, these changes are very recent and lapses tend to be frequent. The fourth stage is action in which the person is actively engaging in alternate behaviour over a sustained period of time (often upwards of a year), relative to their lifetime functioning, and lapses tend to be very infrequent. The fifth stage is maintenance in which the person has sustained positive behaviour changes for an extended period of time across a variety of contexts without lapsing into previous problematic behaviour. Relapse prevention is the focus at this time.

Some psychometric tools have opted to weight certain items greater than other items to bolster their predictive capacity. However, all items in the VRS (both static and dynamic) are given the same weight as there is no evidence that one item consistently and reliably out-predicts all others, or that differentially weighting the items substantively improves prediction. Tabachnick and Fidell (2007) identify serious problems with stepwise procedures to predict outcomes using a weighted linear combination of predictor variables. Namely, the procedure capitalizes on chance and the decision rules to include or exclude variables can result in the exclusion of potentially meaningful variables if predictive magnitudes of individual variables differ by only a fraction of a coefficient. A further problem is that bizarre or unusual weighting of variables can occur (e.g., on the VRAG, schizophrenia diagnosis is given negative weighting in the prediction of violence), and the regression weights (i.e., predictive value of individual variables) may not be stable across samples, settings, or jurisdictions. As such, an even weighting of variables offers a parsimonious solution to the challenges and vagaries posed by differential weighting of variables.

The VRS has been demonstrated to have strong predictive accuracy. Wong and Gordon (2006) demonstrated that VRS total scores predicted violent and nonviolent recidivism of 918 violent offenders with 4.4 years of follow-up, r_{pb} = .40, AUC = .75 and r_{pb} = .39, AUC = .72

respectively. Further, the authors noted that VRS dynamic variable scores predicted future violence (r_{pb} = .40) significantly better than VRS static variable scores (r_{pb} = .31). The VRS has also been demonstrated to have strong predictive accuracy in mentally disordered offenders. Dolan and Fullam (2007) examined the predictive accuracy of the VRS in a sample of 136 male medium security psychiatric inpatients. The authors demonstrated that VRS total scores predicted institutional violence 12 months post-assessment, Cohen's *d* = .72, AUC = .71. Additionally, the authors noted that VRS dynamic variable scores predicted institutional violence (Cohen's *d* = .75, AUC = .72) significantly better than the VRS static variable scores (Cohen's *d* = .42, AUC = .62).

Yang, Wong, and Coid (2010) conducted a meta-analysis examining the predictive accuracy of violence risk assessment tools. With regard to the VRS, the authors examined four published studies (*n* = 1148). The authors determined that the VRS demonstrated strong predictive accuracy for violent recidivism (Cohen's *d* = .53, AUC = .65) and that no appreciable difference was observed between the VRS and other commonly used violence risk assessment tools after controlling for key moderators. Additionally, the authors examined the utility of the VRS dynamic and static domain scores (k = 3, *n* = 1098). The authors demonstrated that the VRS dynamic domain performed slightly, but not significantly, better than VRS static domain (Cohen's *d* = .57, AUC = .66 and Cohen's *d* = .51, AUC = .65 respectively). The authors noted that, although predictive accuracy did not significantly differ between the dynamic and static domains, "the clinical usefulness of dynamic variables outweighs the static ones in risk reduction treatment and management of forensic clients" (p. 759).

Wong, Gordon, and Gu (2007) demonstrated that as offenders completed violence-focused intervention, violent offenders move through the stages-of-change as shown by the integrated TTM in the VRS. Tierney and McCabe (2001) hypothesized that progression through the stages-of-change may have a negative relationship with recidivism. Lewis, Olver, and Wong (2013) tested this hypothesis. The authors examined pre- and post-treatment VRS scores in a sample of 150 high risk violent offenders receiving high intensity, violence-focused treatment. The authors demonstrated that progression through the stages-of-change on the dynamic predictors of the VRS (as noted by larger change scores) was negatively correlated with violent reoffending. Overall, 23.1% of violent offenders with high change scores reoffended violently after five years of follow-up; whereas 56.7% of violent offenders with low change scores reoffended violently at follow-up. Further, the authors demonstrated that post-treatment VRS dynamic and total scores were stronger predictors of violent recidivism than pre-treatment VRS dynamic and total scores (AUC = .66 and AUC = .64 vs AUC = .60 and AUC = .60). Similarly, Olver and Wong (2011) demonstrated that sex offenders with high change scores on a related measure, the Violence Risk Scale: Sex Offender Version (VRS:SO; Wong, Olver, Nicholaichuk, & Gordon, 2003), also showed significantly decreased rates of sexual recidivism when compared to sex offenders with low change scores. Together, these studies demonstrate that the integrated TTM in the VRS is able to capture therapeutic change and that this change is related to decreased recidivism.

1.2.2 HCR-20.

The HCR-20 version 2 is a structured professional judgement measure which contains 10 static/stable variables (referred to as historical variables) and 10 dynamic variables (referred to as clinical and risk management variables). Each variable is rated on a 3-point scale and the clinician assigns an overall risk rating of low, medium, or high risk based on the overall pattern of scores over the 20 variables (Webster et al., 1997). Douglas, Yeomans, and Boer (2005) examined the predictive accuracy of the HCR-20 in 188 offenders with a mean follow-up time of 7.5 years. The authors demonstrated that the HCR-20 raw score had strong predictive accuracy for violent recidivism (AUC = .82). Additionally, the authors examined the predictive accuracy of the historical, clinical, and risk management variables independently. The static historical variables were demonstrated to be strong predictors of violent recidivism (AUC = .72); however, the dynamic variables contained in the clinical and risk management scales were determined to be stronger predictors of violent recidivism (AUC = .79 and AUC = .80). Finally, the authors examined whether structured final judgements were as predictive of violent recidivism in comparison to using the raw scale scores. The HCR-20 continued to be a strong predictor of violent recidivism when structured final judgement was used instead of reliance on the raw scale scores (AUC = .78).

Dolan and Fullam (2007) examined the predictive accuracy of the HCR-20 in 136 mentally disordered forensic inpatients with 12 months follow-up. The authors demonstrated the HCR-20 scores were a strong predictor of future institutional violence (Cohen's *d* = .80). Further, the authors examined the predictive accuracy of the historical, clinical, and risk management scores independently. Static historical variables of the HCR-20 were found to be a strong predictor of institutional violence (Cohen's *d* = .62). The dynamic variables of the HCR-20's clinical and risk management scores were also strong predictors of institutional violence (Cohen's *d* = .85 and *d* = .60 respectively). Finally, the authors correlated the VRS total and the HCR-20 total scores. The authors demonstrated that the measures show strong convergent validity, $r = .92$, $p < .001$.

The Yang and colleagues (2010) meta-analysis referenced above also examined the predictive accuracy the HCR-20 (k = 16, *n* = 4161). The authors determined that the HCR-20 demonstrated strong predictive accuracy for violent recidivism (Cohen's *d* = .79, AUC = .71) and that no appreciable difference was observed between the HCR-20 and other commonly used violence risk assessment tools after controlling for key moderators such as country of origin, sample, and setting. The authors also examined the predictive accuracy of the historical, clinical, and risk management scores independently. The historical variables of the HCR-20 were found to be a strong predictor of violent recidivism (Cohen's *d* = .61, AUC = .67, k = 18, *N* = 4725). Additionally, the clinical variables (k = 14, *n* = 4078) and the risk management variables (k = 12, *n* = 3998) of the HCR-20 were both found to be strong predictors of violent recidivism (Cohen's *d* = .59, AUC = .66 and Cohen's *d* = .60, AUC = .66 respectively). Yang and colleagues broadly concluded that all nine risk tools (including the VRS, HCR-20, and LSI-R) were relatively equal in their predictive accuracy for violence.

1.3 Issues of Risk Assessment

A number of issues exist in the use of and research on risk assessment. A subset of these issues are discussed below, including the selection of a risk assessment tool, risk state vs risk status, assessing changes in risk, and the role of protective factors in risk assessments.

1.3.1 Selection of a risk assessment measure.

The selection of a risk assessment measure is an important decision. Bonta (2002) argues that ten guidelines should be considered. First, assessment of offender risk should be based on actuarial measures of risk rather than personality, projective, or unstructured measures. Second, measures used in a risk assessment should demonstrate predictive validity and have been developed specifically to do so. Third, the instrument used should be directly relevant to criminal behaviour. Fourth, the instrument should be derived from a relevant theory such as social-learning perspectives. Fifth, the measure should assess multiple domains of criminal conduct (e.g., criminal history and social support for crime). Sixth, the measure should assess criminogenic needs. In other words, the measure should contain dynamic risk variables which allow for prediction of risk and treatment planning. Seventh, measures of general personality and cognitive ability should be limited to the assessment of responsivity factors rather than risk. Eighth, multiple methods should be used to assess the risk and criminogenic need as every tool and every approach (e.g., interview, pencil-paper, etc.) has its limitations. Ninth, the assessor must exercise professional responsibility and only use measures that he or she is appropriately trained on. Finally, the tenth guideline outlined by Bonta (2002) is "be nice". The measure selected "should adhere to the least-restrictive alternative" (p. 374). In other words, a measure should not be selected specifically to justify the application of severe sanctions.

Assuming the Bonta's (2002) guidelines are followed, assessors are still left with the choice of which qualified risk assessment tool should be chosen. One might suspect that the measure with the strongest predictive validity should be chosen; however, making a decision on this basis is far from clear cut. For example, Campbell and colleagues (2009) examined the predictive accuracy of five tools designed to assess violence risk using a meta-analytic approach. The authors reported no clinically significant difference between the measures with effect sizes ranging from r_{pb} = .24 to .27. Similarly, the Yang and colleagues (2010) meta-analysis examined the predictive accuracy of nine commonly used violence risk assessment tools using a multi-level modelling approach. After controlling for key moderators, the authors noted no clinically significant differences between tools with effect sizes ranging from AUC = .65 to .71. Thus, Olver, Stockdale, and Wormith (2009) suggest that the selection of a risk assessment tool should be decided based on the purpose of the assessment. For example, if the purpose of the assessment is to generate a risk rating, then many different measures can serve this purpose. However, if the purpose of the assessment is treatment planning, then a tool specifically designed to assess criminogenic needs (i.e. treatment targets) such as the VRS or HCR-20 would be a more appropriate choice. Further, if there was a desire to identify responsivity considerations that could impact treatment, tools such as the Psychopathic Checklist-Revised (PCL-R; Hare, 2003) and its derivatives could be of assistance to identify individuals who may be at risk for non-completion of risk management strategies; although usefulness of such tools may be minimized in highly homogenous samples (see Polaschek, 2010).

1.3.2 Risk state vs status.

Similar to the previous studies, Kroner, Mills, and Reddon (2005) conducted a “coffee can” factor analysis of four commonly used risk assessment tools. Individual items from the four tools were transcribed onto separate cards. The cards were mixed in a coffee can, and then items were drawn at random to create new instruments comprised of randomly selected items from the original tools. Upon creating the randomly generated instruments from the four tools’ subcomponents, the authors demonstrated that no single original instrument had better predictive accuracy than the randomly derived instruments. The authors interpreted the results in two ways. First, the results supported that all four measures had similar predictive accuracy for future criminal conduct. Second, the results demonstrate a failing of our current risk assessment theory and “suggest substantial deficiencies in the conceptualization of risk assessment and instrumentation” (p. 360). Thus, the authors argue that risk assessment is being conducted under a limited or stagnated conceptualization of risk and that advances in the development of a risk-based construct are needed.

Douglas and Skeem (2005) have also addressed this issue. The authors argue that a differentiation between risk status and risk state is lacking in our understanding of risk. The bulk of past research has focused on risk status—“interindividual risk level based largely on static factors” (p. 347). In other words, research has focused on the identification of individuals at high risk for violent behaviour relative to other people and leaves little room for change over time. Although risk status is an important consideration, a high-risk status offender’s actual level of risk “ebbs and flows overtime within each individual” (p. 348). For example, the risk level of a vigilante who targets child molesters is very different during an individual counselling session with a therapist in comparison to when the same individual is accidentally assigned to a cell in the sex offender wing of a prison. Thus, risk state is a measure of “intraindividual risk level determined largely by current status on dynamic risk factors” (p. 347). Risk state describes an individual’s “propensity to become involved in violence at a given time, based on particular biological, psychological, and social variables in his or her life” (p. 349). Overall, the authors argue that the dynamic entity of risk is better examined through the empirical identification of dynamic factors and the broadening of our conceptualization of risk.

1.3.3 Assessing changes in risk.

A growing number of risk assessment tools include dynamic risk factors; however, the majority of research conducted on these measures has examined the relationship between violent recidivism and scores on dynamic risk factors at a single time-point. As noted by Hanson and Harris (2000), to make claims of dynamism requires a minimum of two ratings at different time-points. Thus, it remains unclear whether differences in these dynamic risk factors are truly associated with changes in violent recidivism as most research assumes dynamic risk factors are dynamic without having provided empirical evidence corroborating such a claim (Douglas & Skeem, 2005; Olver et al., 2007). Consequently, the link between changes in dynamic risk factors and changes in recidivism needs to be examined as it is the underlying presumption of correctional intervention.

Demonstrating the connection between dynamic risk factor change (due to treatment) and changes in violent recidivism has largely been neglected in empirical research, and research conducted thus far has been inconsistent in its outcomes. Preliminary attempts to address this hole in the literature have examined dynamic variables at multiple time-points. For example, Belfrage and Douglas (2002) examined the clinical and risk management (i.e. the dynamic variables) scores on the HCR-20 in forensic psychiatric inpatients pre- and post-treatment. The authors demonstrated that movement on the dynamic variables did occur following treatment. Unfortunately, the authors did not examine whether the change on the dynamic variables represented a change in recidivism rates as they did not have a follow-up period. Further, the treatment program length was highly variable and the treatment program did not have violence reduction as its specific focus. As such, without follow-up data on recidivism, it is difficult to ascertain whether the observed movement on the dynamic factors were risk relevant or whether they related to a different aspect of the unspecified treatment program.

Similarly, Wilson, Desmarais, Nicholls, Hart, and Brink (2013) examined changes in dynamic risk for institutional violence using a sample of 30 forensic inpatients. Over the course of one year, the HCR-20 was rated four times (i.e., every three months). The authors demonstrated that dynamic scores varied over the four assessments and that for each three-month follow-up period the predictive accuracy of the assessments varied. Unfortunately, the authors did not examine whether changes between assessments were statistically different nor whether the change scores added incrementally over the previous assessment’s dynamic scores in the prediction of institutional violence. Generally, mean dynamic scores for the different assessment were similar in size with overlapping standard deviations. Further, changes on the HCR-20 dynamic scales were not tied to specific violence-reducing agents as the treatment program was unspecified in nature. As such, the changes may represent natural fluctuations in the score over the three months between assessments or variability of a score within the 95% confidence interval due to error of measurement (i.e., non-reliable change of the observed score around the true score) rather than intervention-related changes in risk and recidivism.

A study by Hanson, Harris, Scott, and Helmus (2007) also suffers from some of the aforementioned criticisms. The authors measured dynamic variables in a group of sex offenders at multiple time-points but found no significant relationship between changes on the dynamic variables with changes in sexual recidivism rates. A limitation of this study, however, was that the sex offenders in this study did not complete treatment between assessment time-points. The only potential therapeutic change agent was that these participants were completing community supervision. As such, it is possible that this null finding relates to the lack of a risk-relevant therapeutic change agent, rather than a lack of dynamism in the dynamic variables or a lack of relationship between change scores and recidivism rates.

A criticism of previous studies on "change" could be that most measures that incorporate dynamic variables are not specifically designed to assess change and lack an integrated and structured system to evaluate change. Recently, risk assessment instruments specifically designed to assess change have been developed. Both the VRS and VRS:SO contain dynamic risk factors and use an integrated stages-of-change model to assess change. Change scores on the VRS and the VRS:SO have been shown to be associated with reductions in any, violent, and sexual community recidivism after controlling for pre-treatment risk (Beggs & Grace, 2011; Lewis et al., 2013; Olver et al., 2007; Olver, Nicholaichuk, Kingston, & Wong, 2014; Sowden, 2013).

Beggs and Grace (2011) examined the predictive validity of the VRS:SO change scores in an archival sample of 218 adult male sex offenders who completed an intensive cognitive behaviour therapy (CBT) based sex offender treatment program between 1993 and 2000; mean follow-up length of 12.24 years. The total dynamic change score on the VRS:SO was found to be a significant predictor of post-treatment sexual recidivism ($r = -.23$, $p < .01$; AUC = .70). That is, increased prosocial changes (as captured by the VRS:SO) were associated with a decreased likelihood of being reconvicted for a new sexual offense. Further, using hierarchical cox regression analyses, the VRS:SO total dynamic change score demonstrated incremental validity in the prediction of sexual recidivism over the pre-treatment Static-99 score ($\beta = -.27$, $Exp^B = .76$, $p < .01$) and approached significance when both pre-treatment Static-99 and VRS:SO dynamic total scores were entered as covariates ($\beta = -.17$, $Exp^B = .84$, $p = .08$). In a multi-site, multi-intensity, prospective sample of 676 treated sex offenders with a mean follow-up of 6.31 years, Olver and colleagues (2014) found a similar pattern of results. Small but significant semi-partial correlations were observed between VRS:SO dynamic change scores (after controlling for pre-treatment VRS total score) and sexual, violent, and any community recidivism. Cox regression survival analyses revealed that dynamic change scores added incrementally to the prediction of any community recidivism ($\beta = -.07$, $Exp^B = .93$, $p = .010$) and approached significance for sexual and violent recidivism ($\beta = -.10$, $Exp^B = .90$, $p = .107$ and $\beta = -.08$, $Exp^B = .92$, $p = .058$, respectively). A similar pattern of results was observed in Sowden's (2013) high-risk treated sex offender sample.

Lewis and colleagues (2013) also found support for the predictive importance of using change scores. The authors examined the predictive validity of the VRS in a sample of 150 adult, male, high-risk, high-psychopathy violent offenders who completed a high-intensity CBT-based violence-reduction treatment program called the Aggressive Behaviour Control program. Mean total follow-up time was 4.9 years and results were reported for both total follow-up time and a fixed three year follow-up period. The authors found that VRS dynamic change scores were negatively associated with violent recidivism at both total follow-up ($r = -.21$, $p < .01$; AUC = .62) and three-year fixed follow-up ($r = -.23$, $p < .05$; AUC = .64). That is, prosocial changes (i.e. reductions in risk as measured by the VRS) were associated with reductions in future violence. Further, offenders with high change scores (greater than 7-points of change) had lower rates of recidivism (23.1%) than offenders with low change scores (56.7%; less than 3-points of change); log rank Kaplan-Meier survival analysis between low and high change groups identified a significant difference in failure rate, $\chi^2 (1, N = 74) = 10.20$, $p < .001$. Additionally, hierarchical cox regression survival analysis (total follow-up) and logistic regression (fixed three-year follow-up) revealed that VRS change scores incrementally added to the prediction of violent recidivism after controlling for VRS pre-treatment total score ($\beta = -.088$, $Exp^B = .92$, $p = .020$ and $\beta = -.144$, $Exp^B = .87$, $p = .042$, respectively). That is, for each one point increase in VRS change score (after controlling for pre-treatment VRS score), the likelihood of being convicted for a new violent offense decreased by 8% (total follow-up) to 13% (fixed three-year follow-up). As a follow-up paper to Lewis and colleagues (2013), Olver, Lewis, and Wong (2013) specifically examined the role of psychopathic traits and VRS change scores in the prediction of violent recidivism. In an archival study of 152 high-risk violent offenders who were high in psychopathic traits (mean PCL-R score of 26), VRS dynamic change scores added incrementally to the prediction of community violence ($\beta = -.081$, $Exp^B = .922$, $p = .042$) and any violence (combined institutional and community recidivism; $\beta = -.088$, $Exp^B = .915$, $p = .022$) after controlling for PCL-R total score. These results appear consistent with the arguments put forward by Polaschek (2014), Polaschek and Daly (2013), and Skeem, Polaschek, Patrick, and Lilienfeld (2011), suggesting that the presence of psychopathic traits does not mean psychopathic offenders are immutable to change, and that psychopathic offenders may, in fact, be more similar to high risk nonpsychopathic offenders than was previously thought; especially in relation to their responsivity to correctional treatment.

Although these results support the underlying presumptions of all correctional treatment, most risk assessment tools do not have an integrated method of assessing change. Thus, it remains unclear whether the integrated stages-of-change model (as implemented in the VRS family of tools) is the ideal method to assess change.

1.3.4 Protective factors.

Research on the clinical application of dynamic factors in risk assessment has been widely positive (see Ryba, 2008; Hanson, 2009); however, their use is not without limitations. One such limitation is that this field tends to focus on dynamic “risk” factors (Sheldrick, 1999) meanwhile neglecting possible dynamic “protective” factors (Tweed, Bhatt, Dooley, Spindler, Douglas, & Viljoen, 2011), which may have salutary benefits and be linked to positive outcomes. Miller (2006) argues that the narrow focus on risk factors in violence risk assessment may generate pessimism among therapists and feeds an attitude toward the over-prediction of recidivism rather than other potentially positive outcomes. As such, Miller (2006) as well as other authors (e.g., Rogers, 2000; Laub & Lauritsen, 1994) argue that risk assessments using only risk factors could possibly have a negative bias, generate unbalanced reports, and lead to lengthier periods of detention; a result that would be costly to all parties involved. Clearly, there is a growing appreciation for potential use of dynamic protective factors (such as a strong prosocial support network, religious beliefs, and healthy coping styles) in the assessment of risk to improve and balance risk assessments (Rogers, 2000; Hanson, 2009; de Ruiter & Nicholls, 2011). Unlike risk factors, which are linked to an increase in an offender's likelihood of reoffending, protective factors are hypothesized to have a buffering effect on risk; however, it is as yet unclear whether protective factors have a mediating or moderating role in the relationship of violence risk to recidivism (Rogers, 2000). True to this hypothesis, protective factors have long been included as an under-addressed component of the risk-need-responsivity model of effective correctional treatment (model discussed in detail in the next section) as seen in Andrews and colleagues (2004) and Wormith, Gendreau, and Bonta (2012).

The vast majority of research on protective factors in violent reoffending thus far has focused on youth populations. The Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, & Fourth, 2002) is one measure that has integrated empirically supported protective factors into the appraisal of risk, including: prosocial involvement, strong social support, strong attachments and bonds, positive attitudes towards interventions and authority, strong commitment to school, and resilient personality traits. Research on the SAVRY has been largely supportive of the use of protective factors. Lodewijks, de Ruiter, and Doreleijers (2010) examined the use of the SAVRY in 224 violent adolescents. The adolescents came from three samples: adolescents in pre-trial (n = 111), adolescents in residential treatment (n = 66), and adolescents released from a juvenile justice facility (n = 47). Follow-up time was 36, 43, and 28 months respectively. The authors found that violent reoffending was significantly higher when there was an absence of protective factors regardless of the adolescents' original sample, AUC = .28 to .16 (note: an AUC less than .50 would be interpreted in a similar manner to a negative correlation). Additionally, Lodewijks and colleagues (2010) demonstrated that the use of dynamic protective factors in risk assessment accounts incrementally for more variance in reoffending than dynamic risk factors alone. Rennie and Dolan (2010) found similar results to Lodewijks' study, furthering the importance of protective factors by noting that the presence of even one protective factor was associated with a reduced reoffending rate.

Despite the fact that the majority of protective factor research focuses on youth, attempts have been made to assess protective factors in adults, such as the Structured Assessment of Protective Factors (SAPROF; de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009). The SAPROF is comprised of 17 protective factors which the authors define as "any characteristic of a person, his/her environment or situation which reduces the risk of future violent behaviour" (p. 25). The SAPROF contains two static and 15 dynamic protective factors which are divided into three classes of items: internal items, motivational items, and external items. Each item is scored on a three-point ordinal scale. The SAPROF was designed to supplement the HCR-20. It has been demonstrated to predict recidivism (relevant articles reviewed below); however, the authors argue that its greatest value relates to guiding treatment planning and evaluation (de Vogel, de Vries Robbé, de Ruiter, & Bouman, 2011; de Vries Robbé, de Vogel, & Stam, 2012).

A small but growing research literature has examined the use of the SAPROF in the prediction of community sexual violence, community violence, and institutional violence. One of the first published studies on the SAPROF (de Vries Robbé, de Vogel, & de Spa, 2011) retrospectively examined 126 adult male forensic patients who received terbeschikkingstelling (TBS) orders and had subsequently received treatment. Dutch TBS-orders are similar (but not identical) to Canada's "not criminally responsible on account of mental disorder" verdicts in that it orders mandated treatment of violent offenders who are not found fully responsible for their offenses due to mental illness. Of the 126 patients, only 105 were released and a 19% violent recidivism rate was observed at 3-year follow-up. The HCR-20 was also rated post-treatment. Large correlations were observed between HCR-20 and SAPROF total scores (r = -.69) with some individual items having similarly large correlations (e.g., correlation between the HCR-20 impulsivity item and SAPROF self-control item, r = -.73). The SAPROF total score was found to be a significant predictor of violent recidivism at 1-year (r_{pb} = -.35, AUC = .85), 2-year (r_{pb} = -.38, AUC .80), and 3-year follow-up (r_{pb} = -.35, AUC = .74). Similarly, SAPROF protection judgments and integrated risk judgements were found to be significant predictors of violent recidivism at 1-year (AUC = .82 and .80), 2-year (AUC = .77 and .72), and 3-year follow-up (AUC = .71 and .65, respectively). The authors also created a combined HCR-20 and SAPROF index by subtracting SAPROF scores from the HCR-20 scores. A similar pattern of AUCs were observed between this combined index and the recidivism criteria. Although combining the HCR-20 and SAPROF through subtraction represents a simple way for clinicians to integrate the tools, the exact meaning of this index (and therefore its results) is unclear as it generates a score that assumes an offender with low risk and low protection to be equivalent to an offender with high risk and high protection. Further, it assumes one unit of risk as measured on the HCR-20 is equal to and completely mitigated by one unit of protection as measured on the SAPROF.

Neither of these hypotheses have been rigorously evaluated.

Moreover, de Vries Robbé and colleagues (2011) also examined differences in SAPROF scores between pre-treatment and post-treatment. A subset of 60 patients had both pre- and post-treatment SAPROF ratings. Paired *t*-tests revealed that SAPROF total scores significantly differed between pre-treatment and post-treatment ratings. Unfortunately, change scores were not generated for these participants. Further, the treatment program was unspecified, but appeared to focus on mental health status rather than the reduction of broader dynamic risk factors for violence (i.e., criminogenic needs). As such, without connecting change scores to follow-up data on recidivism, it is difficult to ascertain whether the observed movement on the dynamic factors were recidivism relevant, whether they related to a different aspect of the unspecified treatment program, or whether such changes on the SAPROF added incrementally to the prediction of recidivism over pre-treatment protection.

De Vries Robbé, de Vogel, Koster, and Bogaerts (2015) examined the predictive validity of the SAPROF with 83 adult male sex offenders who received TBS-orders and had subsequently received treatment. The authors report large negative correlations between the SAPROF and the HCR-20 and SVR-20 (Sexual Violence Risk-20; Boer, Hart, Kropp, & Webster, 1997) total scores (r = -.83 and -.39, respectively). The SAPROF total score was found to be a significant predictor of violent recidivism at 1-year (r_{pb} = -.28, AUC = .83), 3-year (r_{pb} = -.36, AUC = .77), and long-term (M = 15.1 years) follow-up (r_{pb} = -.41, AUC = .74). SAPROF total score was also a significant predictor of sexual recidivism at 3-year (r_{pb} = -.25, AUC = .76) and long-term follow-up (r_{pb} = -.29, AUC = .71). Semi-partial correlations revealed a weaker pattern of results when the variance of both the HCR-20 and SVR-20 total scores were simultaneously removed from the SAPROF total score. The partialled SAPROF total score only predicted long-term violent recidivism (r_{part} = -.29) as well as 3-year and long-term sexual recidivism (r_{part} = -.26 and -.35, respectively). Again, the authors created a combined HCR-20 and SAPROF index by subtracting SAPROF scores from the HCR-20 scores. A similar pattern of significant correlations and AUCs were observed between this combined index and recidivism criteria. Using hierarchical logistic and cox regressions, the authors examined the incremental contributions of the SAPROF over the HCR-20 and SVR-20 in the prediction of violent and sexual recidivism. Both the HCR-20 and SVR-20 were entered together into the first block of the regressions. Overall, the SAPROF total score was found to add incrementally in the prediction of only long-term violent recidivism as well as 3-year and long-term sexual recidivism. Finally, the authors examined the predictive capacity of the structure professional judgment (SPJ) ratings from the SAPROF. The final protection judgement as well as the integrated final violence risk and final sexual violence risk judgements were significant predictors of most recidivism criteria; however, their correlation and AUC values were generally smaller than the total scores.

Yoon, Spehr, and Briken (2011) also examined the use of the SAPROF in a sex offender sample. Thirty high-risk sex offenders who were on parole and mandated to community treatment had the SAPROF, SVR-20, and Static-99 (Hanson & Thorton, 1999) rated. Similar to de Vries Robbé and colleagues (2015), a large correlation was observed between the SAPROF total score and SVR-20 total score (r = -.53). Convergence was also observed between SAPROF and SVR-20 structured profession judgements. No significant correlations were observed between the SAPROF and the Static-99, which the authors argue was due to the dynamic nature of the SAPROF and the static nature of the Static-99. Further, the SAPROF did not demonstrate significant postdictive correlations with prior prison sentences, parole length, or treatment duration. Unfortunately, this study suffered from a number of limitations such as small sample size, no outcome criteria (i.e., recidivism follow-up), the measures were rated at varying stages of treatment, and pre-treatment ratings were not available.

Abidin, Davoren, Naughton, Gibbons, Nulty, and Kennedy (2013) was the first to examine the use of the SAPROF in the prediction of institutional violence and self-injury. In this prospective study, a cohort of 100 civil (i.e., non-forensic) psychiatric inpatients (94 male) with severe mental illness were followed for a mean length of 181.9 days. The SAPROF was strongly correlated with the strength (r = .81) and vulnerability (r = -.78) scales of the START (Short-Term Assessment of Risk and Treatability; Webster, Martin, Brink, Nicholls, & Desmarais, 2009). The SAPROF also demonstrated significant correlations with the HCR-20 historical (r = -.39), clinical (r = -.78), risk management (r = -.67), dynamic (r = -.78; clinical + risk management), and total (r = -.75) scales. SAPROF total score was found to be a significant predictor of institutional violence (AUC = .85) and self-harm (AUC = .77). Similarly, the HCR-20 total score also predicted institutional violence (AUC = .87) and self-harm (AUC = .88). The START strength and vulnerability scales were significant predictors of institutional violence (AUC = .78 and .82, respectively) but not self-harm.

In the largest study of the SAPROF and its relationship with violence, de Vries Robbé, de

Vogel, and Douglas (2013) retrospectively examined the use of the HCR-20 and SAPROF (post-treatment) in a sample of 188 male TBS-order forensic patients who had either sexual or nonsexual violent index offenses. Again, large correlations were observed between the measures (r = -.76). Mean follow-up length was 5.5 years with recidivism defined as any new violent (sexual and nonsexual) reconviction. The SAPROF was found to significantly predict recidivism at one year (r_{pb} = -.32, AUC = .85), three year (r_{pb} = -.35, AUC = .75), and long-term follow-up (r_{pb} = -.39, AUC = .73). The HCR-20 was also found to significantly predict recidivism at all three follow-up times (one-year r_{pb} = .33, AUC = .84; three-year r_{pb} = .32, AUC = .73; and long-term r_{pb} = .26, AUC = .64). The authors created a combined HCR-20 and SAPROF index by subtracting SAPROF scores from the HCR-20 scores. The combined index of HCR-SAPROF significantly predicted recidivism (one-year r_{pb} = .34, AUC = .87; three-year r_{pb} = .35, AUC = .76; and long-term r_{pb} = .34, AUC = .70). To examine the incremental contribution of the SAPROF over the HCR-20, the authors used both semi-partial correlations and hierarchical logistic regressions. When controlling for the HCR-20 total score, the semi-partial correlations between the SAPROF and recidivism remained significant (although smaller in magnitude) at three year and long-term follow-up, but were not significant for one-year follow-up. Hierarchical logistic regressions revealed that the SAPROF total score significantly contributed to the prediction of violent recidivism (after controlling for HCR-20 total scores) at three year (β = .17, p < .05) and long-term follow-up (β = .17, p < .01), but did not significantly contribute to the prediction of recidivism at one-year follow-up.

To examine potential interactions between risk factors (as measured by the HCR-20) and protective factors (as measured by the SAPROF), de Vries Robbé and colleagues (2013) also examined recidivism rates for the protection bins within each risk group. The authors reported that the value of the higher protection levels were only observed in the moderate and high risk groups. Within the moderate risk group, offenders with moderate or high protection ratings recidivated less often than those with low protection. A similar, but not significant, pattern was observed for the high risk group.

Viljoen's (2014) dissertation was the first to examine the SAPROF in a Canadian sample. The author's non-forensic prospective sample included 102 mixed sex inpatients (male n = 62) who were admitted to a civil psychiatric facility under section 22 of the British Columbia Mental Health Act (i.e., they presented a risk of harm to themselves or others). To briefly summarize this dissertation, large correlations were found between the SAPROF and HCR-20 (r = -.50). The SAPROF correlated weakly with the START's strength scale (r = .14) and moderately with the vulnerabilities scale (r = -.36). Generally, predictive accuracy of the SAPROF and other tools was not significant for female patients. The reader is referred to section 3.6 for the observed gender differences. As such, only the results of the male patients are discussed. Any violent institutional outcomes included sexual (both contact and non-contact incidents), physical, and verbal violence. These were further subdivided into numerous subcategories. Base rates of violence for male patients was 58.1% for all violence, 38.7% physical violence, 64.5% verbal violence, and 29% sexual violence.

The authors demonstrated that SAPROF total scores were predictive of any violence, verbal violence, and sexual violence at 6- and 12-month follow-up in male patients (AUCs ranged .67-.78). SAPROF total scores were not significant predictors of nonsexual physical violence. Predictive accuracy of the SPJ protection categories was weaker than the full scale score and failed to reach significance for most violence outcomes. The integrated final risk category was a significant predictor of any violence (AUC = .69) and verbal violence (AUC = .72). Surprisingly, the HCR-20 total score and risk category demonstrated weak and mostly non-significant predictive accuracy for all violence outcomes. The authors created a combined HCR-20 and SAPROF index by subtracting SAPROF scores from the HCR-20 scores. The combined index of HCR-SAPROF similarly had weak and mostly non-significant predictive accuracy for most violence outcomes, with the exception of verbal and sexual violence (AUC = .71 and .69, respectively). Unfortunately, the author did not examine the subscales of the SAPROF and HCR-20 for their relative predictive accuracy. Literature on the HCR-20, for example, has demonstrated that the clinical subscale is the most important score for the prediction of inpatient violence and that this relationship is masked when the full HCR-20 total score is used for predictive accuracy analyses (Chu, Dafferin, & Ogloff, 2013; Chu, Thomas, Ogloff, & Daffern, 2013). Finally, using hierarchical logistic regression on the full sample (i.e, both males and females), the author demonstrated that the SAPROF total score uniquely added to the prediction of only verbal violence and serious sexual incidents (a subsection of the sexual violence outcome) after controlling for HCR-20 score and gender. As such, the incremental predictive contributions of the SAPROF remain unclear.

Clearly, the growing literature on the SAPROF is generally positive; however, a number of questions and concerns remain unanswered. One potential concern about the SAPROF may be that some of its protective factors have been operationalized to measure the absence of risk factors rather than the presence of protective factors. In other words, much of the SAPROF's ability to predict future violence may be due to its measurement of risk rather than protection. For example, the external item "Social Network" has been operationalized as supportive peers who are not antisocial rather than the presence of supportive prosocial peers. Additionally, the internal item "Self-control" has been operationalized as the lack of impulsivity. Finally, the item "motivation for treatment" on the SAPROF has eerie similarities to "non-compliance with remediation attempts" on the HCR-20. Preliminary evidence for this hypothesis has been reported in most of the studies reviewed above. The HCR-20 and SAPROF total scores correlate highly (r = -.76; de Vries Robbé et al., 2013) with some individual items, such as the HCR-20 "impulsivity" item and SAPROF "self-control" item as well as the HCR-20 "noncompliance with remediation attempts" item and SAPROF "motivation for treatment" item correlating similarly high (r = -.73 and -.67, respectively; de Vries Robbé, 2011). Considered more broadly, many, if not most, of the items on the SAPROF could be subsumed under the central eight risk factors. As such, the ability of the SAPROF to add incrementally to the prediction of violent recidivism over the HCR-20, or other risk measures, is unclear. Attempts thus far to examine the incremental predictive accuracy of the SAPROF have been mixed in both their results and methodology. Further independent study is clearly required.

Another limitation of the SAPROF literature is that the tools have only been rated at one time point in most of the studies. As such, the dynamic items suffer from the same criticisms as many dynamic risk factors (discussed above); that is, without a minimum of two time-points surrounding a treatment agent focusing on risk reduction or protection promotion, one cannot make comments on whether protective factors are truly dynamic and whether changes on these factors translate into reduced recidivism or increased desistance.

Lastly, a major limitation of the current literature on the SAPROF is that nearly all of the published studies relied on European psychiatric or forensic inpatient samples, many of whom had been found to be not fully responsible for their actions. These studies also report low rates of recidivism. As such, the predictive capacity of the SAPROF has not been examined in correctional populations where the offenders have been found fully responsible for their index offenses, where mental health rehabilitation is not the primary goal of the facility, and where rates of community and institutional recidivism can be drastically higher.

1.3.4.1 Identifying protective factors.

Hanson's (2009) recent review of risk assessment for crime and violence notes that one of the most important additions for the next generation of risk assessment tools is the incorporation of protective factors as well as risk factors. Although the adoption of protective factors into risk assessment has been slow, a variety of promising protective factors have been identified. For the purpose of identifying these protective factors, the SAPROF definition was assumed. The SAPROF defines protective factors as "any characteristic of a person, his/her environment or situation which reduces the risk of future violent behaviour" (de Vogel, de Ruiter, Bouman, & de Vries Robbé, 2009, p. 25). Below a select few with the greatest empirical and conceptual support are reviewed.

1.3.4.1.1 Social support. A strong prosocial support network has been identified as a protective factor in both adolescent and adult populations. The SAVRY contains social support as one of its six protective factors. Lodewijks and colleagues (2010) demonstrated that strong social support item of the SAVRY is associated with protective effects on youth violent reoffending in three separate adolescent populations. Additionally, Hoge, Andrews, and Lescheid (1996) demonstrated that positive peer relations in youth (an item similar to positive social support) were associated with positive outcomes regardless of risk. More recently, Ullrich and Coid (2011) identified that perceived social support plays an important protective role on violent reoffending in adult offenders regardless of an offender's level of risk in a sample of 800 male prisoners released into the community.

1.3.4.1.2 Emotional support. A strong emotional support network has also been identified as a protective factor in both adolescents and adults. Research using the SAVRY has identified that strong emotional attachments and bonds play an important protective role in youth reoffending (Lodewijks et al., 2010; Rennie & Dolan, 2010). Similarly, Ullrich and Coid (2011) demonstrated that perceived emotional support (i.e., "my family or friends can be relied upon, no matter what happens….would take care of me if I needed it") is a strong protective factor in adult violent reoffending. Additionally, the authors found that closeness to others (defined as the presence of at least one person in their life that the offender considered himself particularly close to) demonstrated protective effects on violent reoffending.

1.3.4.1.3 Leisure time. Appropriate use of leisure time has been demonstrated to be an important protective factor. Hoge and colleagues (1996) identified that effective use of leisure time as an important protective factor in youth reoffending. Similarly, Rae-Grant, Thomas, Offord, and Boyle (1989) noted that spending time with prosocial peers at least two or three times a week also had a protective role in adolescents with behavioural problems. Bouman, de Ruiter, and Schene (2010) demonstrated that involvement in structured leisure activities (i.e., clubs) had protective effects in adult high-risk forensic patients. Finally, Ullrich and Coid (2011) demonstrated that spending spare time with prosocial friends and family including organized activities acted as a protective factor in adult violent offenders.

1.3.4.1.4 Religious activity. The role of religious affiliation and activity is a lesser examined potential protective factor. Both Plutchik (1995) and Pearce, Jones, Schwab-Stone, and Ruchkin (2003) demonstrated that religious beliefs in youth have a protective effect on future violent behaviour and conduct problems. Rogers (2000) also identifies that religious affiliation deserves further examination as a potential protective factor. In this direction, Ullrich and Coid (2011) attempted to examine the protective nature of "involvement in religious activities" in 800 offenders. Unfortunately, the authors were unable to draw any conclusions regarding religious involvement as a protective factor, as base rates of religious involvement in their sample was too low for statistical consideration.

In the largest examination of the relationship between religion and crime, Baier and Wright (2001) conducted a meta-analysis of 60 studies. The authors note that there was great inconsistency in both methodology and strength of relationship in these studies. Collapsing across all studies, a small but significant deterrent effect was observed between crime and religious behaviour and belief (mean weighted $r = -.12$, $SD = 0.9$). However, the authors noted a number of important covariates. Studies using samples that were high in religious selectivity (i.e. samples drawn from communities with high mean religious identification and behaviour such as church members and certain geographic areas) demonstrated a stronger deterrent relationship between religiosity and crime. Another important covariate was type of crime in that the deterrent relationship was stronger for nonvictim crimes (i.e., gambling, alcohol/drug use, and other forms of delinquency) than for victim crimes (i.e., theft and murder). Further, predominantly white samples showed a weaker deterrent relationship than mixed ethnicity samples. Unfortunately, the vast majority of the research included in this meta-analysis was conducted using nonincarcerated high school and college samples.

Some authors have specifically examined whether faith-based programming is beneficial in correctional treatment. For example, Duwe and King (2012), using a retrospective design, examined recidivism rates in a sample of 366 male offenders who completed a faith-based correctional program in Minnesota prisons between 2003 and 2009. Participants were matched to nonparticipant controls. The authors concluded that participation in faith-based correctional programs can reduce recidivism, but only if evidence-based behavioural interventions targeting criminogenic needs (i.e., dynamic risk variables) were a focus of the treatment. Unfortunately, without a stronger control condition, the authors were unable answer whether the faith-specific components of the program added incrementally over the behavioural interventions. Thus, it remains unclear what direct role religious involvement may have in an incarcerated sample of adult violent offenders.

1.3.4.1.5 Attitude toward intervention. Of particular importance to youth violence is the protective factor “positive attitude toward intervention”. Having a positive attitude toward intervention has largely been examined in the context of the SAVRY. Lodewijks and colleagues (2010) demonstrated that positive attitude toward intervention as measured by the SAVRY was an important protective factor in pre-trial, residential treatment, and juvenile justice populations as well as playing an important role in the desistance from violent reoffending. Similarly, Rennie and Dolan (2010) also found support for positive attitude toward intervention as a protective factor using a prospective design with 12 months follow-up. Unfortunately, the importance of attitude toward intervention has largely been unexamined as a potential protective factor in adult violent offenders.

1.3.4.1.6 Accommodation/Housing upon release. Given the nature of the youth correctional justice system, the potential protective factor of having confirmed housing upon release from an institution has not been examined in adolescent offenders. However, recent research suggests this protective factor may play an important role in adult violent offenders. Ullrich and Coid (2011) examined the importance of an adult offender having a confirmed place to live after release. The authors found that having confirmed housing upon release was a protective factor for violent reoffending within the first year following release. This provocative finding clearly deserves further empirical attention.

1.3.4.1.7 Adaptive Coping/Prosocial Problem Solving. In youth violent offenders, adaptive coping and prosocial problem solving has been identified as an important protective factor (see Lodewijks et al., 2010; Rennie & Dolan, 2010). The SAVRY incorporates these abilities under it protective factor “resilient personality traits” which includes (but is not limited to) the ability to develop thoughtful solutions to conflicts and problems meanwhile maintaining calm and healthy mood states. Similarly, the SAPROF has also identified adaptive coping as a potentially important protective factor in adult violent offenders.

1.4 The Risk-Need-Responsivity Model and its Relation to Treatment-related Change

In 1990, Andrews, Bonta, and Hoge proposed three principles which would form a foundation of effective correctional programming. The Risk principle states that the most intensive services should be directed to the highest risk offenders and that low risk offenders should receive minimum intensity programming. Second, the Need principle states that the intervention the offender receives should target that offender’s criminogenic needs (i.e., changeable factors, which result in reductions in recidivism if addressed). Third, the Responsivity principle states that the treatment should be provided to the offender in a style or mode that he/she is responsive to given the offender’s learning style and abilities. Andrews and Bonta (2010b) note that there are two types of responsivity considerations: general and specific. The general responsivity principle addresses how the intervention should be delivered. General responsivity refers to using “[the] strategies of choice, namely, cognitive social learning practices. The general responsivity principle recognizes the importance of the therapeutic relationship but also adds that structured, cognitive-behavioral intervention is an important component of effective correctional treatment” (p. 46). The specific responsivity principle requires the “individualiz[ation] [of] treatment according to strengths, ability, motivation, personality, and bio-demographic characteristics such as gender, ethnicity, and age….Specific responsivity calls for the matching of treatment to client characteristics, one of the hallmarks of all psychological treatments” (p 46). Together, the risk, need, and responsivity principles address who should be treated, what they should be treated for, and how the treatment should be delivered.

Since the introduction of the Risk-Need-Responsivity model (RNR), a plethora of studies have supported its use as a treatment model (see Andrews & Bonta, 2010b for a review of these studies). Andrews and Dowden (2006) examined the importance of the risk principle in correctional treatment. The authors found solid support for the utility of the risk principle in correctional programming, $\varphi = .10$, interpreted to mean a 10% reduction in recidivism among programs that targeted high risk offenders ($k = 278$). Additionally, the authors examined the risk principle in programs where the need and general responsivity principles were also adhered to. When the risk principle was adhered to in programs that followed the need principle, the effect of adherence to the risk principle was stronger ($\varphi = .22$, $k = 129$). When the risk principle was adhered to in programs that followed the general responsivity principle, the effect of adherence to the risk principle was stronger ($\varphi = .26$, $k = 64$). Finally, when the effect of the risk principle was examined in programs that adhered to both the need and general responsivity principles, there is a small but significant increase in the effect of the risk principle ($\varphi = .22$, $k = 133$). From these findings, the authors concluded that adherence to the risk principle results in significant reductions in offender recidivism.

The need principle has also developed strong additional support. Dowden and Andrews (2000) examined the utility of the need principle in violent offenders. The authors investigated the efficacy of programs that targeted criminogenic needs (e.g., negative affect/anger, antisocial attitudes, relapse prevention) and those that targeted non-criminogenic needs (e.g., fear of official punishment, vague emotional problems). The authors demonstrated that programs that targeted non-criminogenic needs had either no effect or a negative effect on recidivism rates, $\varphi = -.16$, and $\varphi = -.26$. Whereas programs that focused on criminogenic needs were associated with positive effects on recidivism rates, $\varphi = .30$, $\varphi = .26$, and $\varphi = .43$. Thus, programs that adhered to the need principle demonstrated reductions in violent recidivism, whereas programs that focused on noncriminogenic needs were associated with no change in violent recidivism or increased rates of violent recidivism.

The general responsivity principle has also received strong support. Landenberger and Lipsey (2005) examined the efficacy of cognitive-behavioural programs on offender recidivism ($k = 58$). Best practice cognitive-behavioural programs adhere to the general responsivity principle. The authors demonstrated that offender recidivism rates dropped 25% to 30% when the offenders completed cognitive-behavioural programs compared to controls. Additionally, when best practice cognitive-behavioural programs focusing on criminogenic needs were followed, reductions in recidivism were greater for higher risk offenders, up to 52%.

Consequently, adherence to the general responsivity principle has been shown to result in decreased reoffending.

Of importance is the relationship between a treatment program's adherence to RNR and reductions in recidivism. Andrews and Bonta (2010b) examined level of adherence to all three principles and their combined effect on recidivism. Programs that strictly adhere to all the principles of RNR have shown reductions in offender recidivism of up to 35%, whereas programs that did not adhere to any of the RNR principles were associated with increases in recidivism of up to 10%. Additionally, the authors examined the applicability of the RNR principles across different offender populations. They demonstrated that the principles of RNR apply to young offenders, women offenders, and minority offenders as well as to violent offending, gangs, institutional misconduct, and sexual offending.

1.4.1 The Aggressive Behaviour Control (ABC) program.

The ABC program was established in 1993 at the Regional Psychiatric Centre (RPC), a multilevel security forensic mental health hospital in Saskatoon, Saskatchewan, Canada operated by Canada's federal correctional department, the Correctional Service of Canada (CSC). The ABC program was a high intensity cognitive-behavioural therapy program based on risk, need, and responsivity model with the goal of reducing violent reoffending in male offenders with extensive histories of violence and/or histories of serious institutional misconduct. The program was interdisciplinary in nature, and utilized psychoeducation, relapse prevention skills, as well as individual and group therapy (DiPlacido, Simon, Witte, Gu, & Wong, 2006; Wong et al., 2007; Lewis et al., 2013). The ABC program was dissolved in 2011 to allow for the harmonization of programming across CSC institutions. As such, the ABC program was replaced, despite evidence supporting its efficacy, with the nationally implemented Violence Prevention Program.

The ABC program was approximately 6-8 months in length. Although most offenders taking part in the ABC program had extensive violence histories, many offenders complete this program because they had not had success in past treatments attempts or belong to/affiliated with a gang. The program focused on violence-specific criminogenic needs meanwhile attending to offenders' responsivity factors. The program was divided into three phases which were integrated with the TTM. Phase one revolved around moving offenders through the pre-contemplation and contemplation stages. The focus here was to increase the offenders' insight into their violence, identify treatment targets, and increase the offenders' motivation and treatment engagement. As offenders entered phase two, the goal of treatment was to teach skills that can be used when offenders reach the preparation stage and action stage. Offenders were encouraged to examine and challenge destructive behaviour patterns or cycles that were linked to their violent offending. Further, the offenders worked on cognitive restructuring, emotion management, and behaviour management as well as learning and implementing violence reduction skills. In the final phase of treatment, offenders were encouraged to learn relapse prevention skills that can be used when they reach the action stage and maintenance stage. Offenders began relapse prevention planning and release planning, as well as consolidating, reinforcing, and generalising the skills and strategies they had learnt in the program (Wong et al., 2007).

The ABC program was demonstrated to be efficacious in reducing violence risk, institutional misconduct, violent recidivism, and severity of violent recidivism in gang members, violent offenders (non-gang affiliated), and offenders high in psychopathic traits (see Wong et al., 2007). Evidence for the integrity of this program has been seen in DiPlacido and colleagues (2006), Wong, Vander Veen, Leis, Parrish, Liber, and Middleton (2005), and Wong, Witte, Gordon, and Lewis (2006). Strongest support for the program's integrity has been seen in Lewis and colleagues (2013) in which the authors demonstrated the relationship between ABC-related treatment gains to change scores on the VRS as well as subsequent recidivism. However, it should be noted that no formal published program evaluation was publicly available to the writer. As such, some questions do remain about the integrity of the ABC program's development and administration. However, the lack of publicly available program evaluation information is not unique to the ABC program. Such information is commonly unavailable for many domestic and international correctional programs (see Polaschek & Collie, 2004). This pattern likely relates to the broader therapeutics research community only recently developing an appreciation for the importance of including program evaluation in the development of said programs. A subset of the studies examining the ABC program is briefly reviewed below.

DiPlacido and colleagues (2006) examined the effect of treatment on violent recidivism in gang members. 160 adult male offenders were included in the study and four groups were generated. 80 gang members (40 treated and 40 untreated) were matched with 80 non-gang affiliated offenders (40 treated and 40 untreated) on age at index offense, sentence length, type of index offense, race, and number of prior nonviolent and violent convictions. Treated offenders (both gang members and non-gang members) recidivated significantly less than the untreated matched controls in the 24-month follow-up period. Further, when a treated gang members did recidivated violently, they received shorter sentences (i.e. they committed less serious offences) than their untreated matched controls. Last, untreated gang members had higher rates of major (but not minor) institutional misconducts than the non-gang members and the treated gang members.

In a smaller study, Wong and colleagues (2005) examined the use of the ABC program in the reintegration of offenders with significant management difficulties to the general offender population. Thirty-one offenders from the super-maximum security Special Handling Unit completed the ABC program as part of a transitional strategy to reintegrate them back into the general offender population. Results of the strategy indicated that over 80% of the offenders (*n* = 31) successfully reintegrated into a lower-security facility without relapsing (i.e., having to return to the super-maximum institution) using a 20-month follow-up period. Additionally, they had significantly lower institutional misconduct rates after the completion of the ABC program despite being in less restrictive institutions.

Further, Wong and colleagues (2006) examined the potential benefits of the ABC program with high psychopathy offenders. Thirty-four treated offenders with significant levels of psychopathy were matched with 34 untreated controls (mean PCL–R ratings of 28.6 and 28.0 respectively). The two groups were also matched for age, past criminal history, and follow-up time. Both groups were assessed as high-risk and high-need at pre-treatment as per the VRS. On follow-up, the treated and untreated groups did not differ on most indicators including the number of violent and nonviolent re-convictions, number of sentencing dates, or the time to first reconviction. However, the treated group had a significantly less violent pattern of re-offense as indicated by the significantly shorter aggregated sentences they received (i.e., they engaged in less serious forms of violence). Thus, even in a high psychopathy sample, a harm reduction effect was observed for treated offenders.

1.5 Purpose of the Present Program of Research

The purpose of the present program of research was fivefold. First, we examined the predictive accuracy of two violence risk assessment tools, the VRS and the HCR-20. Prediction of future recidivism and positive community outcomes as well as incremental predictive validity was also examined. Second, we examined and evaluated therapeutic change, as well as the role of therapeutic change in risk reduction in offenders who have completed the RNR-based ABC program at the RPC. Both the VRS and HCR-20 were used to examine the relationship between treatment change and possible reductions in post-program recidivism. Third, we examined the accuracy of two protective factor tools in the prediction of recidivism, the SAPROF and an operationalized list of protective factors (PF List) that was generated based on literature review. Fourth, we examined the role of therapeutic change on protection. Both the SAPROF and PF List were used to examine the relationship between treatment change and possible reductions in post-program recidivism. Last, we examined the relationship between risk and protective factors in the prediction of recidivism. The SAPROF and PF List were entered with the VRS and the HCR-20 to test for incremental contributions in the prediction of recidivism. Three broad outcome variables were examined at each of these five stages: 1) community recidivism rates (i.e., post-release reconvictions or charges over time), 2) institutional recidivism rates (i.e., post-treatment institutional misconducts), and 3) a brief measure of positive community outcomes (Burt, 2003), with items including attained stable housing, prosocial community involvement, successful completion of community supervision, etcetera as well as their simple summation. The following hypotheses were organized according to these five objectives.

1.6 Hypotheses

1.6.1 Validity of risk measures.

1.6.1.1 Convergent validity.

A) Convergent validity will be demonstrated between the VRS and HCR-20 total scores.

B) Convergent validity will be demonstrated between the VRS risk categories and HCR-20 SPJ risk categories.

C) Convergent validity will be demonstrated between the VRS dynamic scores and the HCR-20 clinical and risk management scores.

D) Convergent validity will be demonstrated between the VRS static scores and the HCR-20 historical scores.

1.6.1.2 Predictive validity.

E) The VRS and HCR-20 total scores will significantly predict community and institutional recidivism.

F) The VRS static and dynamic scores will each significantly predict community and institutional recidivism.

G) The HCR-20 historical, clinical, risk management, and dynamic (clinical + risk management) scores will each significantly predict community and institutional recidivism.

H) The VRS and HCR-20 risk category will predict community and institutional recidivism.

I) The VRS and HCR-20 scale scores will be negatively associated with positive community outcomes.

J) The VRS and HCR-20 risk category will be negative associated with positive community outcomes.

1.6.1.3 Incremental predictive validity.

K) The VRS dynamic scores will demonstrate incremental validity in the prediction of community and institutional recidivism over VRS static scores.

L) The HCR-20 clinical, risk management, and dynamic scores will demonstrate incremental validity in the prediction of community and institutional recidivism after controlling for historical scores.

M) The VRS dynamic scores will demonstrate incremental validity in the prediction of positive community outcomes over VRS static scores.

N) The HCR-20 clinical, risk management, and dynamic scores will demonstrate incremental validity in the prediction of positive community outcomes after controlling for historical scores.

1.6.2 Validity of risk change scores.

1.6.2.1 Convergent validity.

A) Change scores on the VRS will positively correspond to change scores on the HCR-20.

1.6.2.2 Predictive validity.

B) Changes on the VRS (as measured by the integrated TTM) and HCR-20 (pre-treatment minus post-treatment) will be significantly and inversely related to community and institutional recidivism (e.g., higher change scores will correspond to lower rates of recidivism).

C) Change scores on the HCR-20 and VRS will be associated with positive community outcomes.

1.6.2.3 Incremental predictive validity.

D) Change scores on the VRS and HCR-20 will demonstrate incremental contributions to the prediction of community and institutional recidivism after controlling for pre-treatment risk scores.

E) Change scores on the VRS and HCR-20 will demonstrate incremental contributions to the prediction of positive community outcomes after controlling for pre-treatment risk scores.

1.6.3 Validity of protective factor measures.

1.6.3.1 Convergent validity.

A) Scores on the PF List will be positively associated with scores on the SAPROF.

B) Scores on the PF List will be positively associated with SPJ protection categories on the SAPROF.

1.6.3.2 Predictive validity.

C) Scores on the PF List will be negatively associated with community and institutional recidivism.

D) Scores on the SAPROF will be negatively associated with community and institutional recidivism.

E) The SAPROF protection category will predict community and institutional recidivism.

F) Scores on the SAPROF and the PF List will be associated with operationalized positive community outcomes (e.g., obtains stable employment, stable housing, etc.)

G) The SAPROF protection category will be positively associated with positive community outcomes.

1.6.4 Validity of protection change scores.

1.6.4.1 Convergent validity.

A) Change scores on the PF List will be positively associated with change scores on the SAPROF.

1.6.4.2 Predictive validity.

B) Change on the SAPROF and PF List will be significantly and inversely related to community and institutional recidivism (e.g., higher change scores will correspond to lower rates of recidivism).

C) Change scores on the SAPROF and PF List will be associated with positive community outcomes.

1.6.4.3 Incremental predictive validity.

D) Change scores on the PF List and SAPROF will demonstrate incremental predictive validity in the prediction of community and institutional recidivism over pre-treatment protection scores.

E) Change scores on the PF List and SAPROF will demonstrate incremental predictive validity in the prediction of positive community outcomes after controlling for pre-treatment protection scores.

1.6.5 The relationship between protective and risk measures.

1.6.5.1 Convergence.

A) Scales from the SAPROF and PF List will correspond inversely to the scales of the VRS and HCR-20.

B) Protection categories from the SAPROF will correspond inversely to risk categories from the VRS and HCR-20.

C) Change scores on the PF list and SAPROF will be positively associated with change scores of the VRS and the HCR-20.

1.6.5.2 Predictive validity.

D) The SAPROF/HCR-20 integrated risk category will predict community and institutional recidivism.

E) The SAPROF/HCR-20 integrated risk category will predict positive community outcomes (e.g., obtains stable employment, stable housing, etc.)

1.6.5.3 Incremental predictive contributions.

F) Scores on the PF List will show incremental validity over VRS scores in the prediction of community and institutional recidivism.

G) Scores on the SAPROF will show incremental validity over HCR-20 scores in the prediction of community and institutional recidivism.

H) Scores on the PF List will show incremental validity over VRS scores in the prediction of positive community outcomes.

I) Scores on the SAPROF will show incremental validity over HCR-20 scores in the prediction of positive community outcomes.

Chapter 2. Method

2.1 Ethics

The present research was archival, and active participation of the offenders was not required. Ethical approval for this study was a two-step process. First, ethical approval was obtained from the University of Saskatchewan's behavioural research ethics board. This project was deemed minimal risk and approved (BEH# 12-68). Second, institution and agency approval was obtained from CSC. All raw data were securely stored at the RPC under lock and key and on a password protected computer.

2.2 Participants

Participants included 178 federally incarcerated adult male violent offenders who had been convicted of a violent offense and had participated in the Aggressive Behaviour Control Program at the Regional Psychiatric Centre (RPC) in Saskatoon, Saskatchewan between 1995 and 2004. Participants included in this program of research were randomly selected from a larger pool of all ABC participants from the study period. The RPC is an accredited, forensic mental health hospital operated by the Correctional Service of Canada (CSC) and is located in Saskatoon, Saskatchewan. The Aggressive Behavior Control (ABC) program is a high intensity cognitive-behavioural therapy program based on the risk, need, and responsivity model with the goal of reducing the violent reoffending of offenders. A review of relevant studies on this treatment program is presented in the introduction (see section 1.4.1). Important participant characteristics are summarized in Table 2.1.

Most, but not all of the participants, were successful in their completion of the program (79%). Of the approximately 21% that did not complete the program, 49% were staff initiated (e.g., participant was removed from group due to noncompliance), 22% were system initiated (e.g., participant reached warrant expiry or paroled), 14% client initiated (e.g., participant withdrew), and 16% were initiated for unknown reasons. The rate of non-completion was similar to those reported for treated high-risk violent offender samples (e.g., Polaschek, 2010). The mean age of the sample upon admission to the ABC program was 32 years (*SD* = 9.22) and the mean age upon release to community was 33 years (*SD* = 8.97). Over half of the offenders (57%) were of Aboriginal decent, 37% were White, and 6% were of other ethnic decent (e.g., East Asian, Black, Middle Eastern, and Hispanic). Approximately 21% of the participants had never been employed, 43% had sporadic or intermittent employment histories (unable to maintain employment for six months), 23% had employment histories in which they were unable to maintain employment for more than one year at a time, and only 14% were able to maintain consistent employment for two years or more. Overall, 55% of the sample was single and never married, 20% were separated or divorced, 25% were married or in a common law relationship, and 1% were widowed.

The participants had an average education level of grade 9.5 (*SD* = 2.1) and an average reading ability grade level of 10.0 (*SD* = 3.1). Approximately 81% of the sample were assessed as having normative intellectual functioning (low average range or higher), whereas the remaining 19% were assessed to be in the impaired range (borderline or extremely low ranges). Only 13.5% of the population were identified as having learning difficulties (e.g., learning disorder; slow learner; attention difficulties; functionally illiterate).

Approximately one third (30.3%) of the sample were assessed as having an axis I disorder or major mental illness (excluding substance misuse disorders), as per the Diagnostic and Statistical Manual of Mental Disorders. Of this subsample, approximately 20% were diagnosed with a psychotic disorder, 13% with a bipolar type disorder, and 69% were assessed with a different Axis I disorder (e.g., depression, OCD, social anxiety). Percentages do not add to 100% due to multiple diagnoses. Three quarters of the sample (75%) had a diagnosis of a substance misuse disorder. Similarly, approximately three quarters (73%) of the sample were assessed as having antisocial personality disorder; 74% of the sample was diagnosed with a cluster B personality disorder (including antisocial personality disorder); and 76% of this sample was assessed as having a diagnosis of at least one personality disorder (any personality disorder including antisocial and cluster B).

The criminal histories of the sample began at a relatively young age. The average age at the first adjudicated violent offense was 18 years (*SD* = 4.6). The average number of prior convictions was: 0.2 (*SD* = 0.4) sexually violent convictions; 4.4 (*SD* = 3.7) nonsexual violent convictions; and 17.5 (*SD* = 13.6) nonsexual nonviolent convictions. Based on the Violence Risk Scale at pre-treatment, 81% of the sample was high risk for violent recidivism, 15% was medium risk, and 4% was low risk. Thus, this sample was largely higher risk. With regards to institutional behaviour, 88% of the sample had a history of institutional misconduct prior to beginning the ABC program. More specifically, 84% had a history of minor institutional misconducts (e.g., verbal threats, possession of contraband), 71% had a history of major institutional misconducts (e.g., fighting, assaults), 86% had a history of nonviolent institutional misconducts, and 36% had a history of violent institutional misconducts. The average number of institutional misconducts prior to beginning the ABC program was: 8.1 (*SD* = 10.1) minor misconducts, 4.6 (*SD* = 6.1) major misconducts, 11.8 (*SD* = 13.0) nonviolent misconducts, and 1.0 (*SD* = 2.5) violent misconducts.

The mean determinate index sentence length was 6 years. Approximately 20% of the sample received a life or indeterminate index sentence. As would be expected, most of the participants' index offenses were violent. The rates of index offense by type are as follows: 2% had a sexually violent index offense, 38% had a violent index offense resulting in homicide, 56% had a non-homicide violent index offense, and 5% had a nonviolent index offense.

Table 2.1
Sample Characteristics

Measure	Mean (*SD*)	Frequency (%)
Demographics		
Age at program admission	32.0 (9.22)	-
Age at release to community	33.7 (8.97)	-
Aboriginal descent	-	57.3
Predominantly unemployed (never employed)	-	20.5
Single/never married	-	54.5
Education (years)	9.5 (2.05)	-
Reading Ability (grade level)	10.0 (3.1)	-
Impaired cognitive ability	-	18.6
Learning difficulties	-	13.5
Mental Health		
Any axis I major mental illness	-	30.3
Psychotic disorder	-	6.2
Bipolar type disorder	-	3.9
Substance use disorder	-	75.3
Personality disorder	-	75.8
Cluster B personality disorder		74.2
Antisocial personality disorder/traits	-	73.0
Criminal History		
Age at 1st violent offense (years)	18.7 (4.6)	-
Prior sexual offenses	0.2 (0.4)	-
Prior nonsexual violent offenses	4.4 (3.7)	-
Prior nonviolent offenses	17.5 (13.6)	
Prior sentencing dates	11.4 (7.6)	-
Offense-related		
High risk at pre-treatment	-	80.9
Index sentence (years)	6.2 (3.8)	-
Released at warrant expiry	-	10.1
Life or indeterminate index sentence	-	19.7
Index – sexual	-	1.7
Index – violent, homicide	-	37.6
Index – violent, non-homicide	-	56.2
Index – nonviolent	-	4.5
Prior Institutional Behaviour		
Institutional misconduct	-	87.6
Total institutional misconducts	12.7 (14.3)	-
Program-related		
Program length (months)	6.0 (1.9)	-
Successful completion	-	79.2
Unsuccessful completion	-	20.8

N = 178

2.3 Measures

2.3.1 Violence Risk Scale (VRS; Wong & Gordon, 1999).

The VRS is a violence risk assessment and treatment planning tool. Comprising 6 static (e.g., number of violent convictions, current age, prior release failures) and 20 dynamic factors (e.g., impulsivity, criminal attitudes, cognitive distortions), the tool is designed to measure changes in risk as a function of treatment or other change agents. This tool relies on the stages of change model (trans-theoretical model) for the assessment of therapeutic change. All factors are rated on a four-point ordinal scale (0, 1, 2, or 3). Total VRS score is obtained by summing static and dynamic variable ratings. The higher the total score, the higher the individuals' risk to reoffend violently. Cut offs (from the VRS administration manual) are applied to the total score to assign a final risk rating, with a total score of 0-34 representing the low risk category, 35-50 representing the moderate risk category, and 51 and above representing the high risk category. Wong and Gordon (2006) report that the VRS has good inter-rater reliability (r = .87 to r = .97) with "Cronbach alpha coefficients for the VRS total, dynamic item total, and static item total were .93, .94, and .69, respectively" (p. 291). Additionally, the authors demonstrated that the VRS could predict violent and nonviolent recidivism over short- and longer term follow-up. A review of relevant studies on this measure's predictive validity for various recidivism outcomes is presented in the introduction (see section 1.2.1).

2.3.2 Historical Clinical Risk Managment-20 (HCR-20; Webster et al., 1997).

The HCR-20 (Version 2) is a violence risk assessment tool comprising of 10 historical (e.g., previous violence, substance use problems, prior supervision failures), 5 clinical (e.g., lack of insight, negative attitudes, impulsivity), and 5 risk management factors (e.g., feasible long term plans, lack of personal support, exposure to destabilizers). In 2013, the third version of the HCR-20 was released; however, the vast majority of research on the HCR-20 utilized the second version of the tool. As the third version was not released until after the start of this program of research, the second version of the HCR-20 was used. The HCR-20 has been validated for use in both correctional and forensic psychiatric samples (Douglas et al., 2005; Dolan & Fullam, 2007; Yang et al., 2010), and has strong predictive accuracy for violence. Assignment of the risk category (i.e., low, moderate, or high risk) is completed using professional judgement rather than relying on fixed total score cut offs (i.e., like those used in the VRS). Please consult the review presented in the introduction for a detailed discussion of this measure's predictive validity (see section 1.2.2). Further, inter-rater reliability of the HCR-20 appears strong, with ICCs ranging from .67 to .96 in correctional samples (Douglas, Shaffer, Blanchard, Guy, Reeves, & Weir, 2014).

2.3.3 Structured Assessment of Protective Factors (SAPROF; de Vogel et al., 2009).

The SAPROF is a checklist of protective factors relating to violence risk. Seventeen protective factors are coded on a 3-point ordinal scale as present, partially present, and absent. Of the 17 protective factors, two are static variables (e.g., intelligence, secure childhood attachment) and 15 are dynamic variables (e.g., coping skills, medication, prosocial and supportive social network). These 17 items are divided into three categories: internal factors, motivational factors, and external factors. Similar to the HCR-20, the assignment of the protection category (i.e., low, moderate, or high protection) is completed using professional judgement rather than relying on fixed total score cut offs (i.e., like those used in the VRS). Further, an integrated final risk category (i.e., low, moderate, or high integrated risk) is assigned by reviewing both the results of the HCR-20 and the SAPROF, and then making a professional judgement of overall integrated risk. Again, this integrated risk category does not rely on fixed total score cut offs or cut offs applied to the summation or subtraction of the HCR-20 and SAPROF scores. The SAPROF has been demonstrated to have strong inter-rater reliability with ICCs of .85-.88 for the total score and .73-.85 for the SPJ final protection category. Individual items' ICCs ranged from .42 to .94. Further, its total score has been shown to predict violent reoffending in a sample of forensic psychiatric patients with AUCs ranging from .74-.85 at one through three years follow-up as well as sexually violent recidivism with AUCs ranging from .71-.76 (de Vries Robbé, de Vogel, & de Spa, 2011; de Vries Robbé et al., 2015).

2.3.4 List of operationalized protective factors (PF List).

The following protective factors have been supported by literature to be associated with reductions in violent and any community recidivism: social support, emotional support, use of leisure time, religious activity, positive attitude towards intervention, housing/accommodation upon release, and prosocial coping/problem solving skills (Plutchik, 1995; Rae-Grant, Thomas, Offord, & Boyle, 1989; Hoge, Andrews, & Leschid, 1996; Lodewijks et al., 2010; Rennie & Dolan, 2010; Rogers, 2000; Ullrich & Coid, 2011). These factors (described in detail in the section 1.3.4.1) are operationalized on a 4-point ordinal scale (akin to the VRS format) and were rated from the same file information sources that were used to rate the other study measures (see

Appendix D). Psychometric data on this tool are presented in section 2.4.1 and appendix H. As this is a new measure, no protection categories (i.e., low, moderate, or high protection) are assigned based on the total score.

2.3.5 Data collection protocol.

The data collection protocol (Appendix F) was developed for the collection of data relevant to key variables that were required to explore the hypotheses outlined in this study. Key variables included participant demographics, criminal history, institutional information and behaviour, program and psychiatric information, recidivism, and post-release community follow-up.

2.3.6 Outcome measures.

Three broad types of outcome measures were coded: 1) institutional recidivism (any new major, minor, violent, or any misconducts) incurred post-program but before release to community, 2) community recidivism (violent, nonsexual violent, and any) incurred post-release, and 3) indexes of positive outcome (Burt, 2003) obtained from post-release community assessments and follow-up reports (e.g., obtaining employment, obtaining or maintaining prosocial friendships, stable housing). See appendix E.

***2.3.6.1 Recidivism*.**

Community recidivism was defined as any new charge or conviction subsequent to the offender's first release to community following ABC program participation. Separate analyses were conducted for new convictions-related recidivism and for all new charges-related recidivism (i.e., all new charges regardless of whether the offender was eventually convicted for said charge). Separate analyses of these related recidivism criteria allow for control of certain sources of error. For example, reliance on convictions only can be a reliable yet more conservative measure of recidivism; there is a higher standard of certainty as the individual has either plead guilty or been found guilty in a court of law. Often offenders are charged with more serious crimes but plea down to less serious crimes (e.g., robbery, a violent charge, may be plead down to break and enter with theft, a nonviolent charge). Additionally, some charges may be stayed (stay of proceedings), dismissed, or withdrawn due to lack of evidence or due to improper evidence collection practices. As such, examining all new charges as the recidivism criteria may partly account for this. The inclusion of these behaviours can also increase base rates for less common forms of recidivism (e.g., sexual violence), however, it also adds a new source of error relating to those who are falsely charged. Violent recidivism was defined as any violent offense against a person (e.g., sexual assault, robbery, uttering threats, murder, manslaughter); nonsexual violent recidivism was defined as a violent offense against a person that was not sexually motivated (e.g., robbery, assault, uttering threats, wounding, murder, manslaughter); and any community recidivism was defined as any offense including sexually violent, nonsexually violent, and nonsexual nonviolent (e.g., possession of illegal substances, theft, mischief, sexual assault, robbery). Institutional recidivism was defined as any new nonsexual violent misconduct or any institutional misconduct following the offenders participation in the ABC program but prior to first release. Institutional recidivism was also examined based on misconduct category (i.e., major misconduct and minor misconduct). Institutional misconducts occurring during the ABC program were not examined in this program of research. All recidivism variables were coded both in binary (yes-no recidivist) and continuous (total number of new offenses/misconducts) formats.

2.4 Procedure

This study was archival in nature. Detailed treatment files were used to rate study measures (risk assessment measures and data collection protocol). Community recidivism data were coded from official criminal records obtained from the nationwide Canadian Police Information Centre (CPIC). Institutional recidivism data were coded from official institutional misconduct records from the nationwide Offender Management System (OMS). OMS is an internal "computerized case file management system used by the Correctional Service of Canada, the Parole Board of Canada, and other criminal justice partners, to manage information on federal offenders throughout their sentences. The system gathers, stores, and retrieves information required for tracking offenders and making decisions concerning their cases" (Correctional Service of Canada, 2013). Post-release indexes of positive community outcomes (Burt, 2003) were coded from official records obtained from OMS and primarily included community parole officer reports and national parole board reports. Participants released at warrant expiry (n = 18) did not have post-release parole reports available and as such positive community outcomes could not be rated for these individuals. Occasionally, VRS and HCR-20 ratings that had been completed by ABC treatment staff were on file for some of the participants. For consistency these scores were not included in this dataset and raters were required to perform their own ratings for these offenders. Thus, the results are purely retrospective in nature.

To prevent bias in measure ratings, electronic copies of all relevant materials were obtained from OMS by two research assistants who did not rate any of the cases. Materials were saved on a computer at the RPC and sorted into four folders for each participant: pre-treatment, post-treatment, at release, and in community. Raters scored all measures on the files in the pre-treatment folder before accessing the files in the post-treatment folder to score the next set of measures. Subsequent to scoring the measures on the files in the post-treatment folder, raters accessed the files in the at release folder to make the last set of risk and protection ratings. After all risk and protection measures were rated, the rater accessed the files in the in-community folder to rate the positive community outcomes scale (Burt, 2003). This process ensured that raters were completely blind to post-treatment outcomes and recidivism until ratings of the appropriate measures were complete. After all the measures were coded for each participant, institutional and community recidivism data were extracted from CPIC and OMS and entered into the dataset. All coding of materials occurred at the RPC and no file information was removed from the premises.

Raters were trained on the measures in group format by the research supervisor (a licensed clinical psychologist who is competent in conducting risk assessments). Two training cases were used to make pre-treatment and post-treatment ratings. The practice cases were drawn from the training materials developed by Gordon and Wong (2005) for VRS training. Subsequent to the training, all raters first coded the same five cases. Ratings from these cases were reviewed with the raters for fidelity and then random double coding of twenty files was used to ensure data integrity.

2.4.1 Reliability.

To examine instrument rating fidelity and the integrity of data collection, reliability analyses were conducted. Twenty randomly selected cases were independently coded by two trained raters to establish inter-rater reliability.

2.4.1.1 Inter-rater reliability.

Single measure, two-way mixed model, consistency intraclass correlation coefficients (ICCs, single measure) were used to examine inter-rater reliability for the risk assessment measures and clinician-rated scales. ICC values are interpreted using Cicchetti and colleagues (2006) guidelines in which values equal to or greater than .60 are considered acceptable. Both ICC and Cohen’s Kappa were used for categorical risk and protection judgements. ICC values for the VRS pre-treatment and post-treatment scales (static, dynamic, total, and risk category) were strong and ranged from .897 to 1.00. These ICC values are consistent with Wong and Gordon (2006) and Lewis and colleagues (2013). Similarly, ICC values for the HCR-20 pre-treatment and post-treatment scales (historical, clinical, risk management, total, and SPJ risk category) were strong and ranged from .632 to .946. Weakest ICC values were observed for pre-treatment clinical and risk management scales (ICC = .672 and .712, respectively) as well as the post-treatment risk management scale (ICC = .632). These ICC values are consistent with those listed in Douglas and colleagues (2014). ICC values for the PF List ranged from .724 to .824. Last, ICC values for the SAPROF varied, ranging from .302 to .825. Weakest ICC values were observed for pre-treatment, post-treatment, and at release external scales (ICC = .440, .561, and .528, respectively). Additionally, at release SPJ protection and risk categories had weaker ICC values (ICC = .302 and .558, respectively). These ICC values are consistent with those reported in de Vries Robbé and colleagues (2011) and de Vries Robbé (2015).

Single measure intraclass correlation coefficients were also used to examine the inter-rater reliability of the VRS, HCR-20, SAPROF, and PF List change scores (see Table 2.3). ICC values for VRS change scores ranged from .281 to .790. Weakest ICC values were observed for the VRS static change score (ICC = .281). ICC values for HCR-20 change scores ranged from .565 to .799. Weakest ICC values were observed for the HCR-20 historical change score (ICC = .565). PF List ICC values ranged from .673 to .741. ICC values for the SAPROF ranged from .340 to .871. Weakest ICC values were observed for the SAPROF internal change scores (pre-treatment to post-treatment ICC = .340 and pre-treatment to at release ICC = .360) as well as the SAPROF pre-treatment to at release motivational change score (ICC = .484). Smaller ICC values for change scores on the VRS static scale, HCR-20 historical scale, and SAPROF internal scale may relate to the minimal observed variance on these (predominantly static) scales.

Intraclass correlations and Cohen’s kappa coefficients were also generated for positive community outcomes (see Table 2.4). ICC values for individual items ranged from .629 to .903 with a total scale ICC value of .907.

Although the vast majority of the generated ICC values exceed Cicchetti and colleagues (2006) cut off for acceptable inter-rater agreement, a few did not. A number of possible explanations exist for these lower ICC values. With regard to the lower ICC values for the SAPROF external subscale, this did not completely come as a surprise. Firstly, this scale is comprised of only five items. As the number of items in a scale decreases, the ICC values also tend to decrease. Second, the items comprising this scale were particularly difficult to rate as they rely on release planning that tends to occur late in an offenders sentence. de Vries Robbé and colleagues (2011) not a similar problem when rating the SAPROF external scale items from file review.

Another area where ICC values were low related to the change scores. The change scores used in this program of research are derived scores. That is, they rely on the subtraction of two separate scores from one another. Derived scores inevitably have lower ICC values than their parent scores as error in agreement on both parent scores are compounded when calculating the derived score. Further, some change scores (i.e., the VRS static and HCR-20 historical change scores) will have lower ICC values due to the minimal observed variance in these change scores. That is, when change is rare and small, it becomes harder to have statistical agreement.

Similarly, the structured professional judgement ratings at release on the SAPROF may suffer from many of the same issues. First, the integrated final risk judgement at release is meta-judgement based on two other judgements. Thus, compounding of error in agreement is likely to occur. Second, no guidelines exist in the SAPROF administration manual on how to make structured professional judgements when treatment-related change is incorporated. Third, integrated final risk judgements (at release) incorporate at release protection on the SAPROF with post-treatment risk on the HCR-20. Given that these two judgements are conducted at different times, integrating them into one final risk judgement may decrease agreement. This, of course, could be easily addressed if the HCR-20 was re-rated at release.

Lastly, another potential explanation for some of the low ICC values relates to the sheer number of ICC analyses conducted. Inevitably, as the number of ICC analyses increases, the likelihood of obtaining a small number of spuriously low ICC values also increases. Overall, however, the vast majority of the ICC values are considered acceptable, and, given that the vast majority of the findings in the results section (below) are positive, the findings are likely robust to the measurement error relating to different raters.

2.4.1.2 Internal consistency.

The internal consistency of the VRS Static, Dynamic, and Total (Static and Dynamic combined) scales, HCR-20 Historical, Clinical, Risk Management, and Total (Historical, Clinical, and Risk management combined) scales, the operationalized list of protective factors, and SAPROF Internal, Motivational, External, and Total (internal, motivational, and external combined) scales was examined using Cronbach's alpha (see Table 2.2). All Cronbach alpha values for the VRS scales (static, dynamic, and total at both pre- and post-treatment) demonstrated good internal consistency, ranging from .717 to .853. All HCR-20 scales had acceptable to good internal consistency at both pre-treatment and post-treatment (ranging from .652 to .826) with the exception of the pre-treatment clinical scale (α = .455), which showed weak internal consistency indicating heterogeneity of item content. The PF List total score demonstrated good internal consistency at pre-treatment, post-treatment, and at release (α = .750, .780, and .831, respectively). All SAPROF scales (internal, motivational, external, and total) had acceptable to good internal consistency at pre-treatment, post-treatment, and at release (Cronbach alphas ranging from .616 to .892). Generally, post-treatment and at release scales had higher internal consistency values than pre-treatment scales for all four measures. Possible explanations for this pattern include: more accurate ratings at post-treatment and at release due to increased available information, assessment of change may enhance the reliability and validity of post-treatment and at release scores, and participation in the ABC program may have resulted in homogenization of the sample.

Lastly, a Cronbach alpha coefficient was generated for positive community outcomes total score (see Table 2.4) which demonstrated good internal consistency (α = .853). Additional psychometric data (including item means, standard deviations, Cronbach's alpha if item removed, and corrected item-total correlations) for the PF List and the measure of positive community outcomes are presented in Appendix H.

Table 2.2

Scale and Inter-rater Reliability of Measures: Internal Consistency and Single Measure Intraclass Correlation Coefficients

Measure	Cronbach's Alpha	ICC (Kappa)
VRS Static (pre)	.718	.975
VRS Dynamic (pre)	.788	.977
VRS Total (pre)	.842	.984
VRS Risk Level (pre)	-	1.00 (1.00)
VRS Static (post)	.717	.980
VRS Dynamic (post)	.818	.964
VRS Total (post)	.853	.978
VRS Risk Level (post)	-	.897 (.785)
HCR-20 Historical (pre)	.687	.946
HCR-20 Clinical (pre)	.455	.672
HCR-20 Risk Management (pre)	.703	.712
HCR-20 Total (pre)	.816	.928
HCR-20 Risk Level (pre)	-	.890 (.710)
HCR-20 Historical (post)	.698	.936
HCR-20 Clinical (post)	.727	.806
HCR-20 Risk Management (post)	.652	.632
HCR-20 Total (post)	.826	.938
HCR-20 Risk Level (post)	-	.724 (.524)
PF List (pre)	.750	.750
PF List (post)	.780	.724
PF List (rel)	.831	.824
SAPROF Internal (pre)	.616	.745
SAPROF Motivational (pre)	.799	.811
SAPROF External (pre)	.786	.440
SAPROF Total (pre)	.872	.726
SAPROF Protection Level (pre)	-	.825 (.630)
SAPROF Integrated Risk Level (pre)	-	.744 (.387)
SAPROF Internal (post)	.741	.804
SAPROF Motivational (post)	.783	.728
SAPROF External (post)	.774	.561
SAPROF Total (post)	.872	.787
SAPROF Protection Level (post)	-	.656 (.455)
SAPROF Integrated Risk Level (post)	-	.704 (.286)
SAPROF Internal (rel)	.747	.825
SAPROF Motivational (rel)	.828	.795
SAPROF External (rel)	.742	.528
SAPROF Total (rel)	.892	.802
SAPROF Protection Level (rel)	-	.302 (.243)
SAPROF Integrated Risk Level (rel)	-	.558 (.310)

Note: pre = pre-treatment, post = post-treatment, rel = at release

Table 2.3
Inter-rater Reliability of Change Scores: Single Measure Intraclass Correlation Coefficients

Measure	ICC
VRS Static	.281
VRS Dynamic	.790
VRS Total	.744
HCR-20 Historical	.565
HCR-20 Clinical	.799
HCR-20 Risk Management	.607
HCR-20 Total	.787
PF List (pre – post Tx)	.673
PF List (pre Tx – at release)	.741
SAPROF Internal (pre – post Tx)	.340
SAPROF Motivational (pre – post Tx)	.667
SAPROF External (pre – post Tx)	.828
SAPROF Total (pre – post Tx)	.871
SAPROF Internal (pre Tx – at release)	.360
SAPROF Motivational (pre Tx – at release)	.484
SAPROF External (pre Tx – at release)	.775
SAPROF Total (pre Tx – at release)	.823

Note: Tx = Treatment.

Table 2.4
Scale and Inter-rater Reliability of Positive Community Outcomes: Internal Consistency and Single Measure Intraclass Correlation Coefficients

Measure	Cronbach's Alpha	ICC (Kappa)
Employment	-	.665 (.597)
Housing	-	.757 (.524)
Positive Relationships	-	.629 (.592)
Supervision Completion	-	.903 (.774)
Prosocial Activities	-	.748 (.577)
Total	.853	.907

2.5 Data Preparation

To prepare for inferential statistical analysis (detailed below), a series of pre-analytic statistical procedures were used to describe and summarize the data. First, treatment-related risk change scores were calculated by subtracting post-treatment scores from pre-treatment scores (for the VRS, and HCR-20). Treatment-related protection change scores were calculated by subtracting pre-treatment scores from post-treatment scores as well as by subtracting pre-treatment scores from at release scores (for both the PF List and SAPROF). Second, in order to conduct survival analyses, the length of time to recidivism was calculated by subtracting the release date (from treatment or to community) from the reconviction date (for a new misconduct or offense). For offenders who did not recidivate, the respective release date was subtracted from the CPIC date or date of death as noted on the CPIC record for community follow-up, or from release to community date for institutional follow-up. Third, descriptive statistics were obtained for the total sample and included means, frequencies, and standard deviations as well as ranges, variances, and maximum and minimum scores.

2.6 Validity: Definitional and Conceptual Issues

Although the term validity is frequently described in this document as a concrete property of a measure, psychometric theory has moved away from this conceptualization of the term. Current psychometric theory argues that all "types" of validity are in fact different methods of building evidence for the unitary concept of construct validity; that is "the degree to which a score [on a measure or tool] can be interpreted as representing the intended underlying construct" (Cook & Beckman, 2006, p. 166.e7). As such, validity refers to the extent that the conclusions or inferences, drawn from a score, tool, test, or assessment, are considered well-grounded, relevant, and meaningful. Thus, it can be problematic for validity (and reliability; the reproducibility and consistency of scores) to be treated as discrete labels (e.g., face, content, convergent, criterion-related) which can be attached to a measure, as the validity (or reliability) of an inference is always a matter of degree and validity is always a property of the inference not the measure. Further, the argument (i.e., evidence) for validity of an inference is always changing. Validity, is therefore dynamic, and requires ongoing cycles of re-evaluation.

From this understanding of validity, the results presented below represent evidence for validity, obtained through different methods, of the inferences drawn from these tools scores and rating. However, for the purposes of organization and communication, the terms convergent, predictive, and incremental predictive validity are employed, bearing in mind that such language is not meant to insinuate that these represent properties possessed by the tools.

2.7 Data Analytic Plan

2.7.1 Validity of risk measures.

2.7.1.1 Convergent validity.

A) Convergent validity between the VRS and HCR-20 total scores was examined using Pearson correlation coefficients between the sets of measures.

B) Convergent validity between the VRS risk categories and HCR-20 SPJ risk categories was examined using Pearson correlation coefficients between the sets of measures.

C) Convergent validity between the VRS and HCR-20 dynamic scores was examined using Pearson correlation coefficients.

D) Convergent validity between the VRS and HCR-20 static scores was examined using Pearson correlation coefficients.

2.7.1.2 Predictive validity.

E) To test the predictive validity of the VRS and HCR-20 total scores, predictive accuracy analyses were conducted using receiver operating characteristic (ROC) curves and point-biserial correlation coefficients (i.e., a correlation between a continuous and dichotomous variable) with community and institutional recidivism.

F) To test whether VRS static and dynamic scores independently predicted community and institutional recidivism, separate ROC curves and point-biserial correlation coefficients were computed.

G) To test whether HCR-20 historical, clinical, risk management, and dynamic (clinical + risk management) scores independently predicted community and institutional recidivism, separate ROC curves and point-biserial correlation coefficients were computed.

H) To test whether the VRS and HCR-20 risk categories predicted community and institutional recidivism, separate ROC curves, point-biserial correlation coefficients, and survival curves for were computed.

I) To test whether HCR-20 and VRS scores were associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), Pearson correlation coefficients were computed.

J) To test whether risk category on the VRS and HCR-20 were associated with positive community outcomes, Pearson correlation coefficients were computed.

2.7.1.3 Incremental predictive validity.

K) To test whether VRS dynamic scores demonstrated incremental validity in the prediction of community and institutional recidivism over VRS static scores, hierarchical Cox regression survival analyses were used controlling for individual differences in follow-up time.

L) To test whether the HCR-20 clinical, risk management, and dynamic scores demonstrated incremental validity in the prediction of community and institutional recidivism over HCR-20 historical scores, Cox regression survival analyses were conducted controlling for individual differences in follow-up time.

M) To test whether VRS dynamic scores demonstrated incremental validity in the prediction of positive community outcomes over VRS static scores, hierarchical multiple regression was used.

N) To test whether the HCR-20 clinical, risk management, and dynamic scores demonstrated incremental validity in the prediction of positive community outcomes over HCR-20 historical scores, hierarchical multiple regressions were conducted.

2.7.2 Validity of risk change scores.

2.7.2.1 Convergent validity.

A) To examine convergent validity between VRS and HCR-20 measurements of change, Pearson correlations were computed between the two sets of change scores on these measures.

2.7.2.2 Predictive validity.

B) To test the predictive validity of the VRS and HCR-20 change scores, predictive accuracy analyses were conducted using point-biserial correlations and semi-partial correlations (controlling for pre-treatment risk) with community and institutional recidivism criteria.

C) To test whether change scores on the HCR-20 and the VRS are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations and semi-partial correlations (controlling for pre-treatment risk) were computed between change scores on these measures and the operationalized measurements of positive community outcomes.

2.7.2.3 Incremental predictive validity.

D) Hierarchical Cox regression survival analyses were conducted to examine changes scores on the VRS and HCR-20 and their relationship with community recidivism while controlling for pre-treatment risk (i.e., pre-treatment VRS total and HCR-20 total, respectively) and individual differences in follow-up time.

E) Hierarchical Cox regression survival analyses were conducted to examine changes scores on the VRS and HCR-20 and their relationship with post-treatment institutional recidivism while controlling for pre-treatment risk (i.e., pre-treatment VRS total and HCR-20 total, respectively) and individual differences in follow-up time.

F) Hierarchical multiple regressions were conducted to examine change scores on the VRS and HCR-20 and their relationship with positive community outcomes total score while controlling for pre-treatment risk (i.e., pre-treatment VRS total and HCR-20 total, respectively).

2.7.3 Validity of protective factor measures.

2.7.3.1 Convergent validity.

A) To test convergent validity between scores on the PF List and scores on the SAPROF, Pearson correlation coefficients were conducted.

B) To test convergent validity between scores on the PF List and SPJ protection ratings on the SAPROF, Pearson correlation coefficients were conducted.

2.7.3.2 Predictive validity.

C) To test whether scores on the PF List are negatively associated with community and institutional recidivism, receiver operating characteristic (ROC) curves (with the PF List reverse keyed) and point-biserial correlation coefficients with community and institutional recidivism criteria were conducted.

D) To test whether scores on the SAPROF are negatively associated with community and institutional recidivism, receiver operating characteristic (ROC) curves (with the SAPROF reverse keyed) and point-biserial correlation coefficients with community and institutional recidivism criteria were conducted.

E) To test whether the SAPROF protection category predicts community and institutional recidivism, separate ROC curves (with the SAPROF reverse keyed), point-biserial correlation coefficients, and survival curves for were computed.

F) To test whether scores on the SAPROF and the PF List are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), Pearson correlations coefficients were computed between scores on these measures and operationalized measurements of positive community outcomes.

G) To test whether protection category on the SAPROF was associated with positive community outcomes, Pearson correlations coefficients were computed.

2.7.4 Validity of protection change scores.

2.7.4.1 Convergent validity.

A) To test convergent validity between change scores on the PF List and change scores on the SAPROF, Pearson correlation coefficients were conducted.

2.7.4.2 Predictive validity.

B) To test the predictive validity of the PF List and SAPROF change scores, predictive accuracy analyses were conducted using point-biserial correlations and semi-partial correlations (controlling for pre-treatment protection) with the community and institutional recidivism criteria.

C) To test whether change scores on the PF List and the SAPROF are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations and semi-partial correlations (controlling for pre-treatment risk) were computed between scores on these measures and operationalized measurements of positive community outcomes.

2.7.4.3 Incremental predictive validity.

D) To test whether change scores on the PF List demonstrate incremental validity in the prediction of community and institutional recidivism over PF List pre-treatment total scores, hierarchical Cox regression survival analyses were conducted.

E) To test whether change scores on the SAPROF demonstrate incremental validity in the prediction of community and institutional recidivism over SAPROF pre-treatment total scores, hierarchical Cox regression survival analyses were conducted.

F) To test whether change scores on the PF List demonstrate incremental validity in the prediction of positive community outcomes over PF List pre-treatment total scores, hierarchical multiple regressions were conducted.

G) To test whether change scores on the SAPROF demonstrate incremental validity in the prediction of positive community outcomes over SAPROF pre-treatment total scores, hierarchical multiple regressions were conducted.

2.7.5 The relationship between protective and risk measures.

2.7.5.1 Convergence.

A) To test whether scales from the SAPROF and PF List correspond inversely to the scales of the VRS and HCR-20, Pearson correlations were computed between the two sets of scales.

B) To test whether protection categories correspond inversely to risk categories, Pearson correlations were computed.

C) Pearson correlations were computed between scores on the change scores on the PF List and SAPROF, with change scores from the VRS and HCR-20.

2.7.5.2 Predictive validity.

D) To test whether the SAPROF/HCR-20 integrated risk category was associated with community and institutional recidivism, separate ROC curves, point-biserial correlation coefficients, and survival curves for were computed.

E) To test whether SAPROF/HCR-20 integrated risk category was associated with positive community outcomes, Pearson correlation coefficients were computed.

2.7.5.3 Incremental predictive contributions.

F) To test whether scores on the PF List demonstrated incremental validity in the prediction of community and institutional recidivism over VRS scores while controlling for individual differences in follow-up time, hierarchical Cox regression survival analyses were conducted. VRS total scores and the protective factor total scores were entered as separate covariates.

G) To test whether scores on the SAPROF demonstrated incremental validity in the prediction of community and institutional recidivism over HCR-20 scores while controlling for individual differences in follow-up time, hierarchical Cox regression survival analyses were conducted. HCR-20 total scores and the SAPROF total scores were entered as separate covariates.

H) To test whether scores on the PF List demonstrated incremental validity in the prediction of positive community outcomes over VRS total scores, hierarchical multiple regressions were conducted.

I) To test whether scores on the SAPROF demonstrated incremental validity in the prediction of positive community outcomes over HCR-20 total scores, hierarchical multiple regressions were conducted.

2.8 Summary of Data Analytic Plan and Study Design

In summary, four study measures were rated at two (i.e the risk measures) or three (i.e., the protection measures) separate time points. These measures generated a set of total raw scores, subscale raw scores, and, with the exception of the PF List, categorical risk/protection bins for each time point. Change scores were also calculated for the observed change in total and subscale raw scores between time points. Correlations, ROCs, and regressions were used to examine the predictive accuracy of these raw scores, change scores, and bins for three broad outcome variables: community recidivism, institutional recidivism, and positive community outcomes. Survival analysis was also used to examine the predictive accuracy of the categorical risk/protection bins. Separate analyses were conducted for community recidivism assuming a conviction-only recidivism criterion and an all charges recidivism criterion. For the purpose of analysis, community recidivism was further subdivided into all violent, nonsexual violent, and any community recidivism. Institutional recidivism was also subdivided into four categories to allow for separate analysis: major, minor, violent, and any institutional recidivism. Separate analyses were conducted on the institutional recidivism outcomes using three different minimum follow-up lengths to aid in ruling out a potential confound: no minimum, one week minimum institutional follow-up, and one month minimum institutional follow-up.

Chapter 3. Results

3.1 Base Rates of Recidivism

The total sample consisted of 178 participants. However, sample size differed depending on the outcome variable being examined. For community recidivism analyses, the sample size was 155 participants as 23 participants were either never released (16), died before release (5), or were deported (2). For institutional recidivism analyses, all 178 participants were included. However, many participants had short institutional follow-up periods before their release. As such, additional analyses were conducted requiring a minimum of one week (n = 167) and one month (n = 157) follow-up time. Finally, for positive community outcome analyses, only participants who were released and supervised in the community before the expiration of their sentence had appropriate documentation to rate these variables. As such, only 137 participants were included in these analyses.

The mean community recidivism follow-up length was 9.7 years (*SD* 2.6), with a range of 0.1 to 13.8 years. In this sample, 60.6% had at least one new violent conviction, 60.0% had at least one new nonsexual violent conviction, and 78.7% had at least one new conviction (i.e., any reconviction). The mean institutional recidivism follow-up length was 29.7 months (*SD* = 40.3) with a range of 0 to 163.7 months. The difference between maximum institutional and community follow-up lengths relates to different offenders having different release and discharge dates. In this sample, 30.9% had at least one post-treatment major misconduct, 51.1% had at least one post-treatment minor misconduct, 12.4% had at least one post-treatment violent misconduct, and 55.6% had at least one misconduct (i.e., any misconduct). Table 3.0.1 summarizes the recidivism rates by type.

Table 3.0.1
Base Rates of Recidivism

	Base Rate (%)
Any Violent Conviction	60.6
Any Violent Charge or Conviction	71.6
Nonsexual Violent Conviction	60.0
Nonsexual Violent Charge or Conviction	71.0
Any Conviction	78.7
Any Conviction or Charge	81.3
Major Institutional	30.9
Minor Institutional	51.1
Violent Institutional	12.4
Any Institutional	55.6

N = 178

3.2 Descriptive Statistics

Means and standard deviations are summarized in Table 3.0.2 for the protective and risk measures at pre-treatment, post-treatment, and at release. Table 3.0.3 summarizes the mean, standard deviation, and sample size for each risk/protection category at pre-treatment, post-treatment, and at release. Table 3.0.4 summarizes the mean change score for each risk (pre-treatment minus post-treatment) and protection (post-treatment minus pre-treatment; at release minus pre-treatment; at release minus post-treatment) scale. Cohen's *d* effect sizes are also presented for the change scores to quantify the magnitude of the change (*d* = .20 is a small effect, *d* = .50 is a medium effect, and *d* = .80 is a large effect; Cohen, 1992). All change scores were significant with the exception of the VRS static change score and the HCR-20 historical change score.

At both pre-treatment and post-treatment, the mean total score on the VRS fell in the high risk category. A pre-treatment VRS mean total score of 57.8 corresponds with the 84th percentile of the validation sample (Wong & Gordon, 2006). Proportion of offenders in each VRS risk bin was near identical to those reported in for the New Zealand high-risk specialized treatment units program (Polaschek & Kilgour, 2013). The SPJ ratings of the HCR-20 similarly placed most of the offenders at both pre-treatment and post-treatment in the high risk category. These results are consistent with the ABC programs focus on admitting high risk violent offenders and supports that the ABC program adhered to the risk principle. SPJ protection ratings on the SAPROF placed most offenders in the low protection category at pre-treatment and roughly equal number of offenders in the low and moderate protection categories at release. VRS dynamic and total change scores obtained moderate effect sizes. Similarly, HCR-20 clinical, risk management, dynamic (clinical + risk management), and total change scores obtained moderate to large effect sizes. Generally the total PF list change scores obtained large effect sizes, whereas the SAPROF change scores (with the exception of the external scale) obtained moderate to large effect sizes.

Table 3.0.2

Risk and Protective Measures: Means and Standard Deviations

Measure	*M* (*SD*)
VRS Static (pre)	12.7 (4.0)
VRS Dynamic (pre)	45.1 (6.7)
VRS Total (pre)	57.8 (9.7)
VRS Static (post)	12.7 (4.0)
VRS Dynamic (post)	40.4 (6.8)
VRS Total (post)	52.8 (10.0)
HCR-20 Historical (pre)	14.4 (3.1)
HCR-20 Clinical (pre)	6.4 (1.5)
HCR-20 Risk Management (pre)	7.5 (1.9)
HCR-20 Dynamic (Clinical + Risk Management) (pre)	13.9 (3.1)
HCR-20 Total (pre)	28.3 (5.5)
HCR-20 Historical (post)	14.4 (3.2)
HCR-20 Clinical (post)	4.3 (2.0)
HCR-20 Risk Management (post)	6.5 (1.9)
HCR-20 Dynamic (Clinical + Risk Management) (post)	10.8 (3.6)
HCR-20 Total (post)	25.2 (5.8)
PF List (pre)	5.6 (3.4)
PF List (post)	8.9 (4.1)
PF List (rel)	9.9 (4.6)
SAPROF Internal (pre)	2.4 (1.8)
SAPROF Motivational (pre)	4.2 (2.7)
SAPROF External (pre)	3.5 (2.5)
SAPROF Total (pre)	10.1 (6.0)
SAPROF Internal (post)	3.9 (2.2)
SAPROF Motivational (post)	5.8 (2.9)
SAPROF External (post)	3.7 (2.5)
SAPROF Total (post)	13.4 (6.3)
SAPROF Internal (rel)	4.1 (2.3)
SAPROF Motivational (rel)	6.1 (3.3)
SAPROF External (rel)	4.2 (2.3)
SAPROF Total (rel)	14.3 (6.8)

N = 178; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.0.3
Sample by Risk and Protection Categories

	Pre-treatment		Post-treatment		At Release	
	M (*SD*)	*n*	*M* (*SD*)	*N*	*M* (*SD*)	*n*
VRS						
Low	27.9 (5.2)	7	25.6 (5.7)	10	-	-
Med	45.6 (3.9)	27	44.4 (3.8)	45	-	-
High	61.6 (5.0)	144	58.1 (4.8)	123	-	-
Total	57.8 (9.7)	178	52.8 (10.0)	178	-	-
HCR-20 (SPJ)						
Low	9.7 (2.8)	5	9.2 (3.2)	7	-	-
Med	23.1 (4.0)	36	21.7 (3.4)	57	-	-
High	30.4 (3.3)	137	27.9 (4.1)	114	-	-
Total	28.3 (5.5)	178	25.2 (5.8)	178	-	-
SAPROF (SPJ)						
Low	8.1 (4.3)	146	9.9 (4.4)	105	9.5 (4.4)	90
Med	18.2 (2.8)	29	17.9 (4.5)	70	18.6 (4.8)	81
High	28.1 (1.9)	3	29.7 (0.0)	3	26.6 (4.7)	7
Total	10.1 (6.0)	178	13.4 (6.3)	178	14.3 (6.8)	178
PF List						
Total	5.6 (3.4)	178	8.9 (4.1)	178	9.9 (4.6)	178

N = 178; SPJ = structured professional judgement

Table 3.0.4

Change Scores: Means, Standard Deviations, and Effect Sizes

Measure	*M* (*SD*)	Cohen's *d*	*p*
VRS Static	0.0 (0.1)	.01	.058
VRS Dynamic	4.7 (3.0)	.69	.000
VRS Total	5.0 (4.6)	.51	.000
HCR-20 Historical	0.0 (0.7)	.01	.736
HCR-20 Clinical	2.1 (1.7)	1.17	.000
HCR-20 Risk Management	1.0 (1.3)	.54	.000
HCR-20 Dynamic (Clinical + Risk Management)	3.2 (2.5)	.95	.000
HCR-20 Total	3.2 (2.8)	.56	.000
PF List (pre – post)	3.3 (3.0)	.86	.000
PF List (pre – rel)	4.3 (3.9)	1.05	.000
PF List (post – rel)	1.0 (2.6)	.23	.000
SAPROF Internal (pre – post)	1.5 (1.3)	.75	.000
SAPROF Motivational (pre – post)	1.6 (1.8)	.55	.000
SAPROF External (pre – post)	0.2 (1.0)	.09	.004
SAPROF Total (pre – post)	3.3 (2.9)	.53	.000
SAPROF Internal (pre – rel)	1.7 (1.6)	.80	.000
SAPROF Motivational (pre – rel)	1.9 (2.4)	.63	.000
SAPROF External (pre – rel)	0.7 (1.3)	.27	.000
SAPROF Total (pre – rel)	4.2 (4.2)	.66	.000
SAPROF Internal (post – rel)	0.2 (1.1)	.07	.046
SAPROF Motivational (post – rel)	0.4 (1.7)	.11	.006
SAPROF External (post – rel)	0.4 (1.1)	.18	.000
SAPROF Total (post – rel)	1.0 (3.0)	.15	.000

N = 178; pre = pre-treatment, post = post-treatment, rel = at release

3.3 Validity of Risk Measures

3.3.1 Convergent validity.

3.3.1.1 Correlations.

Table 3.1.1 shows correlations between the VRS total and HCR-20 total (both pre-treatment and post-treatment). All correlations were significant and large.

Table 3.1.1
Convergence Correlations between VRS and HCR-20 Total Scores

	VRS Total (post)	HCR Total (pre)	HCR Total (post)
VRS Total (pre)	.89	.80	.75
VRS Total (post)		.74	.76
HCR Total (pre)			.88

N = 178, all *p* < .001; pre = pre-treatment, post = post-treatment

Table 3.1.2 shows the correlations between the VRS total risk category and the HCR-20 total SPJ risk category (both pre-treatment and post-treatment). Similarly, all correlations were large and significant.

Table 3.1.2
Convergence Correlations between VRS and HCR-20 Risk Categories

	VRS Risk (post)	HCR SPJ (pre)	HCR SPJ (post)
VRS Risk (pre)	.80	.59	.52
VRS Risk (post)		.60	.60
HCR SPJ (pre)			.75

N = 178, all *p* < .001; pre = pre-treatment, post = post-treatment, SPJ = structured professional judgement

Table 3.1.3 summarizes the correlations between the VRS dynamic total and the HCR-20 clinical, risk management, and dynamic (clinical + risk management subscales) totals (both pre-treatment and post-treatment). All correlations were significant and ranged in magnitude from moderate to large.

Table 3.1.3

Convergence Correlations between VRS and HCR-20 Dynamic Scores

	VRS Dyn (post)	HCR Clinical (pre)	HCR RiskM (pre)	HCR Dyn (pre)	HCR Clinical (post)	HCR RiskM (post)	HCR Dyn (post)
VRS Dyn (pre)	.91	.66	.44	.61	.43	.45	.49
VRS Dyn (post)		.68	.47	.63	.67	.61	.71
HCR Clinical (pre)			.58	.86	.61	.61	.67
HCR RiskM (pre)				.91	.38	.76	.62
HCR Dyn (pre)					.54	.78	.72
HCR Clinical (post)						.65	.92
HCR RiskM (post)							.90

N = 178, all *p* < .001; Dyn = Dynamic, RiskM = Risk Management, pre = pre-treatment, post = post-treatment

Lastly, Table 3.1.4 summarizes the correlations between the VRS Static total and the HCR-20 historical (static) total (bot pre-treatment and post-treatment). All correlations were significant and large in magnitude.

Table 3.1.4

Convergence Correlations VRS and HCR-20 Static Scores

	VRS Static (post)	HCR Historical (pre)	HCR Historical (post)
VRS Static (pre)	.99	.70	.69
VRS Static (post)		.70	.69
HCR Historical (pre)			.97

N = 178, all *p* < .001; pre = pre-treatment, post = post-treatment

3.3.2 Predictive validity.

3.3.2.1 Community recidivism.

3.3.2.1.1 *Correlations and area under the curve.*

The predictive validity of the risk measures was examined with respect to violent recidivism, nonsexual violent recidivism, and any community recidivism. Separate analyses were conducted to examine conviction-only recidivism (see Table 3.1.5) and all charges recidivism (see Table 3.1.6) following release into community after participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}; i.e., a correlation between a continuous and dichotomous variable) and receiver-operator characteristic generated area under the curve (AUC) values. All total scores were found to significantly predict violent, nonsexual violent, and any recidivism. Slightly larger correlations were observed for the all charges analyses than the conviction-only analyses. Slightly larger correlations were observed for post-treatment scores over pre-treatment scores. Similarly, all total scores were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined; again, with all charges analyses generating slightly larger AUC values than the conviction-only analyses. Slightly larger AUC values were observed for post-treatment scores over pre-treatment scores.

All static scores were found to significantly predict violent, nonsexual violent, and any recidivism, with slightly larger correlations for the all charges analyses than the conviction-only analyses. Slightly larger correlations were observed for post-treatment scores over pre-treatment scores. Similarly, all static scores were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined; again, with all charges analyses generating slightly larger AUC values than the conviction-only analyses. Slightly larger AUC values were observed for post-treatment scores over pre-treatment scores.

All dynamic scores were found to significantly predict violent, nonsexual violent, and any recidivism, with slightly larger correlations for the all charges analyses than the conviction-only analyses. Slightly larger correlations were observed for post-treatment scores over pre-treatment scores. Similarly, nearly all dynamic scores were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined, with the exception of the HCR-20 risk management scale at pre-treatment for both violent and nonsexual violent conviction-only recidivism. The AUC value for the HCR-20 dynamic scale at pre-treatment also did not predict nonsexual violent conviction only recidivism. When the all charges analyses were reviewed, all dynamic scores generating slightly larger and significant AUC values. Again, slightly larger AUC values were observed for post-treatment scores over pre-treatment scores.

Table 3.1.5
Predictive Validity of VRS and HCR-20 Scores for Community Recidivism (Convictions): point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx									
VRS Static	.30***	.65**	.56, .74	.29***	.64**	.55, .73	.38***	.72***	.61, .83
VRS Dyn	.32***	.65**	.56, .74	.32***	.65**	.56, .74	.38***	.69**	.59, .80
VRS Total	.35***	.66**	.57, .76	.34***	.66**	.56, .75	.42***	.73***	.62, .83
HCR Hist	.32***	.65**	.56, .75	.34***	.66**	.57, .75	.41***	.70***	.59, .81
HCR Clin	.26**	.61*	.51, .70	.25**	.60*	.51, .70	.39***	.72***	.60, .83
HCR RiskM	.20*	.58	.49, .68	.19*	.58	.48, .67	.36***	.71***	.60, .82
HCR Dyn	.25**	.60*	.50, .70	.24**	.59	.49, .69	.41***	.73***	.62, .84
HCR Total	.32***	.64**	.55, .74	.32***	.65**	.55, .75	.46***	.75***	.64, .86
Post-Tx									
VRS Static	.31***	.66**	.57, .75	.29***	.65**	.55, .74	.38***	.72***	.61, .83
VRS Dyn	.35***	.68***	.59, .77	.35***	.68***	.59, .76	.42***	.75***	.65, .85
VRS Total	.34***	.68***	.57, .76	.33***	.68***	.59, .76	.42***	.77***	.68, .86
HCR Hist	.36***	.68***	.59, .77	.38***	.69***	.60, .78	.43***	.71***	.60, .82
HCR Clin	.31***	.67***	.58, .76	.31***	.67***	.59, .76	.35***	.75***	.65, .85
HCR RiskM	.29***	.66**	.57, .75	.28***	.65**	.56, .74	.42***	.78***	.69, .87
HCR Dyn	.33***	.68***	.57, .75	.33***	.68***	.59, .76	.42***	.79***	.70, .88
HCR Total	.40***	.72***	.63, .80	.40***	.72***	.64, .81	.49***	.81***	.73, .90

N = 155; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; Tx = treatment, dyn = dynamic, hist = historical, clin = clinical, riskm = risk management

Table 3.1.6

Predictive Validity of VRS and HCR-20 Scores for Community Recidivism (All Charges): point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx									
VRS Static	.29***	.66**	.56, .76	.27**	.64**	.54, .75	.36***	.71***	.60, .83
VRS Dyn	.37***	.67**	.57, .77	.36***	.66**	.56, .76	.38***	.68**	.57, .80
VRS Total	.37***	.68**	.58, .78	.36***	.67**	.57, .77	.41***	.72***	.60, .84
HCR Hist	.36***	.66**	.56, .77	.37***	.67**	.57, .78	.42***	.71***	.59, .83
HCR Clin	.34***	.66**	.55, .77	.34***	.66**	.55, .76	.38***	.72***	.59, .84
HCR RiskM	.28***	.65**	.54, .75	.27**	.64**	.53, .74	.32***	.70**	.58, .82
HCR Dyn	.35***	.67**	.56, .78	.33***	.66**	.55, .77	.39***	.72***	.60, .84
HCR Total	.39***	.70***	.59, .80	.40***	.70***	.59, .81	.45***	.75***	.64, .87
Post-Tx									
VRS Static	.30***	.67**	.56, .77	.28***	.65**	.55, .75	.36***	.71***	.60, .83
VRS Dyn	.40***	.72***	.62, .81	.39***	.71***	.62, .80	.41***	.74***	.63, .85
VRS Total	.37***	.71***	.62, .80	.36***	.70***	.61, .79	.41***	.76***	.67, .85
HCR Hist	.39***	.68**	.58, .78	.40***	.69***	.59, .79	.44***	.73***	.61, .84
HCR Clin	.39***	.75***	.66, .84	.40***	.75***	.66, .84	.34***	.76***	.65, .86
HCR RiskM	.36***	.72***	.62, .81	.35***	.71***	.61, .80	.41***	.78***	.69, .88
HCR Dyn	.41***	.76***	.67, .85	.41***	.76***	.67, .84	.41***	.79***	.70, .89
HCR Total	.46***	.77***	.69, .86	.47***	.78***	.69, .86	.49***	.83***	.75, .91

$N = 155$; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; ; Tx = treatment, dyn = dynamic, hist = historical, clin = clinical, riskm = risk management

The predictive validity of the risk measures' risk categories was examined with respect to violent recidivism, nonsexual violent recidivism, and any recidivism. Separate analyses were conducted to examine conviction-only recidivism and all charges recidivism (summarized in Table 3.1.7) following release into community after participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. All risk categories were found to significantly predict violent, nonsexual violent, and any recidivism. Slightly larger correlations for the all charges analyses than the conviction-only analyses were observed. Slightly larger correlations were observed for post-treatment categories over pre-treatment categories. Similarly, all risk categories were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined; again, with all charges analyses generating slightly larger AUC values than the conviction-only analyses. Slightly larger AUC values were observed for post-treatment categories over pre-treatment categories.

Table 3.1.7

Predictive Validity of VRS and HCR-20 Risk Categories for Community Recidivism: point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Convictions									
VRS (pre)	.35***	.64**	.55, .73	.35***	.64**	.54, .73	.38***	.66**	.54, .77
VRS (post)	.30***	.63**	.54, .72	.29***	.63**	.54, .72	.36***	.68**	.56, .79
HCR-20 (pre)	.35***	.65**	.56, .75	.36***	.66**	.57, .75	.39***	.69**	.58, .80
HCR-20 (post)	.33***	.66**	.57, .75	.35***	.67***	.58, .76	.42***	.73***	.62, .83
All Charges									
VRS (pre)	.37***	.65**	.54, .75	.36***	.64**	.54, .74	.39***	.66**	.54, .79
VRS (post)	.31***	.64**	.53, .74	.30***	.63*	.53, .73	.33***	.66**	.54, .78
HCR-20 (pre)	.41***	.70***	.59, .80	.43***	.70***	.61, .80	.41***	.71***	.59, .83
HCR-20 (post)	.40***	.70***	.61, .80	.41***	.71***	.61, .81	.40***	.72***	.61, .83

N = 155; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; pre = pre-treatment, post = post-treatment

3.3.2.1.2 Kaplan-Meier survival analysis.

The predictive validity of the VRS and HCR-20 risk categories was also examined using Kaplan-Meier survival analysis. Separate survival functions were conducted for pre-treatment and post-treatment categories for each community recidivism outcome (violent, nonsexual violent, and any) as well as for conviction-only recidivism and all charges recidivism. Often low-risk (and high-protection) bins suffered from low cell sizes. This was to be expected given the high risk nature of the sample. Low cell sizes for these bins make comparisons with the other risk (and protection) bins prone to error, thereby making the interpretation of these contrasts difficult. As such, in addition to comparing all three bins, supplementary analyses were conducted merging low and moderate-risk bins (and moderate and high-protection bins). Merging these bins allows for greater emphasis of the important distinction between high-risk and not high-risk (and low protection and not low-protection) categories, and clarifies some interpretation concerns. This approach has been implemented in previous research such as Sowden (2013).

Survival graphs were created for the VRS pre-treatment risk category as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.1 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (pre-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (*n* = 130) was significantly higher than the low-risk (*n* = 7) and moderate-risk (*n* = 18) groups, Log Rank χ^2 (1) = 5.146, *p* = .023 and Log Rank χ^2 (1) = 12.378, *p* = .000, respectively. Figure 3.1.2 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's pre-treatment risk levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 5.146, *p* = .023 and Log Rank χ^2 (1) = 12.048, *p* = .001, respectively. Lastly, Figure 3.1.3 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS pre-treatment risk groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 9.277, *p* = .002 and Log Rank χ^2 (1) = 7.288, *p* = .007.

Figure 3.1.1
Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Pre-Treatment Risk Category (Convictions)

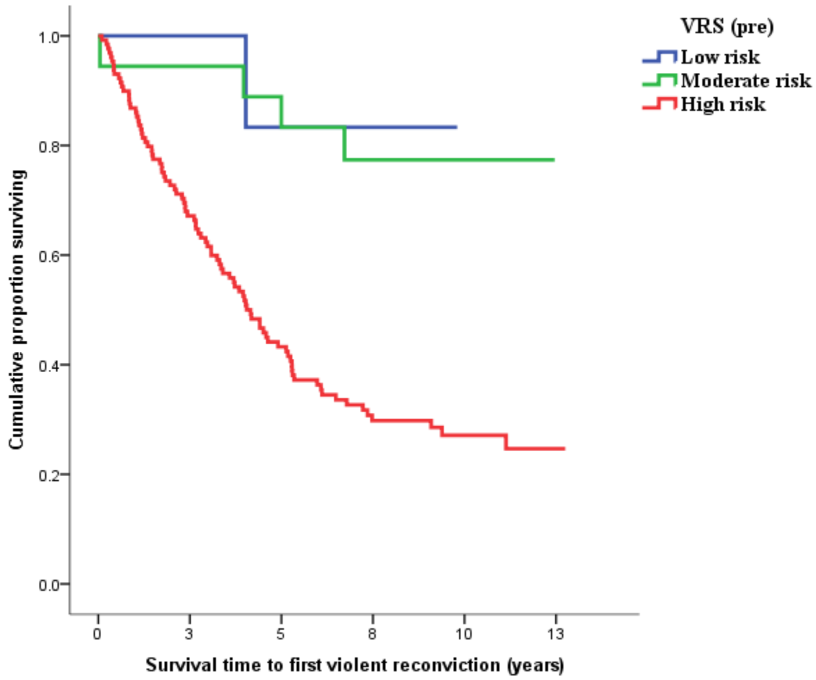


Figure 3.1.2

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by VRS Pre-Treatment Risk Category (Convictions)

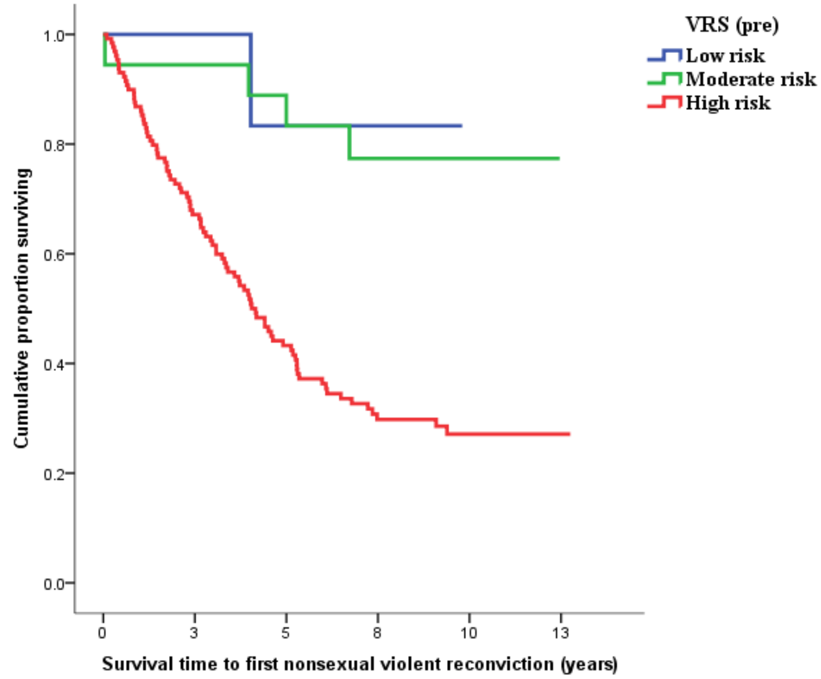
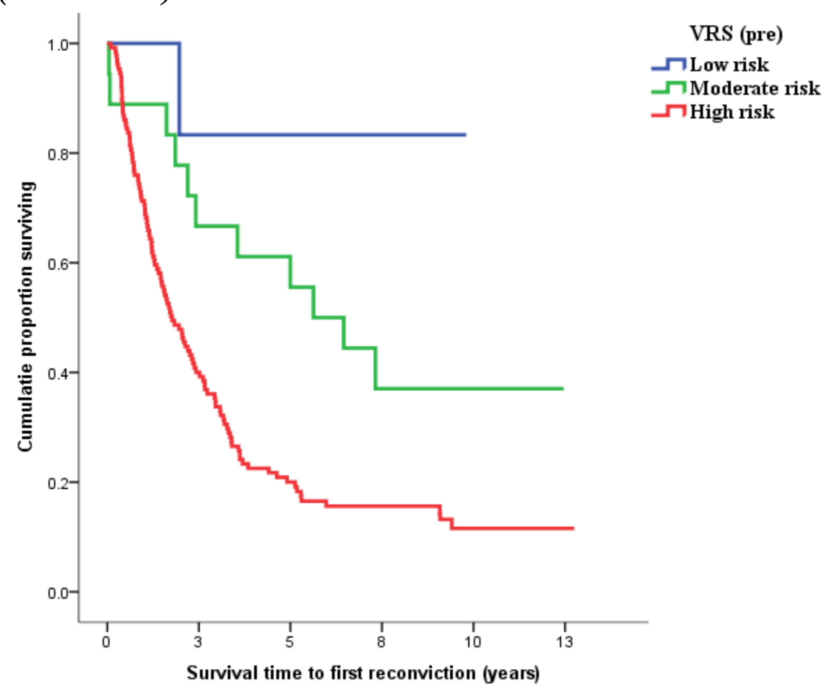


Figure 3.1.3

Survival Function: Cumulative Proportion of Offenders who Reoffended by VRS Pre-Treatment Risk Category (Convictions)



Survival functions were created for the VRS (post-treatment) as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.4 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (post-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 115) was significantly higher than the low-risk (n = 10) and moderate-risk (n = 30) groups, Log Rank χ^2 (1) = 6.091, p = .014 and Log Rank χ^2 (1) = 7.379, p = .007, respectively. Figure 3.1.5 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's post-treatment risk levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.091, p = .014 and Log Rank χ^2 (1) = 7.044, p = .008, respectively. Lastly, Figure 3.1.6 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS post-treatment risk groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 10.315, p = .001 and Log Rank χ^2 (1) = 8.723, p = .003.

Figure 3.1.4

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Post-Treatment Risk Category (Convictions)

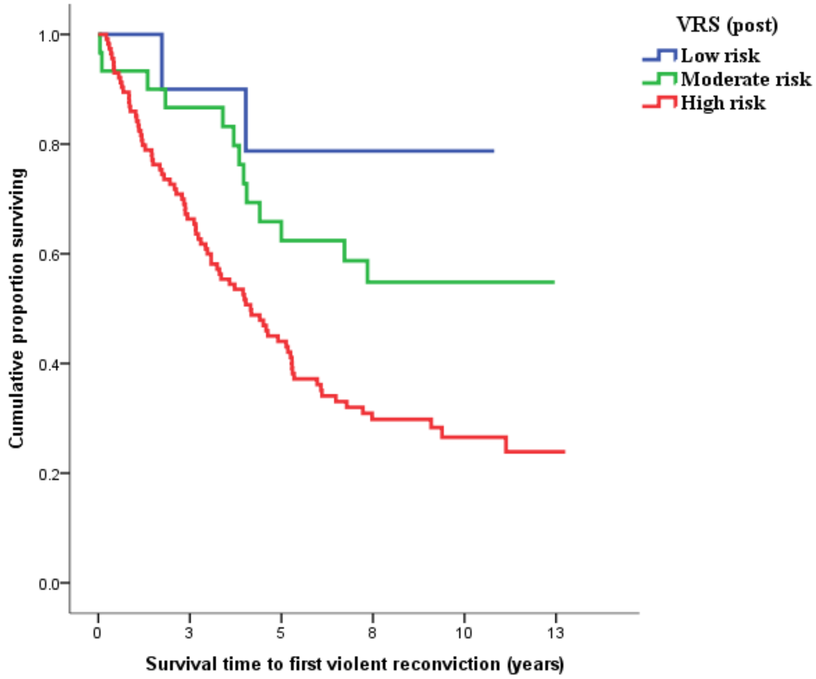


Figure 3.1.5

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by VRS Post-Treatment Risk Category (Convictions)

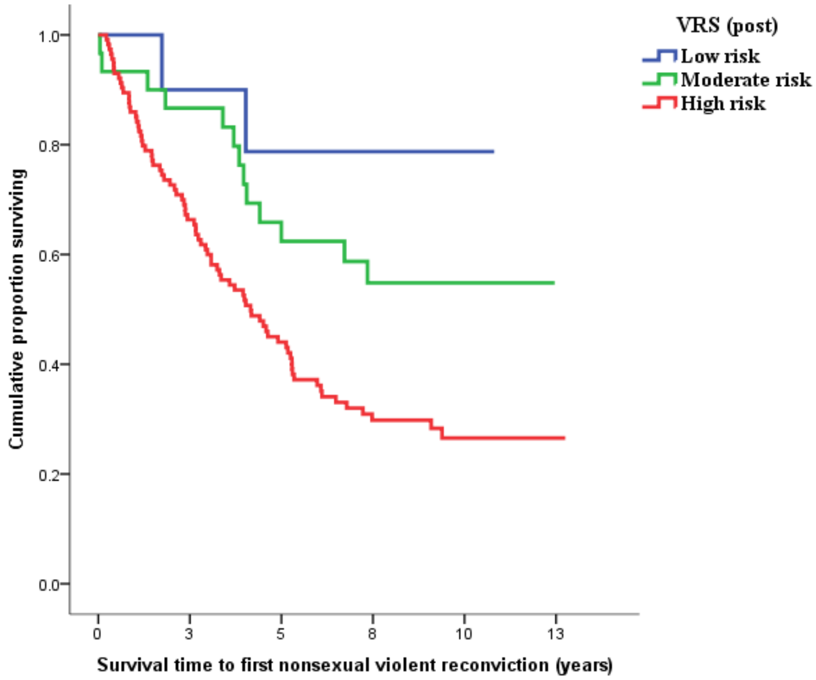
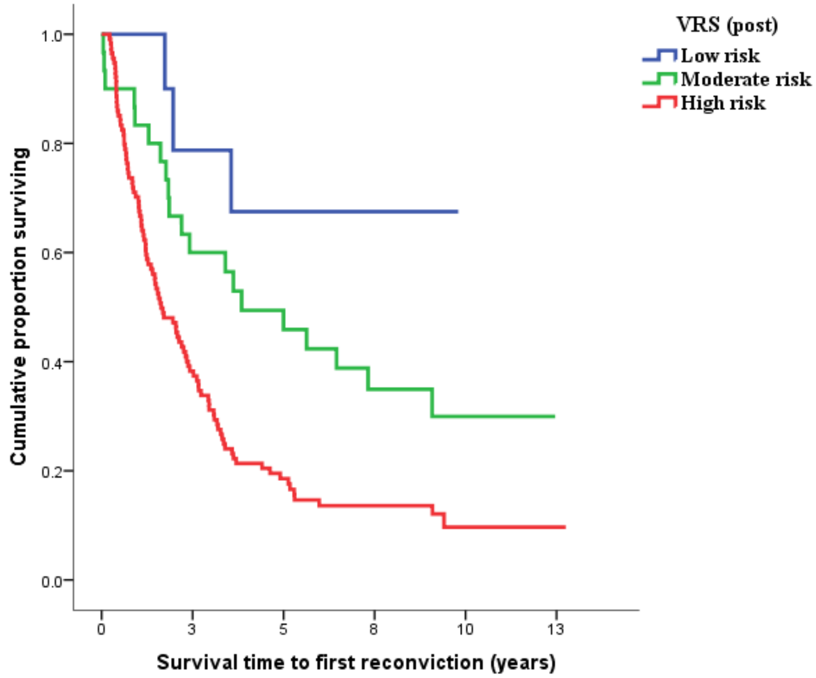


Figure 3.1.6

Survival Function: Cumulative Proportion of Offenders who Reoffended by VRS Post-Treatment Risk Category (Convictions)



Survival functions were created for the VRS (pre-treatment) as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.7 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (pre-treatment) in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 130) was significantly higher than the low-risk (n = 7) and moderate-risk (n = 18) groups, Log Rank χ^2 (1) = 7.407, p = .006 and Log Rank χ^2 (1) = 9.460, p = .002, respectively. Figure 3.1.8 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's pre-treatment risk levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 7.407, p = .006 and Log Rank χ^2 (1) = 9.460, p = .002, respectively. Lastly, Figure 3.1.9 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS pre-treatment risk groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 10.165, p = .001 and Log Rank χ^2 (1) = 7.259, p = .007.

Figure 3.1.7

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Pre-Treatment Risk Category (All Charges)

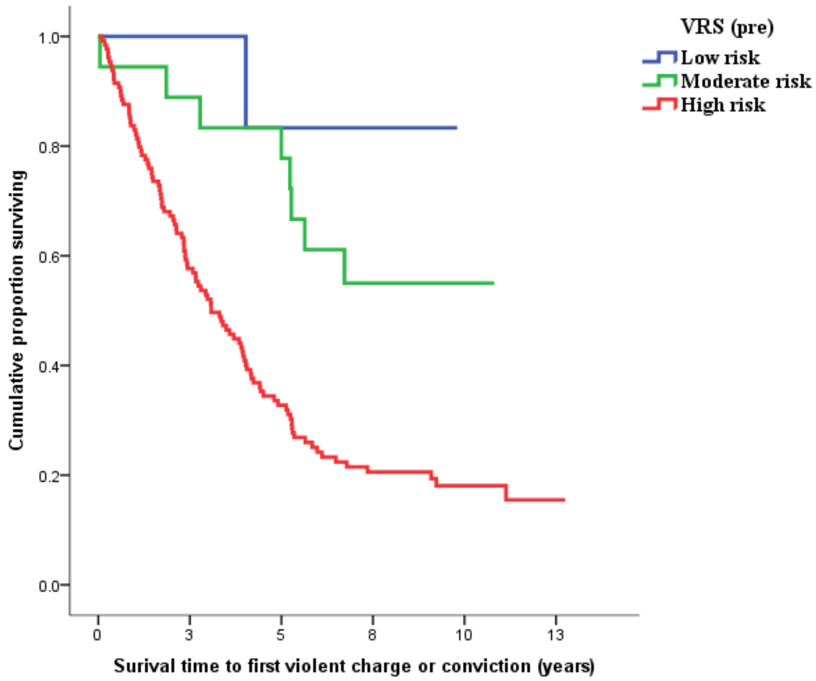


Figure 3.1.8

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by VRS Pre-Treatment Risk Category (All Charges)

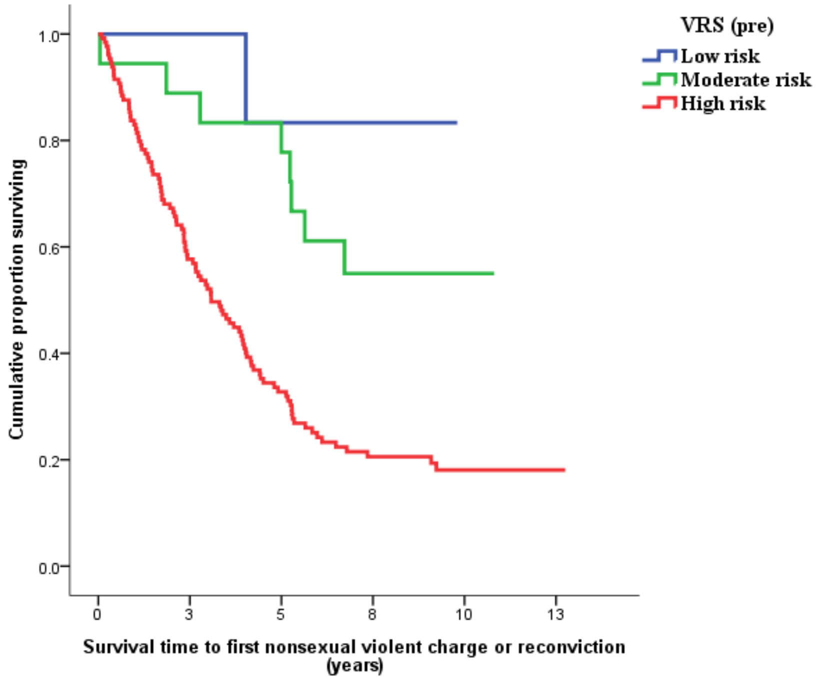
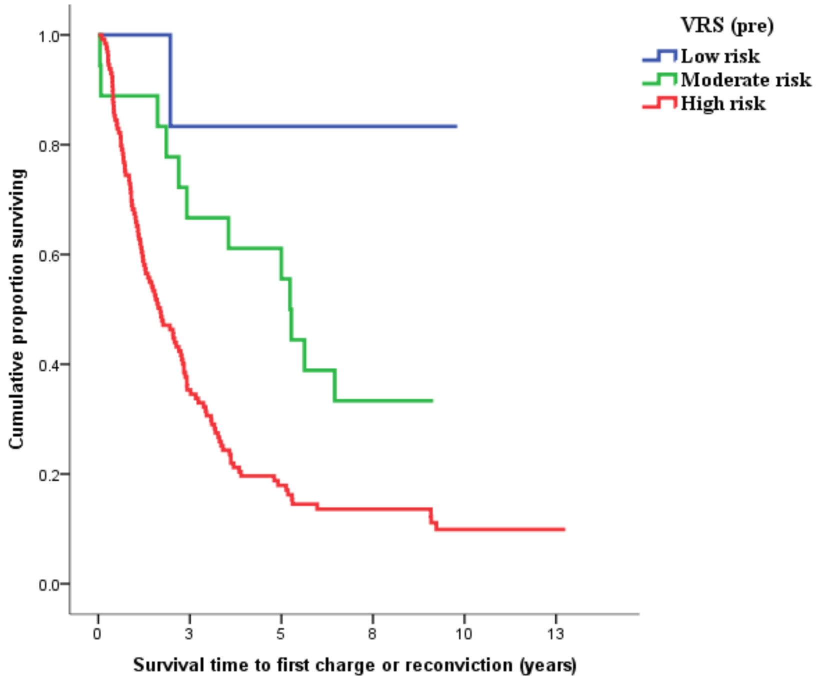


Figure 3.1.9

Survival Function: Cumulative Proportion of Offenders who Reoffended by VRS Pre-Treatment Risk Category (All Charges)



Survival functions were created for the VRS (post-treatment) as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.10 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (post-treatment) in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 115) was significantly higher than the low-risk (n = 10) and moderate-risk (n = 30) groups, Log Rank χ^2 (1) = 9.157, p = .002 and Log Rank χ^2 (1) = 5.394, p = .020, respectively. Figure 3.1.11 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's post-treatment risk levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 9.157, p = .002 and Log Rank χ^2 (1) = 5.282, p = .022, respectively. Lastly, Figure 3.1.12 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS post-treatment risk groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 10.910, p = .001 and Log Rank χ^2 (1) = 6.314, p = .012.

Figure 3.1.10

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Post-Treatment Risk Category (All Charges)

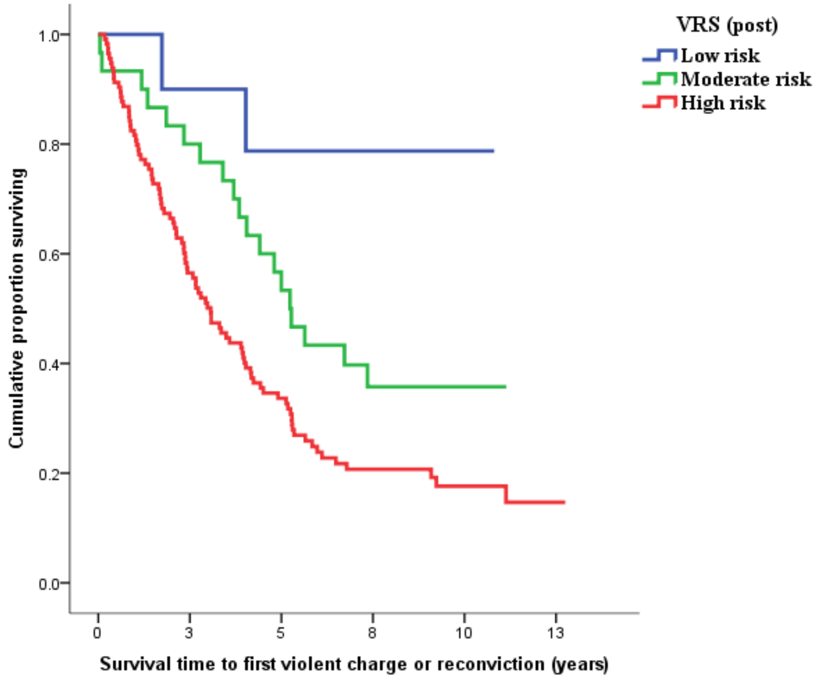


Figure 3.1.11

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by VRS Post-Treatment Risk Category (All Charges)

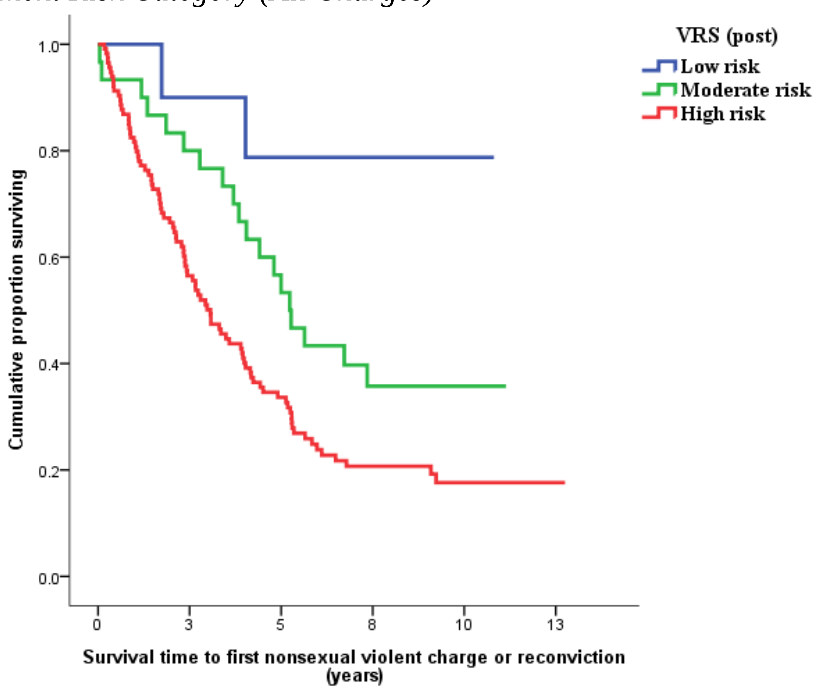
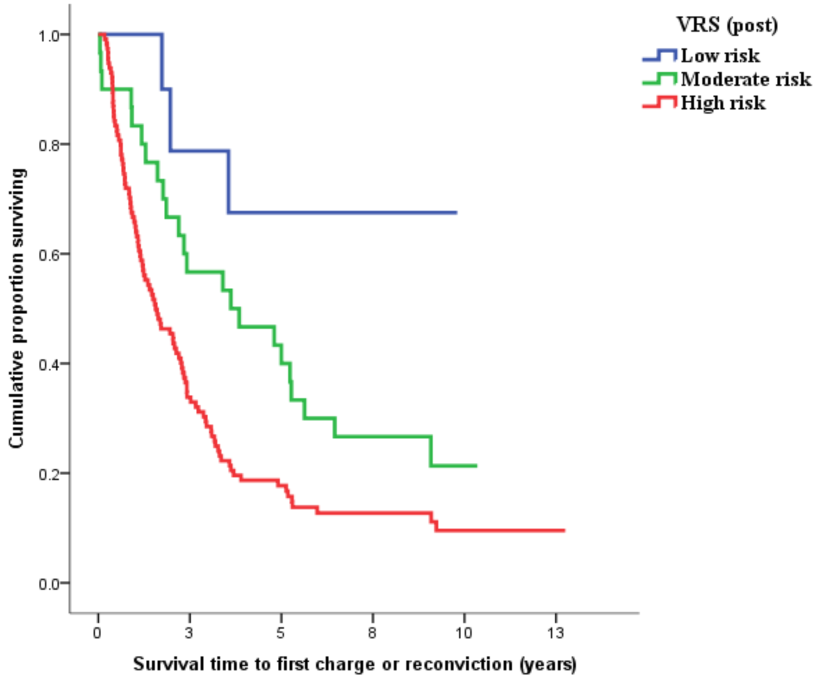


Figure 3.1.12

Survival Function: Cumulative Proportion of Offenders who Reoffended by VRS Post-Treatment Risk Category (All Charges)



Survival graphs were created for the HCR-20 (pre-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.13 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (pre-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 120) was significantly higher than the moderate-risk (n = 30) group, Log Rank χ^2 (1) = 14.313, p = .000. The failure rate of the low-risk (n = 5) group was not significantly different from the high risk group, Log Rank χ^2 (1) = 3.717, p = .054. However, when the low risk and moderate risk groups are merged, the failure rate of the high risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 17.457, p = .000. Figure 3.1.14 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment SPJ risk levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the moderate-risk group, Log Rank χ^2 (1) = 15.818, p = .000. The failure rate of the low-risk group was not significantly different than the high risk group, Log Rank χ^2 (1) = 3.717, p = .054. However, when the low risk and moderate risk groups are merged, the failure rate of the high risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 19.059, p = .000. Lastly, Figure 3.1.15 presents the cumulative proportion of offenders surviving over the follow-up period for the HCR-20 pre-treatment SPJ risk groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.815, p = .009 and Log Rank χ^2 (1) = 12.317, p = .000.

Figure 3.1.13

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (Convictions)

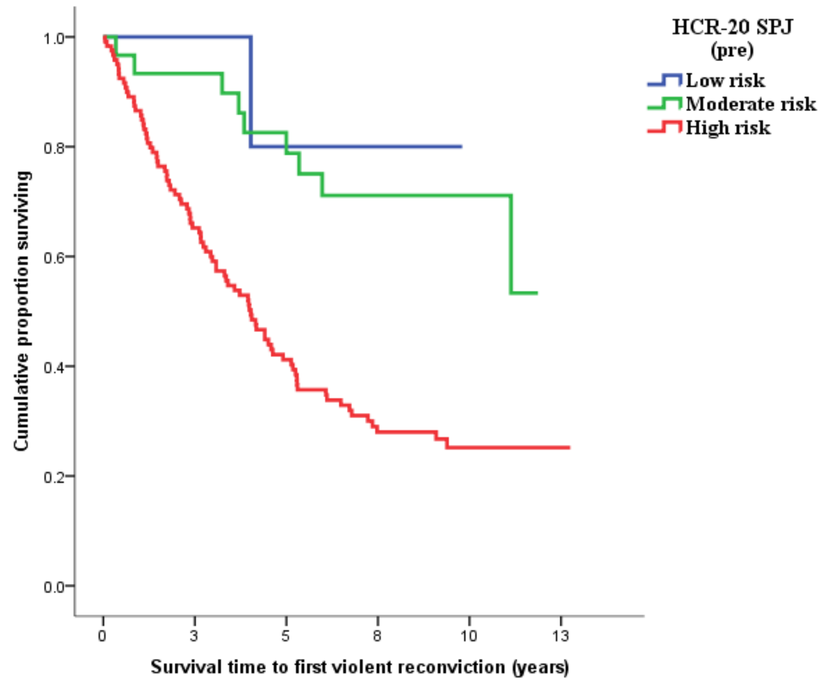


Figure 3.1.14

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (Convictions)

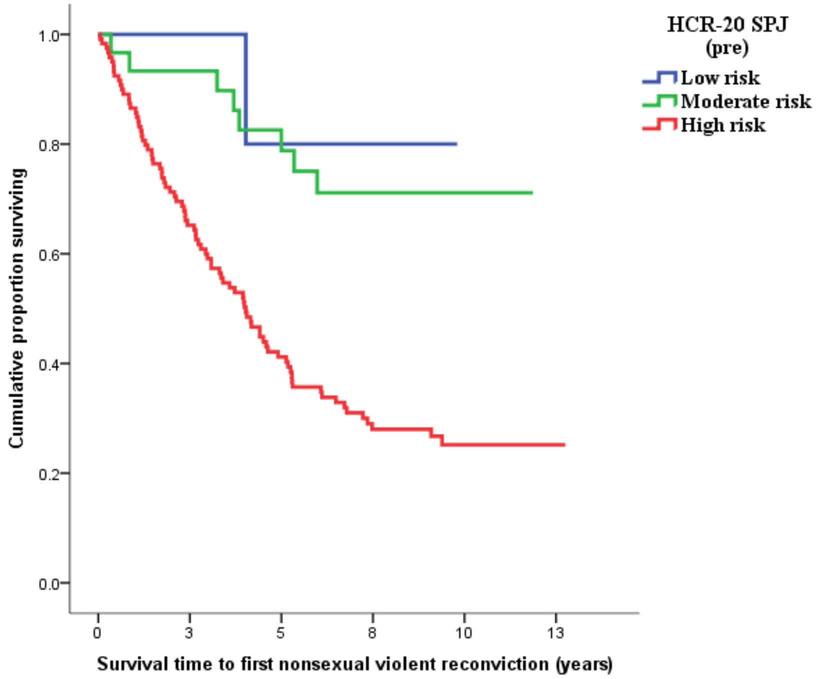
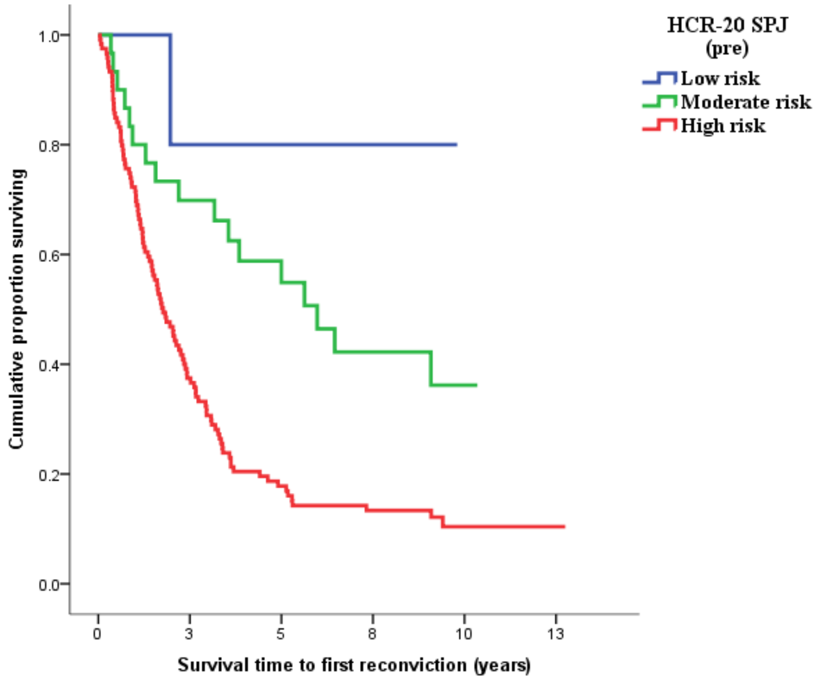


Figure 3.1.15

Survival Function: Cumulative Proportion of Offenders who Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (Convictions)



Survival graphs were created for the HCR-20 (post-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.16 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (post-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 102) was significantly higher than the low-risk (n = 7) and moderate-risk (n = 46) groups, Log Rank χ^2 (1) = 5.806, p = .016 and Log Rank χ^2 (1) = 13.602, p = .000, respectively. Figure 3.1.17 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's post-treatment SPJ risk levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 5.806, p = .016 and Log Rank χ^2 (1) = 14.620, p = .000, respectively. Lastly, Figure 3.1.18 presents the cumulative proportion of offenders surviving over the follow-up period for the HCR-20 post-treatment SPJ risk groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher rate of failure than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 10.562, p = .001 and Log Rank χ^2 (1) = 12.020, p = .001.

Figure 3.1.16

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 SPJ Post-Treatment Risk Category (Convictions)

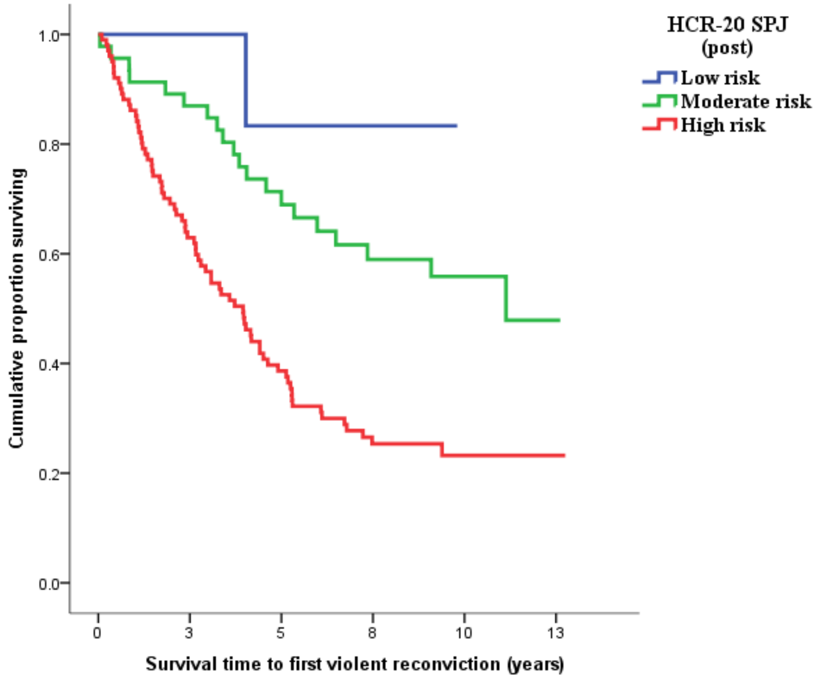


Figure 3.1.17

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by HCR-20 SPJ Post-Treatment Risk Category (Convictions)

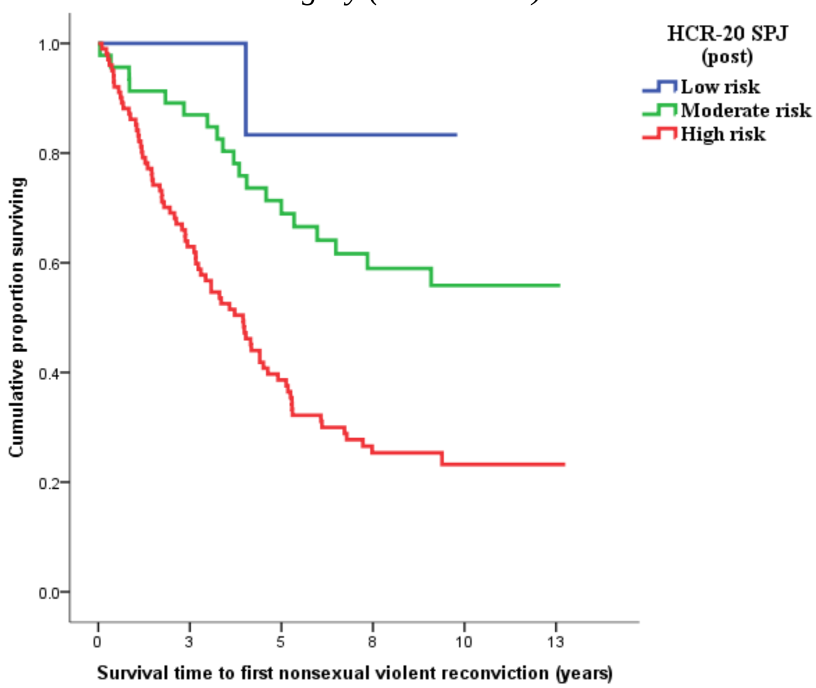
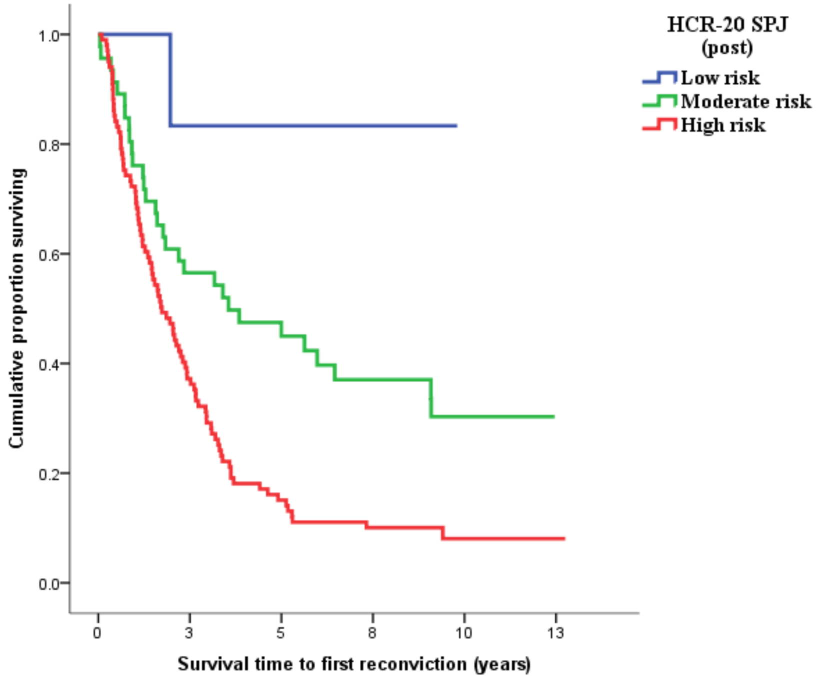


Figure 3.1.18

Survival Function: Cumulative Proportion of Offenders who Reoffended by HCR-20 SPJ Post-Treatment Risk Category (Convictions)



Survival graphs were created for the HCR-20 (pre-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.19 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (pre-treatment) in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 120) was significantly higher than the low-risk (n = 5) and moderate-risk (n = 30) groups, Log Rank χ^2 (1) = 6.030, p = .014 and Log Rank χ^2 (1) = 19.680, p = .000, respectively. Figure 3.1.20 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment SPJ risk levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.030, p = .014 and Log Rank χ^2 (1) = 21.237, p = .000, respectively. Lastly, Figure 3.1.21 presents the cumulative proportion of offenders surviving over the follow-up period for the HCR-20 pre-treatment SPJ risk groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 7.820, p = .005 and Log Rank χ^2 (1) = 14.280, p = .000.

Figure 3.1.19
Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (All Charges)

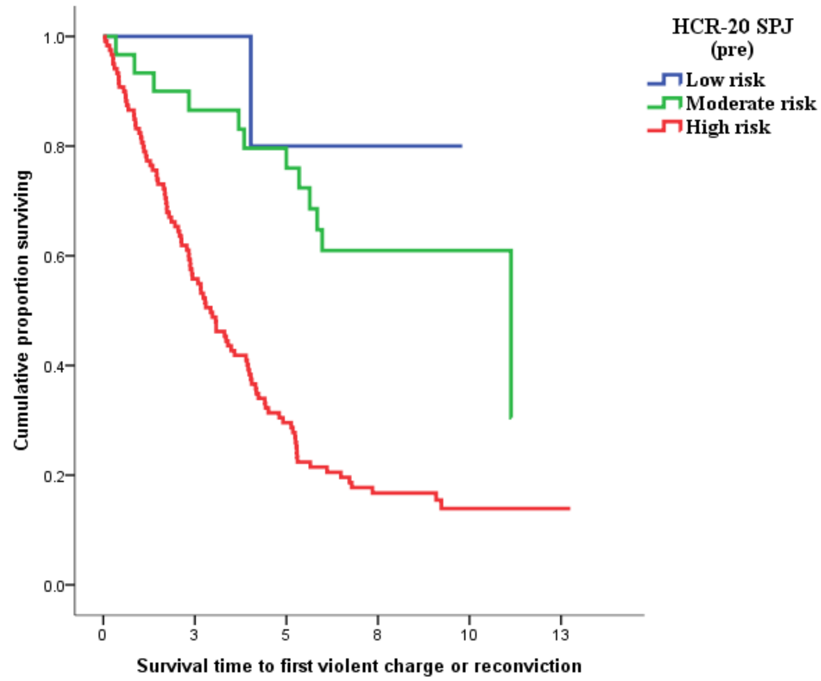


Figure 3.1.20

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (All Charges)

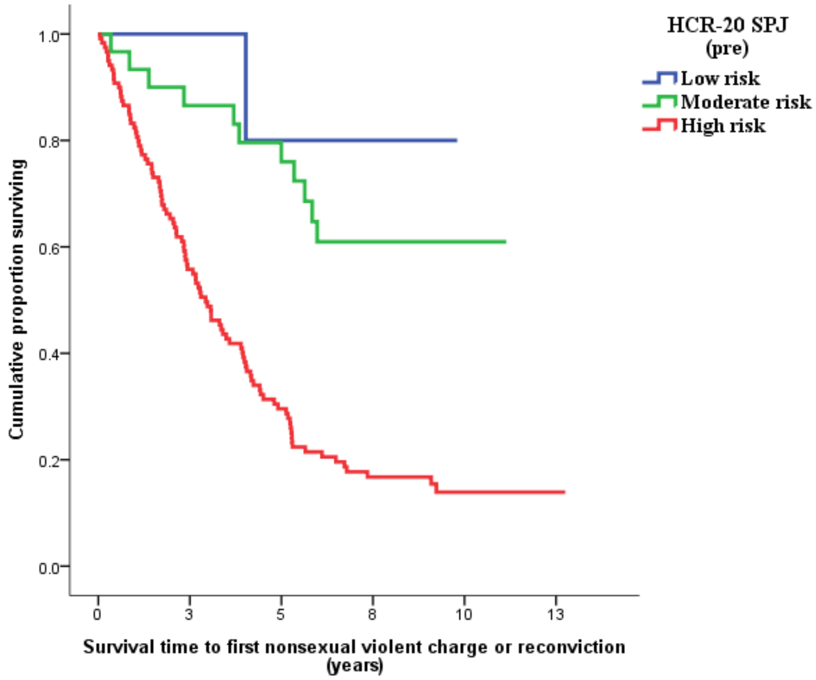
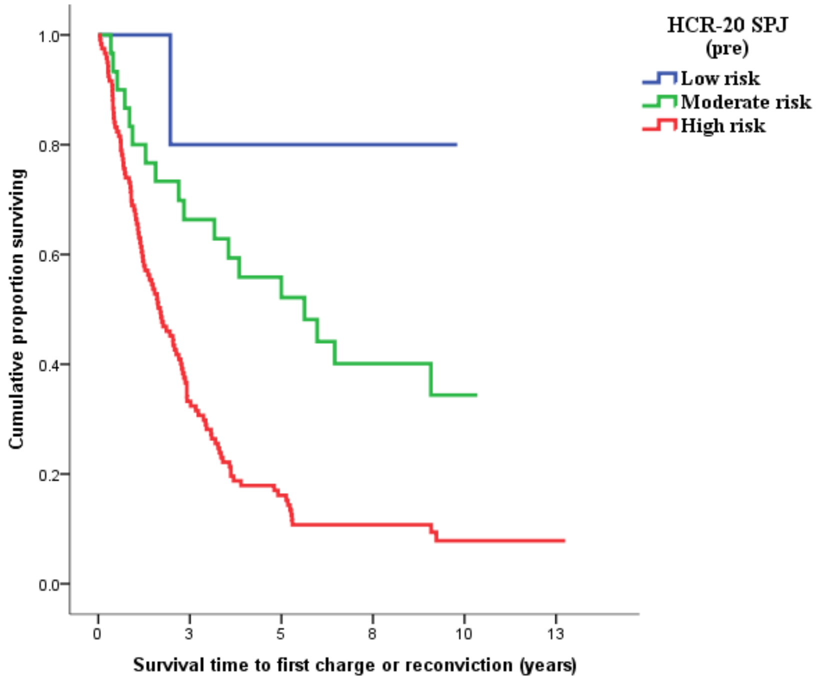


Figure 3.1.21

Survival Function: Cumulative Proportion of Offenders who Reoffended by HCR-20 SPJ Pre-Treatment Risk Category (All Charges)



Survival graphs were created for the HCR-20 (post-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.22 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (post-treatment) in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 102) was significantly higher than the low-risk (n = 7) and moderate-risk (n = 46) groups, Log Rank χ^2 (1) = 9.310, p = .002 and Log Rank χ^2 (1) = 21.206, p = .000, respectively. Figure 3.1.23 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's post-treatment SPJ risk levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 9.310, p = .002 and Log Rank χ^2 (1) = 22.194, p = .000, respectively. Lastly, Figure 3.1.24 presents the cumulative proportion of offenders surviving over the follow-up period for the HCR-20 post-treatment SPJ risk groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 11.530, p = .001 and Log Rank χ^2 (1) = 11.285, p = .001.

Figure 3.1.22

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 SPJ Post-Treatment Risk Category (All Charges)

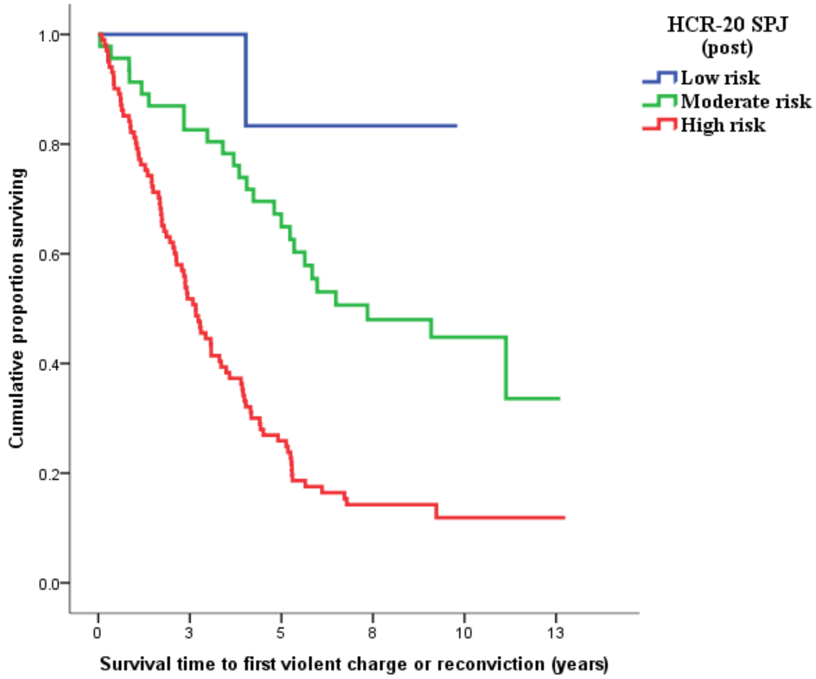


Figure 3.1.23

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by HCR-20 SPJ Post-Treatment Risk Category (All Charges)

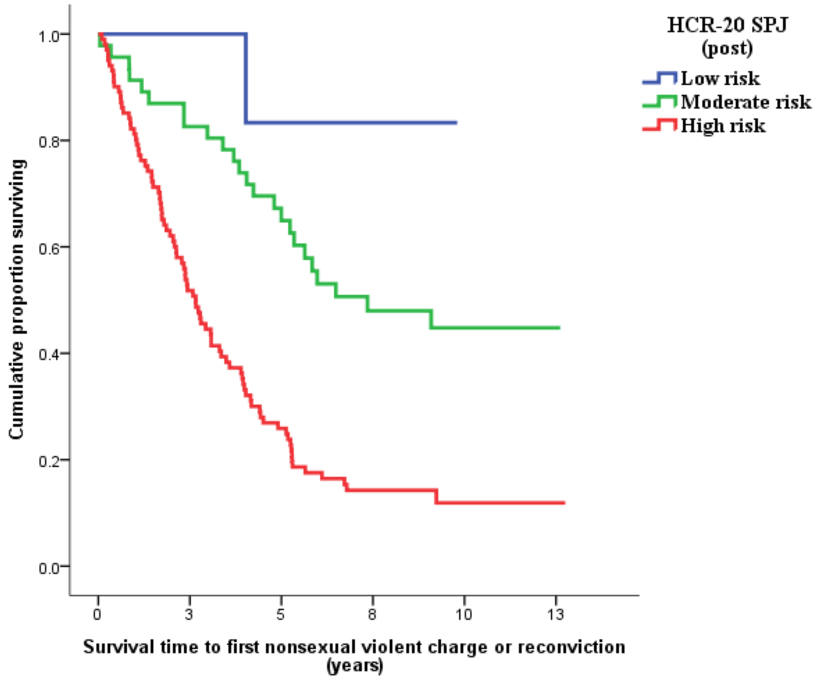
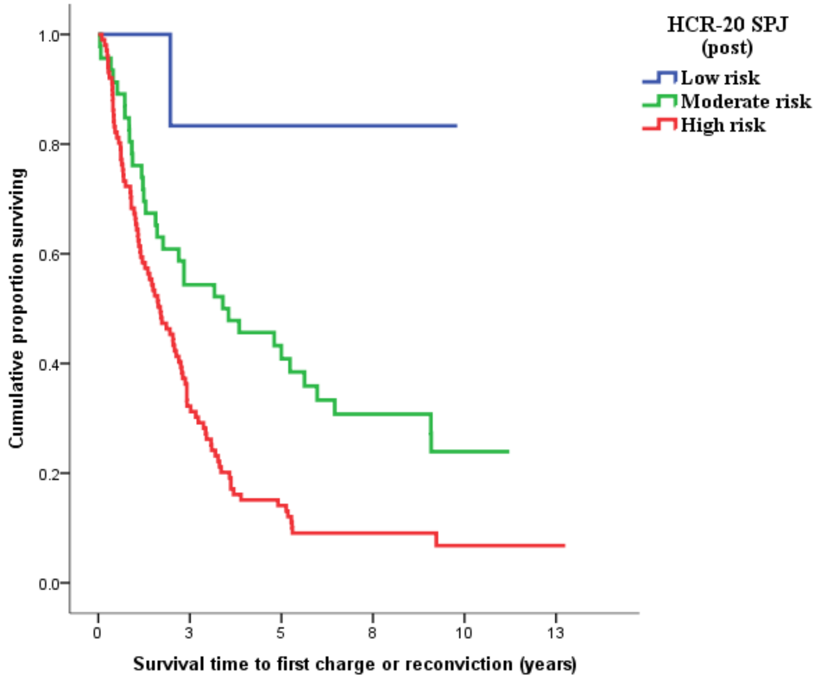


Figure 3.1.24

Survival Function: Cumulative Proportion of Offenders who Reoffended by HCR-20 SPJ Post-Treatment Risk Category (All Charges)



3.3.2.2 Institutional recidivism.

3.3.2.2.1 Correlations and area under the curve.

The predictive validity of the risk measures was examined with respect to major, minor, violent, and any institutional recidivism (i.e., any new post-treatment institutional misconduct) following participation in the ABC program. Separate analyses were conducted to examine institutional recidivism with no minimum follow-up, a one week minimum follow-up, and a one month minimum follow-up. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. Point-biserial correlations revealed sporadic small correlations with institutional recidivism when no minimum follow-up was examined (see Table 3.1.8). VRS static scores (both pre- and post-treatment) and HCR-20 clinical and dynamic (post-treatment) scores had small significant correlations with major institutional misconducts. Similarly, AUC values identified sporadic significant predictors of institutional recidivism by the risk measures when no minimum follow-up was examined. HCR-20 dynamic (i.e., clinical + risk management subscales) and total (post-treatment) scores (summed values) had significant AUC values for major institutional misconducts only. None of the measures significantly predicted minor, violent, and any institutional misconducts.

Table 3.1.8
Predictive Validity of VRS and HCR-20 Scores for Institutional Recidivism: point-biserial correlations and AUCs.

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
VRS Static	.16*	.59	.50, .68	.08	.54	.45, .62	.09	.56	.44, .69	.12	.56	.47, .64
VRS Dyn	.11	.55	.46, .64	.05	.49	.41, .58	.09	.55	.42, .67	.05	.50	.41, .59
VRS Total	.14	.57	.49, .66	.07	.50	.42, .59	.10	.56	.44, .68	.08	.52	.43, .60
HCR Hist	.12	.55	.46, .64	.01	.47	.38, .56	.09	.56	.44, .68	.06	.50	.42, .59
HCR Clin	.05	.53	.44, .62	.02	.50	.42, .59	-.01	.46	.34, .58	.00	.49	.41, .58
HCR RiskM	.06	.53	.44, .62	.11	.56	.47, .64	.00	.47	.36, .58	.08	.54	.46, .63
HCR Dyn	.06	.53	.44, .62	.08	.54	.46, .63	.00	.46	.35, .57	.05	.53	.44, .61
HCR Total	.10	.55	.46, .64	.05	.49	.40, .57	.05	.50	.39, .61	.06	.50	.41, .59
Post-Tx												
VRS Static	.16*	.59	.50, .68	.08	.54	.45, .62	.09	.57	.45, .69	.12	.56	.48, .65
VRS Dyn	.15	.59	.50, .68	.02	.49	.40, .57	.11	.57	.44, .69	.05	.51	.42, .60
VRS Total	.12	.59	.50, .68	.02	.48	.40, .57	.12	.58	.46, .70	.06	.51	.43, .60
HCR Hist	.11	.55	.46, .63	.00	.46	.38, .55	.08	.54	.42, .66	.06	.50	.41, .59
HCR Clin	.15*	.59	.50, .68	-.05	.47	.38, .55	.09	.58	.46, .69	.01	.50	.41, .58
HCR RiskM	.13	.58	.49, .67	.06	.53	.45, .62	.06	.53	.41, .66	.05	.53	.44, .61
HCR Dyn	.16*	.60*	.51, .69	.00	.49	.41, .58	.08	.56	.44, .68	.03	.51	.43, .60
HCR Total	.16	.60*	.51, .69	.00	.48	.39, .56	.09	.54	.41, .67	.05	.51	.42, .59

N = 178; * = $p < .05$; Tx = treatment, dyn = dynamic, hist = historical, clin = clinical, riskm = risk management

Using a one week minimum follow-up, more significant point-biserial correlations with institutional recidivism were revealed (see Table 3.1.9). VRS static and total scores (both pre- and post-treatment) as well as VRS dynamic (post-treatment) scores predicted major institutional misconducts. HCR-20 clinical, dynamic, and total (post-treatment) scores also had significant correlations with major institutional misconducts. Overall, correlation coefficients are slightly larger than when no minimum follow-up was applied. Similarly, AUC values identified that the VRS static scores (both pre- and post-treatment) as well as VRS dynamic and total (post-treatment) scores predicted major institutional misconducts. HCR-20 clinical, dynamic, and total (post-treatment) scores also had significant AUCs for major institutional misconducts. None of the measures significantly predicted minor or violent misconducts. VRS static scores (both pre- and post-treatment) had small significant correlations with any institutional misconducts.

Table 3.1.9
Predictive Validity of VRS and HCR-20 Scores for Institutional Recidivism: point-biserial correlations and AUCs (one week minimum follow-up)

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
VRS Static	.19*	.60*	.51, .69	.12	.55	.47, .64	.10	.57	.45, .70	.17*	.58	.49, .67
VRS Dyn	.14	.57	.48, .66	.10	.52	.43, .61	.10	.56	.44, .68	.10	.53	.44, .62
VRS Total	.18*	.59	.51, .68	.11	.53	.44, .62	.12	.58	.46, .69	.14	.55	.46, .64
HCR Hist	.15	.57	.48, .65	.05	.49	.40, .58	.10	.57	.45, .69	.11	.53	.44, .63
HCR Clin	.10	.56	.46, .65	.08	.55	.46, .63	.02	.49	.37, .61	.07	.54	.45, .63
HCR RiskM	.07	.53	.44, .62	.14	.57	.48, .66	.01	.48	.36, .59	.10	.55	.46, .64
HCR Dyn	.09	.55	.46, .64	.13	.57	.48, .66	.01	.47	.36, .58	.10	.55	.47, .65
HCR Total	.14	.57	.48, .66	.10	.52	.42, .61	.07	.51	.40, .63	.12	.53	.44, .62
Post-Tx												
VRS Static	.19*	.60*	.51, .69	.12	.56	.47, .65	.10	.58	.45, .70	.17*	.58	.50, .67
VRS Dyn	.18*	.61*	.52, .70	.07	.51	.42, .60	.13	.58	.46, .71	.10	.54	.44, .63
VRS Total	.16*	.60*	.52, .69	.07	.51	.42, .60	.14	.59	.47, .71	.11	.54	.45, .63
HCR Hist	.14	.56	.47, .65	.04	.48	.39, .57	.09	.55	.43, .67	.10	.52	.43, .62
HCR Clin	.18*	.61*	.52, .70	-.03	.48	.39, .57	.11	.59	.48, .70	.04	.52	.43, .61
HCR RiskM	.14	.58	.49, .67	.07	.54	.45, .63	.06	.53	.41, .66	.07	.54	.45, .63
HCR Dyn	.18*	.61*	.52, .70	.02	.51	.42, .60	.10	.57	.45, .68	.06	.53	.44, .62
HCR Total	.19*	.61*	.52, .70	.03	.50	.41, .59	.11	.55	.43, .68	.09	.53	.44, .63

N = 164; * = $p < .05$; Tx = treatment, dyn = dynamic, hist = historical, clin = clinical, riskm = risk management

Using a one month minimum follow-up, additional significant point-biserial correlations with institutional recidivism were revealed (see Table 3.1.10). VRS static and total scores (both pre- and post-treatment) as well as VRS dynamic (post-treatment) scores predicted major institutional misconducts. HCR-20 historical (pre-treatment) as well as clinical, dynamic, and total (post-treatment) scores had significant correlations with major institutional misconducts. Additionally, HCR-20 risk management and dynamic scores (pre-treatment) predicted minor institutional misconducts, and VRS static (pre- and post-treatment) and total (pre-treatment) scores predicted any institutional misconduct. Similarly, AUC values identified that the VRS static and total scores (both pre- and post-treatment) as well as VRS dynamic (post-treatment) scores predicted major institutional misconducts. HCR-20 clinical, dynamic, and total (post-treatment) scores also had significant AUCs for major institutional misconducts. None of the measures significantly predicted violent misconducts. VRS static scores (both pre- and post-treatment) had small significant correlations with any institutional misconducts.

Table 3.1.10

Predictive Validity of VRS and HCR-20 Scores for Institutional Recidivism: point-biserial correlations and AUCs (one month minimum follow-up)

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
VRS Stat	.20*	.61*	.52, .70	.14	.56	.47, .65	.11	.57	.45, .70	.19*	.59	.50, .69
VRS Dyn	.15	.58	.49, .67	.12	.53	.43, .63	.11	.57	.45, .69	.13	.54	.44, .64
VRS Tot	.19*	.60*	.51, .69	.14	.54	.44, .63	.12	.58	.46, .69	.16*	.56	.46, .65
HCR H	.16*	.57	.48, .66	.06	.49	.39, .59	.11	.57	.45, .69	.12	.53	.43, .63
HCR C	.11	.56	.47, .66	.11	.56	.46, .65	.02	.49	.37, .61	.10	.55	.46, .65
HCR R	.09	.54	.45, .64	.17*	.59	.50, .68	.02	.48	.37, .60	.13	.57	.48, .67
HCR Dyn	.11	.56	.47, .65	.16*	.59	.50, .68	.02	.48	.37, .59	.13	.58	.48, .67
HCR Tot	.15	.57	.48, .67	.12	.53	.43, .62	.07	.52	.41, .63	.14	.54	.45, .64
Post-Tx												
VRS Stat	.20*	.60*	.51, .69	.14	.56	.47, .66	.11	.58	.46, .70	.19*	.59	.50, .69
VRS Dyn	.20*	.62*	.53, .71	.09	.52	.43, .62	.13	.59	.47, .71	.13	.55	.45, .65
VRS Tot	.17*	.61*	.52, .70	.09	.52	.42, .61	.15	.60	.48, .72	.14	.56	.46, .65
HCR H	.15	.57	.47, .66	.05	.48	.39, .58	.10	.55	.43, .67	.12	.53	.43, .63
HCR C	.19*	.62*	.52, .71	-.02	.49	.40, .58	.11	.60	.48, .71	.06	.53	.43, .62
HCR R	.15	.59	.50, .68	.09	.55	.46, .64	.07	.54	.41, .66	.09	.54	.45, .64
HCR Dyn	.19*	.62*	.53, .71	.04	.52	.42, .61	.10	.57	.45, .69	.08	.54	.45, .63
HCR Tot	.20*	.62*	.53, .71	.05	.51	.41, .60	.11	.56	.43, .69	.11	.54	.45, .64

N = 157; * = $p < .05$; Tx = treatment, stat = static, dyn = dynamic, H = historical, C = clinical, R = risk management, tot = total

The predictive validity of the risk categories was examined with respect to major, minor, violent, and any institutional recidivism (i.e., institutional misconduct) following participation in the ABC program. Separate analyses were conducted to examine institutional recidivism with no minimum follow-up, a one week minimum follow-up, and a one month minimum follow-up (see Table 3.1.11). Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. Point-biserial correlations revealed small correlations with institutional recidivism. When no minimum follow-up was examined, only the HCR-20 post-treatment SPJ risk category predicted major misconducts. No significant correlations or AUCs were observed for minor, violent, or any institutional misconducts. When a one week minimum follow-up was examined, the VRS pre-treatment risk category and HCR-20 post-treatment SPJ risk category predicted major institutional misconducts. VRS pre-treatment risk category also predicted any institutional misconducts. No significant correlations or AUCs were observed with respect to for minor or violent institutional misconducts. When a one month minimum follow-up was examined, VRS pre-treatment risk category predicted major, minor, and any institutional misconducts. VRS post-treatment risk category predicted any institutional misconducts. HCR-20 post-treatment SPJ risk category predicted major institutional misconducts. None of the risk categories significantly predicted violent misconducts.

Table 3.1.11

Predictive Validity of VRS and HCR-20 Risk Categories for Institutional Recidivism: point-biserial correlations and AUCs

	Major			Minor			Violent			Any		
Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
No minimum[a]												
VRS (pre)	*.14*	.56	.47, .65	.09	.53	.44, .61	.10	.56	.44, .68	.11	.54	.45, .62
VRS (post)	.09	.55	.46, .64	.04	.51	.42, .59	.09	.55	.43, .68	.06	.52	.44, .61
HCR (pre)	.10	.55	.46, .64	.03	.51	.43, .60	.09	.56	.44, .68	.04	.51	.43, .60
HCR (post)	.15*	*.58*	.49, .67	.03	.50	.42, .59	.11	.58	.46, .70	.05	.51	.43, .60
One week[b]												
VRS (pre)	.17*	.58	.49, .66	*.14*	.55	.46, .64	.12	.57	.45, .69	.16*	.56	.47, .65
VRS (post)	.13	.57	.48, .66	.10	.54	.45, .63	.11	.57	.45, .69	*.13*	.56	.47, .65
HCR (pre)	.13	.56	.47, .65	.07	.53	.44, .62	.11	.57	.44, .69	.08	.53	.44, .62
HCR (post)	.18*	*.59*	.50, .68	.06	.52	.43, .61	.13	.59	.47, .71	.09	.53	.44, .62
One month[c]												
VRS (pre)	.19*	*.58*	.49, .67	.16*	.57	.47, .66	.13	.58	.46, .69	.20*	.58	.48, .67
VRS (post)	*.15*	*.59*	.49, .68	*.14*	.56	.47, .65	.12	.58	.46, .70	.17*	*.58*	.49, .68
HCR (pre)	*.15*	.57	.48, .66	.10	.54	.45, .64	.12	.57	.45, .69	.11	.55	.45, .64
HCR (post)	.19*	.60*	.51, .69	.07	.53	.43, .62	*.14*	.59	.47, .71	.11	.54	.45, .64

[a] N = 178, [b] N = 164, [c] N = 157; *italicized* = p < .10, * = p < .05; pre = pre-treatment, post = post-treatment, SPJ = structured professional judgement

3.3.2.2.2 Kaplan-Meier survival analysis.

Survival graphs were created for the VRS (pre-treatment) as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.25 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (pre-treatment) in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group (*n* = 144) was significantly higher than the moderate-risk (*n* = 27) group, Log Rank χ^2 (1) = 8.766, *p* = .003. The low-risk group (*n* = 7) was not significantly different from the high-risk group, Log Rank χ^2 (1) = 3.533, *p* = .060. However, when the low-risk and moderate-risk groups were merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 11.727, *p* = .001. Figure 3.1.26 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's pre-treatment risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.950, *p* = .008 and Log Rank χ^2 (1) = 8.483, *p* = .004, respectively. Figure 3.1.27 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's pre-treatment risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 1.814, *p* = .178 and Log Rank χ^2 (1) = 2.768, *p* = .096, respectively. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 4.316, *p* = .038. Lastly, Figure 3.1.28 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS pre-treatment risk groups in relation to any institutional misconducts. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 8.282, *p* = .004 and Log Rank χ^2 (1) = 9.591, *p* = .002.

Figure 3.1.25

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Pre-Treatment Risk Category (Major Misconduct)

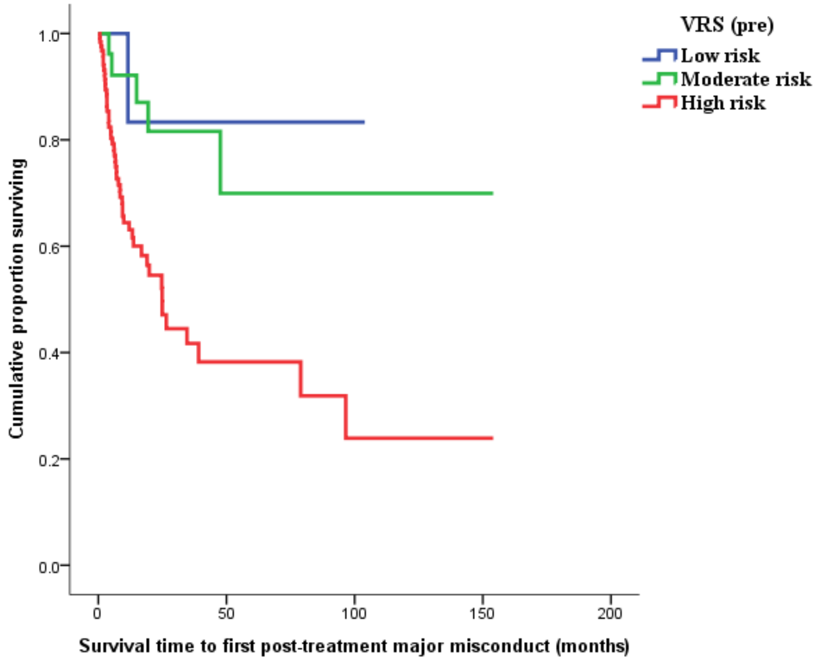


Figure 3.1.26

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Pre-Treatment Risk Category (Minor Misconduct)

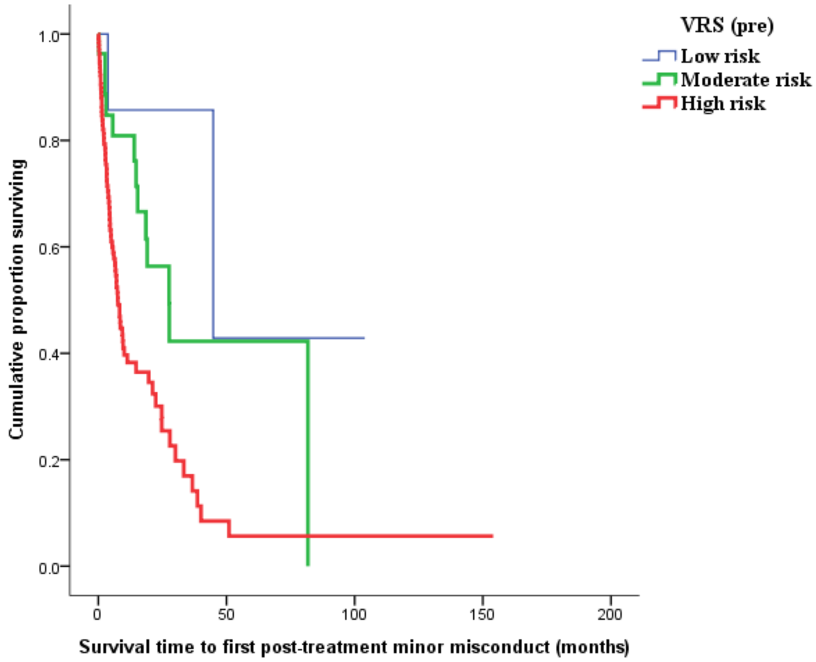


Figure 3.1.27

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Pre-Treatment Risk Category (Violent Misconduct)

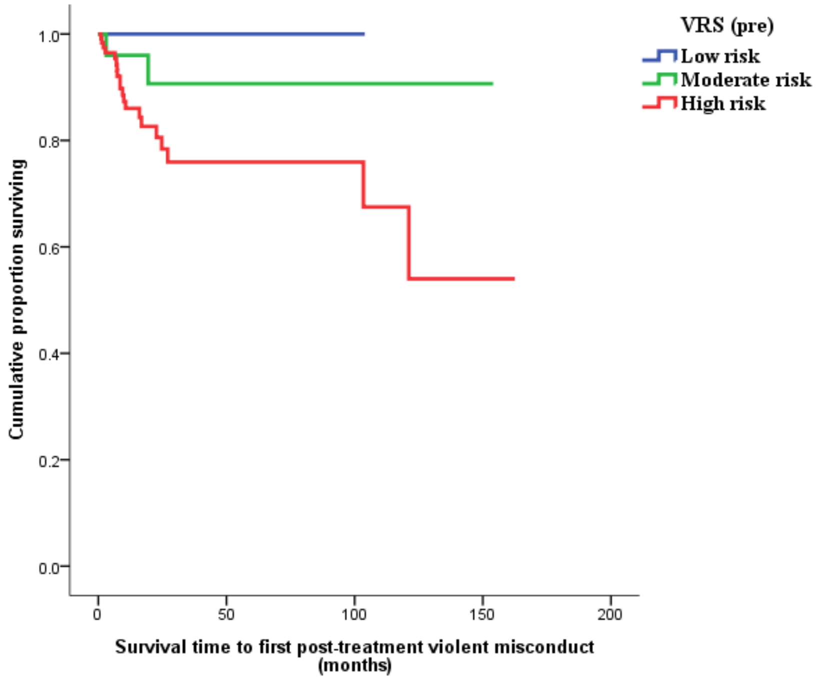
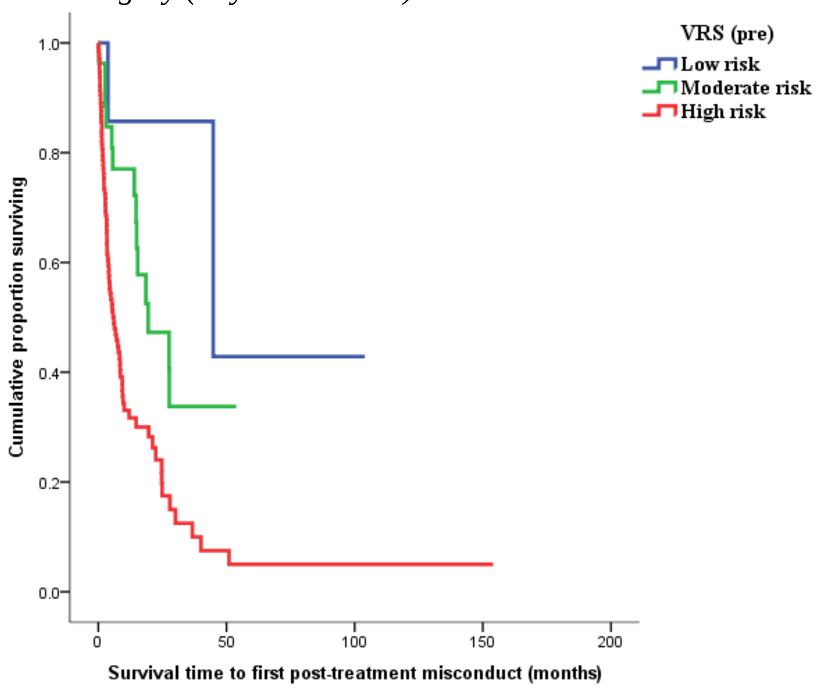


Figure 3.1.28

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Pre-Treatment Risk Category (Any Misconduct)



Survival graphs were created for the VRS (post-treatment) as offenders were rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.29 shows the cumulative proportion of offenders surviving over the follow-up period for each risk rating on the VRS (post-treatment) in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group (n = 123) was significantly higher than the moderate-risk (n = 45) group, Log Rank χ^2 (1) = 7.706, p = .006. The failure rate of the low-risk group (n = 10) was not significantly different from the high-risk group, Log Rank χ^2 (1) = 1.851, p = .174. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 8.9002, p = .003. Figure 3.1.30 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's post-treatment risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the low-risk group, Log Rank χ^2 (1) = 7.514, p = .006. The failure rate of the moderate-risk group was not significantly different from the high risk group, Log Rank χ^2 (1) = 3.722, p = .054. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 8.307, p = .004. Figure 3.1.31 shows the cumulative proportion of offenders surviving over the follow-up period for each of the VRS's post-treatment risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 2.722, p = .099 and Log Rank χ^2 (1) = 2.115, p = .146, respectively. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 3.913, p = .048. Lastly, Figure 3.1.32 presents the cumulative proportion of offenders surviving over the follow-up period for the VRS post-treatment risk groups in relation to any institutional misconducts. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 7.468, p = .006 and Log Rank χ^2 (1) = 6.861, p = .009.

Figure 3.1.29

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Post-Treatment Risk Category (Major Misconduct)

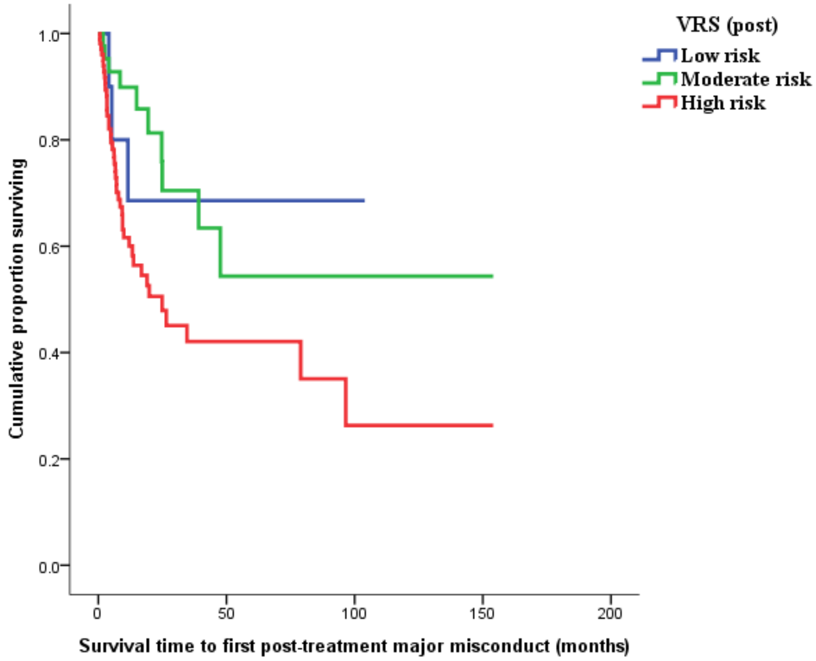


Figure 3.1.30

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Post-Treatment Risk Category (Minor Misconduct)

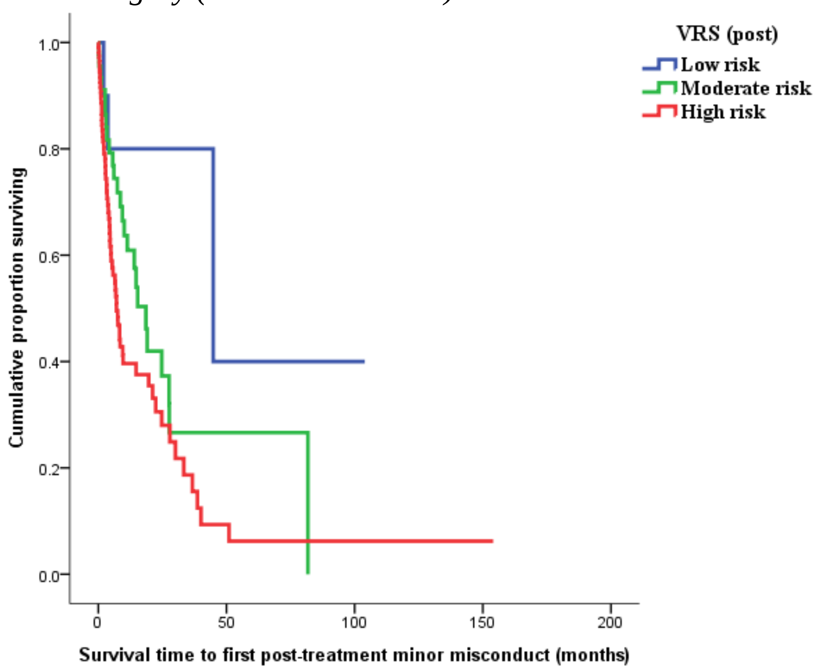


Figure 3.1.31

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Post-Treatment Risk Category (Violent Misconduct)

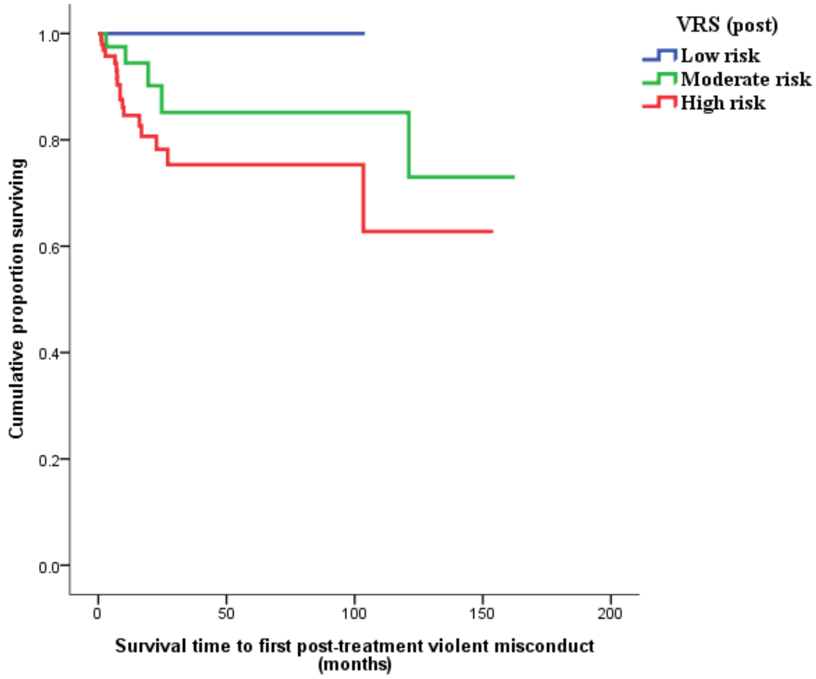
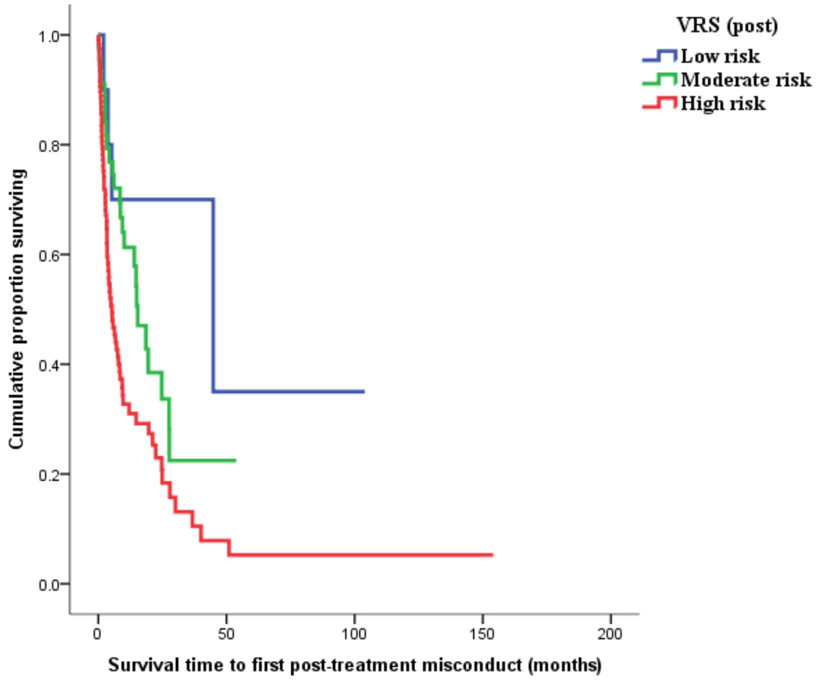


Figure 3.1.32

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Post-Treatment Risk Category (Any Misconduct)



Survival graphs were created for the HCR-20 (pre-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.33 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (pre-treatment) in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group (n = 137) was significantly higher than the moderate-risk (n = 36) group, Log Rank χ^2 (1) = 6.228, p = .013. The failure rate for the low-risk (n = 5) group was not significantly different than the high risk group, Log Rank χ^2 (1) = 1.451, p = .228. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 7.369, p = .007. Figure 3.1.34 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment SPJ risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the moderate-risk group, Log Rank χ^2 (1) = 7.807, p = .005. The failure rate for the low-risk group was not significantly different than the high risk group, Log Rank χ^2 (1) = 3.639, p = .056. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 10.146, p = .001. Figure 3.1.35 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment SPJ risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 1.128, p = .288 and Log Rank χ^2 (1) = 1.920, p = .166, respectively. Similarly, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than the merged low/moderate-risk group, Log Rank χ^2 (1) = 2.739, p = .098. Lastly, Figure 3.1.36 presents the cumulative proportion of offenders surviving over the follow-up period for the HCR-20 SPJ pre-treatment risk groups in relation to any institutional misconducts. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 4.417, p = .036 and Log Rank χ^2 (1) = 7.081, p = .008.

Figure 3.1.33

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Pre-Treatment SPJ Risk Category (Major Misconduct)

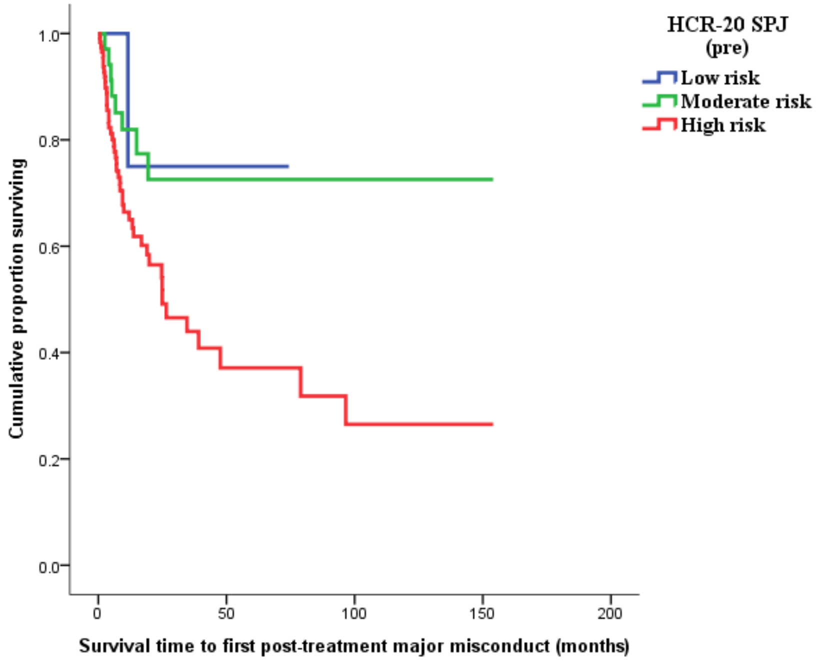


Figure 3.1.34

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Pre-Treatment SPJ Risk Category (Minor Misconduct)

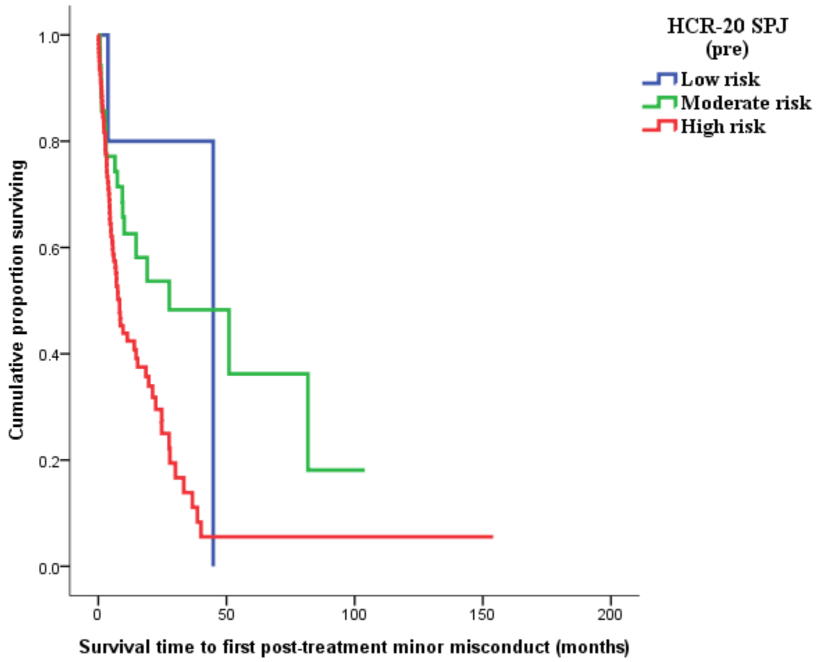


Figure 3.1.35

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Pre-Treatment SPJ Risk Category (Violent Misconduct)

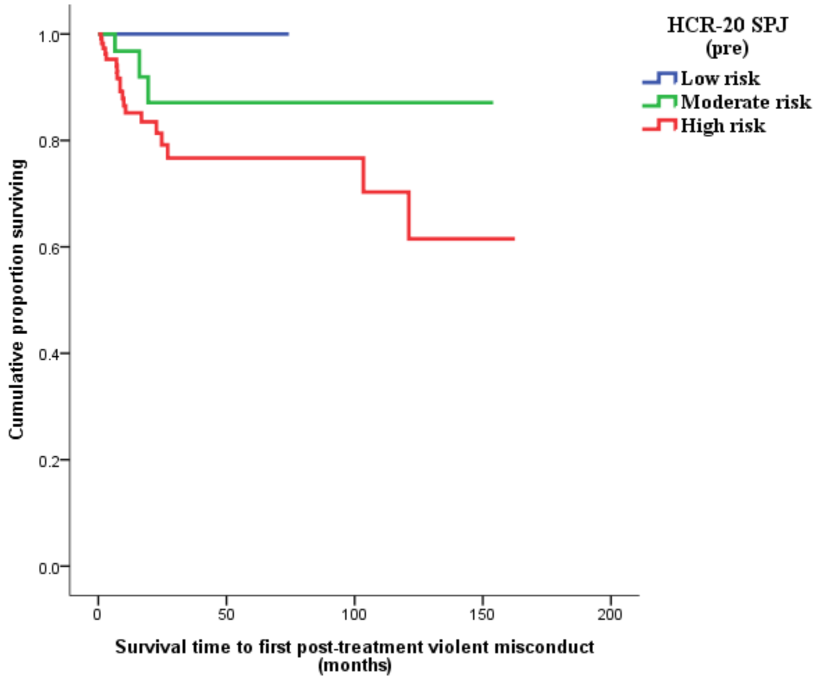
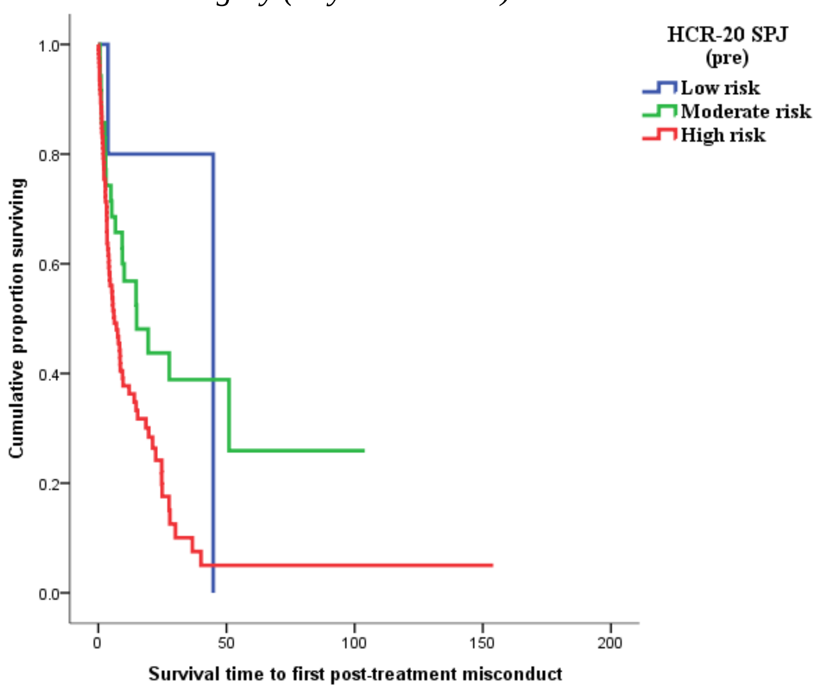


Figure 3.1.36

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Pre-Treatment SPJ Risk Category (Any Misconduct)



Survival graphs were created for the HCR-20 (post-treatment) as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.1.37 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the HCR-20 (post-treatment) in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group (n = 114) was significantly higher than the moderate-risk (n = 57) group, Log Rank χ^2 (1) = 7.320, p = .007. The failure rate for the low-risk (n = 7) group was not significantly different than the high-risk group, Log Rank χ^2 (1) = 3.665, p = .056. However, when the low-risk and moderate-risk groups are merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 9.848, p = .002. Figure 3.1.38 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's post-treatment SPJ risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the low-risk group, Log Rank χ^2 (1) = 6.771, p = .009. The failure rate for the moderate-risk group was not significantly different than the high-risk group, Log Rank χ^2 (1) = 2.062, p = .151. However, when the low-risk and moderate-risk groups are merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 4.759, p = .029. Figure 3.1.39 shows the survival function for each of the HCR-20's post-treatment SPJ risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 1.806, p = .179 and Log Rank χ^2 (1) = 2.383, p = .123, respectively. Similarly, when the low-risk and moderate-risk groups are merged, the failure rate for the high-risk group was not significantly different than the merged low/moderate-risk group, Log Rank χ^2 (1) = 3.597, p = .058. Lastly, Figure 3.1.40 presents the survival function for each of the HCR-20 post-treatment SPJ risk groups in relation to any institutional misconduct. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk group, Log Rank χ^2 (1) = 7.959, p = .005. The failure rate for the moderate risk group was not significantly different than the high-risk group, Log Rank χ^2 (1) = 2.665, p = .103. However, when the low-risk and moderate-risk groups are merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 6.000, p = .014.

Figure 3.1.37

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Post-Treatment SPJ Risk Category (Major Misconduct)

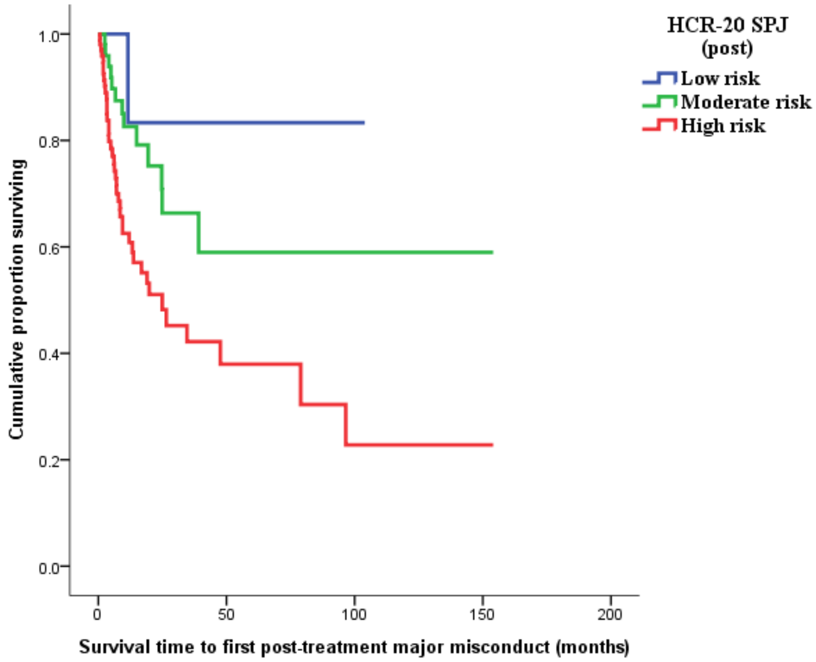


Figure 3.1.38

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Post-Treatment SPJ Risk Category (Minor Misconduct)

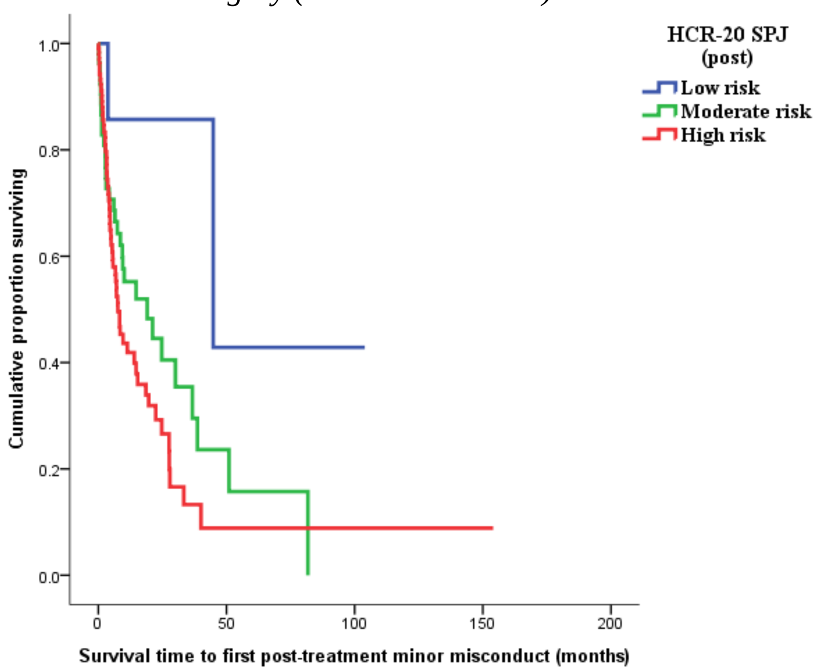


Figure 3.1.39

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Post-Treatment SPJ Risk Category (Violent Misconduct)

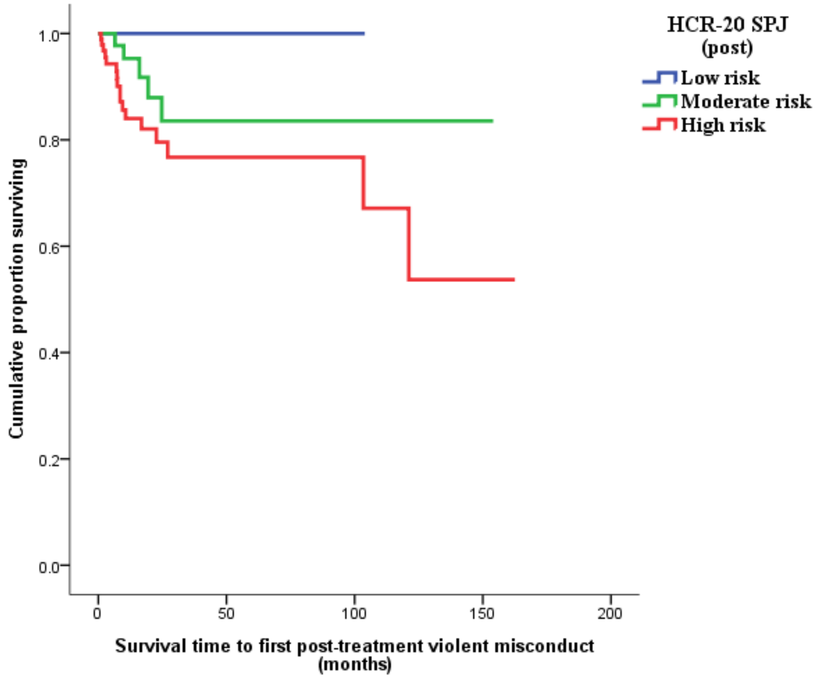
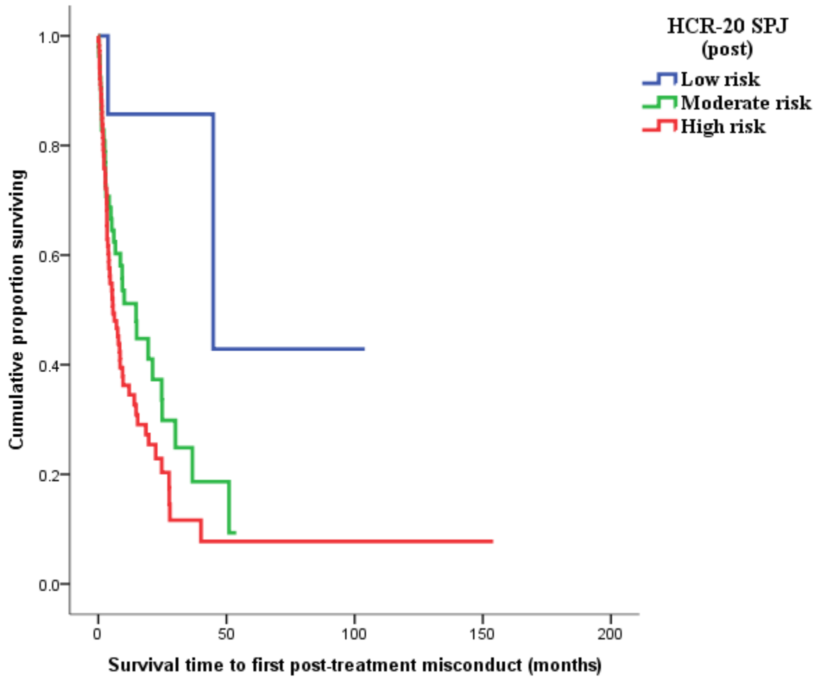


Figure 3.1.40

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Post-Treatment SPJ Risk Category (Any Misconduct)



3.3.2.3 Positive community outcomes.

3.3.2.3.1 Correlations.

To test whether scores on the HCR-20 and VRS are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations coefficients were computed between scores on these measures and the operationalized measurements of positive community outcomes. Significant negative correlations were observed between all measures and all positive outcomes (see Table 3.1.12).

Table 3.1.12
The Relationship between VRS and HCR-20 Scores with Positive Community Outcomes: Correlations

	Employment	Stable Housing	Stable Relationships	Successful Supervision	Prosocial Activities	Total
Pre-Tx						
VRS Static	-.33***	-.34***	-.36***	-.55***	-.32***	-.48***
VRS Dynamic	-.39***	-.25**	-.43***	-.50***	-.38***	-.50***
VRS Total	-.40***	-.31***	-.44***	-.57***	-.39***	-.54***
HCR Historical	-.35***	-.23**	-.36***	-.49***	-.27**	-.43***
HCR Clinical	-.34***	-.25**	-.34***	-.42***	-.42***	-.45***
HCR RiskM	-.32***	-.21*	-.20*	-.39***	-.37***	-.38***
HCR Dynamic	-.36***	-.25**	-.29**	-.45***	-.44***	-.45***
HCR Total	-.40***	-.27**	-.36***	-.52***	-.39***	-.49***
Post-Tx						
VRS Static	-.33***	-.34***	-.37***	-.55***	-.32***	-.48***
VRS Dynamic	-.42***	-.31***	-.45***	-.46***	-.42***	-.52***
VRS Total	-.42***	-.26**	-.40***	-.50***	-.43***	-.51***
HCR Historical	-.35***	-.26**	-.38***	-.50***	-.28**	-.45***
HCR Clinical	-.38***	-.32***	-.38***	-.30***	-.37***	-.44***
HCR RiskM	-.34***	-.26**	-.29**	-.35***	-.40***	-.41***
HCR Dynamic	-.40***	-.32***	-.37***	-.35***	-.42***	-.47***
HCR Total	-.43***	-.33***	-.43***	-.49***	-.41***	-.53***

N = 137; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; Tx = treatment, riskm = risk management

Similarly, correlation coefficients were calculated to examine the relationship between VRS and HCR-20 risk category with positive community outcomes. Again, significant negative correlations were observed between all measures and all positive community outcomes (see Table 3.1.13).

Table 3.1.13

The Relationship between VRS and HCR-20 Risk Categories with Positive Community Outcomes: Correlations

Category	Employment	Stable Housing	Stable Relationships	Successful Supervision	Prosocial Activities	Total
VRS (pre)	-.37***	-.23**	-.34***	-.53***	-.35***	-.46***
VRS (post)	-.30***	-.21*	-.34***	-.42***	-.33***	-.41***
HCR SPJ (pre)	-.28**	-.21*	-.30***	-.41***	-.38***	-.40***
HCR SPJ (post)	-.28**	-.25**	-.36***	-.34***	-.27**	-.38***

N = 137; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; pre = pre-treatment, post = post-treatment; SPJ = structured professional judgement

3.3.3 Incremental predictive validity.

3.3.3.1 Community recidivism.

3.3.3.1.1 Cox regression survival analysis.

To test whether VRS dynamic scores demonstrate incremental validity in the prediction of community recidivism over VRS static scores, a series of hierarchical Cox regression survival analysis were used controlling for individual differences in follow-up time. Similarly, Cox regressions were used to examine whether HCR-20 clinical, risk management, and dynamic scores demonstrate incremental validity in the prediction of community recidivism over HCR-20 historical (static) scores. Separate regressions were conducted for conviction-only community recidivism (see Table 3.1.14) and all charges community recidivism (see Table 3.1.15).

As seen in Table 3.1.14 and 3.1.15, the pre-treatment and post-treatment VRS dynamic scores uniquely predicted all violent, nonsexual violent, and any recidivism (both conviction-only and all charges), after controlling for the static component of the VRS. Clinical, risk management, and dynamic (clinical + risk management) scores of the HCR-20 were examined separately for their incremental contributions over the historical (static) score. At pre-treatment, the clinical, risk management, and dynamic scores uniquely predicted any recidivism, but did not uniquely predict all violent or nonsexual violent recidivism (conviction-only). When all charges recidivism data was examined, the unique predictive contributions of the pre-treatment clinical, risk management, and dynamic scores improved, but only the pre-treatment dynamic score on the HCR-20 consistently predicted all violent, nonsexual violent, and any recidivism. However, post-treatment clinical, risk management, and dynamic scores all uniquely predicted all violent, nonsexual violent, and any recidivism (both conviction-only and all charges) after controlling for historical (static) scores.

Table 3.1.14

Incremental Validity of Dynamic Scores over Static Scores in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent						Nonsexual Violent						All Recidivism					
Regression	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
Pre-Tx																		
VRS Stat	.057	.036	2.47	1.058	.116	.986,1.135	.053	.036	2.15	1.054	.143	.982,1.131	.083	.031	7.11	1.087	**.008**	1.022,1.155
VRS Dyn	.052	.023	5.05	1.053	**.025**	1.007,1.102	.053	.023	5.16	1.054	**.023**	1.007,1.103	.037	.019	3.86	1.038	**.050**	1.000,1.078
HCR H	.123	.045	7.42	1.131	**.006**	1.035,1.236	.131	.046	8.21	1.140	**.004**	1.042,1.248	.099	.038	6.98	1.104	**.008**	1.026,1.189
HCR C	.071	.077	.85	1.074	.358	.923,1.250	.064	.078	.68	1.066	.410	.915,1.242	.148	.067	4.83	1.160	**.028**	1.016,1.324
HCR H	.133	.042	9.88	1.143	**.002**	1.051,1.242	.141	.043	10.83	1.152	**.001**	1.059,1.253	.105	.038	7.78	1.111	**.005**	1.032,1.196
HCR R	.043	.058	.55	1.044	.458	.932,1.169	.037	.058	.41	1.038	.522	.927,1.162	.138	.054	6.43	1.148	**.011**	1.032,1.278
HCR H	.123	.045	7.47	1.131	**.006**	1.035,1.235	.132	.046	8.36	1.141	**.004**	1.043,1.247	.088	.038	5.27	1.092	**.022**	1.013,1.178
HCR Dyn	.040	.040	1.00	1.041	.319	.962,1.126	.035	.040	.77	1.036	.380	.957,1.121	.107	.036	8.70	1.113	**.003**	1.037,1.195
Post-Tx																		
VRS Stat	.057	.034	2.78	1.059	.096	.990, 1.132	.053	.034	2.42	1.055	.120	.986,1.128	.075	.028	6.99	1.077	**.008**	1.019,1.139
VRS Dyn	.058	.020	8.18	1.060	**.004**	1.019,1.103	.059	.020	8.27	1.061	**.004**	1.019,1.104	.066	.018	13.86	1.068	**.000**	1.032,1.106
HCR H	.133	.045	8.70	1.142	**.003**	1.046,1.247	.139	.046	9.22	1.149	**.002**	1.050,1.257	.104	.035	8.60	1.109	**.003**	1.035,1.189
HCR C	.110	.055	4.05	1.116	**.044**	1.003,1.242	.110	.055	4.07	1.116	**.044**	1.003,1.243	.162	.049	10.95	1.176	**.001**	1.068,1.294
HCR H	.147	.044	10.96	1.158	**.001**	1.062,1.263	.155	.045	11.87	1.168	**.001**	1.069,1.275	.110	.037	8.85	1.117	**.003**	1.038,1.201
HCR R	.130	.060	4.64	1.139	**.031**	1.012,1.282	.123	.060	4.16	1.131	**.041**	1.005,1.273	.211	.054	15.06	1.235	**.000**	1.110,1.375
HCR H	.131	.045	8.45	1.140	**.004**	1.044,1.245	.138	.046	9.15	1.149	**.002**	1.050,1.256	.097	.036	7.29	1.102	**.007**	1.027,1.183
HCR Dyn	.074	.032	5.48	1.077	**.019**	1.012,1.146	.073	.032	5.20	1.075	**.023**	1.010,1.144	.114	.028	16.39	1.121	**.000**	1.061,1.185

N = 155; significant *p*-values bolded; Tx = treatment, stat = static, dyn = dynamic, H = historical, C = clinical, R = risk management

Table 3.1.15

Incremental Validity of Dynamic Scores over Static Scores in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent						Nonsexual Violent						All Recidivism					
Regression	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
Pre-Tx																		
VRS Stat	.054	.033	2.68	1.056	.102	.989,1.127	.052	.033	2.40	1.053	.121	.986,1.124	.086	.030	8.00	1.090	**.005**	1.027,1.157
VRS Dyn	.050	.021	5.76	1.051	**.016**	1.009,1.095	.051	.021	5.96	1.052	**.015**	1.010,1.096	.036	.018	3.80	1.036	.051	1.000,1.074
HCR H	.107	.040	7.16	1.113	**.007**	1.029,1.204	.113	.041	7.80	1.120	**.005**	1.034,1.213	.097	.036	7.15	1.101	**.008**	1.026,1.182
HCR C	.142	.071	3.96	1.153	**.047**	1.002,1.326	.139	.072	3.72	1.149	.054	.998,1.322	.154	.065	5.54	1.166	**.019**	1.026,1.326
HCR H	.125	.039	10.3	1.133	**.001**	1.050,1.222	.131	.039	11.26	1.140	**.001**	1.056,1.231	.106	.036	8.68	1.112	**.003**	1.036,1.194
HCR R	.085	.054	2.49	1.088	.115	.980,1.209	.079	.054	2.20	1.083	.138	.975,1.202	.127	.053	5.78	1.135	**.016**	1.024,1.259
HCR H	.106	.040	6.83	1.111	**.009**	1.027,1.203	.113	.041	7.56	1.119	**.006**	1.033,1.213	.088	.037	5.73	1.092	**.017**	1.016,1.174
HCR Dyn	.080	.037	4.63	1.083	**.031**	1.007,1.164	.076	.037	4.22	1.079	**.040**	1.004,1.161	.104	.035	8.66	1.109	**.003**	1.035,1.189
Post-Tx																		
VRS Stat	.053	.031	2.94	1.055	**.086**	.992,1.121	.050	.031	2.64	1.052	.104	.990,1.117	.079	.028	8.22	1.083	**.004**	1.025,1.143
VRS Dyn	.062	.018	11.82	1.064	**.001**	1.027,1.103	.063	.018	11.96	1.065	**.001**	1.028,1.103	.063	.017	13.47	1.065	**.000**	1.030,1.101
HCR H	.114	.038	8.81	1.121	**.003**	1.039,1.208	.119	.039	9.36	1.126	**.002**	1.044,1.216	.103	.034	9.20	1.108	**.002**	1.037,1.184
HCR C	.189	.050	14.47	1.208	**.000**	1.096,1.331	.188	.050	14.36	1.207	**.000**	1.095,1.331	.163	.048	11.56	1.177	**.001**	1.071,1.292
HCR H	.137	.039	12.04	1.147	**.001**	1.061,1.239	.144	.040	12.92	1.154	**.000**	1.067,1.248	.109	.036	9.36	1.115	**.002**	1.040,1.196
HCR R	.165	.054	9.42	1.179	**.002**	1.061,1.310	.158	.054	8.68	1.172	**.003**	1.054,1.302	.213	.053	15.91	1.238	**.000**	1.114,1.374
HCR H	.116	.039	8.76	1.123	**.003**	1.040,1.213	.122	.040	9.44	1.130	**.002**	1.045,1.222	.097	.034	7.84	1.101	**.005**	1.029,1.178
HCR Dyn	.109	.028	15.02	1.116	**.000**	1.056,1.179	.108	.028	14.42	1.114	**.000**	1.053,1.177	.115	.028	17.30	1.122	**.000**	1.063,1.184

N = 155; significant *p*-values bolded; Tx = treatment, stat = static, dyn = dynamic, H = historical, C = clinical, R = risk management

3.3.3.2 Institutional recidivism.

3.3.3.2.1 Cox regression survival analysis.

To test whether VRS dynamic scores demonstrate incremental validity in the prediction of institutional recidivism over VRS static scores, a series of hierarchical Cox regression survival analysis were used controlling for individual differences in follow-up time. Similarly, Cox regressions were used to examine whether HCR-20 clinical, risk management, and dynamic scores demonstrate incremental validity in the prediction of institutional recidivism over HCR-20 historical (static) scores.

As seen in Table 3.1.16 and 3.1.17, none of the pre-treatment dynamic, clinical, or risk management scores from the VRS and HCR-20 uniquely predicted major, minor, violent, or any institutional recidivism, after controlling for the static and historical components. At post-treatment, the VRS dynamic, HCR-20 clinical, and HCR-20 dynamic scores uniquely predicted major institutional recidivism after controlling for static and historical scores. Additionally, the VRS dynamic score uniquely predicted any institutional recidivism after controlling for the static score. None of the post-treatment dynamic, clinical, or risk management scores uniquely predicted violent or minor institutional recidivism, after controlling for static and historical scores.

Table 3.1.16

Incremental Validity of Dynamic Scores over Static Scores in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Major						Minor					
Regression	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
Pre-Tx												
VRS Stat	.107	.043	6.24	1.113	**.012**	1.023,1.211	.077	.031	6.06	1.080	**.014**	1.016,1.148
VRS Dyn	.044	.029	2.42	1.045	.120	.989,1.106	.037	.020	3.34	1.037	.068	.997,1.079
HCR H	.141	.057	6.16	1.152	**.013**	1.030,1.288	.080	.041	3.89	1.083	**.049**	1.000,1.173
HCR C	.104	.103	1.02	1.110	.312	.907,1.358	.105	.078	1.82	1.111	.177	.953,1.295
HCR H	.159	.055	8.39	1.172	**.004**	1.053,1.306	.078	.040	3.88	1.081	**.049**	1.000,1.169
HCR R	.032	.077	.17	1.032	.678	.888,1.200	.115	.064	3.23	1.122	.072	.990,1.272
HCR H	.146	.057	6.47	1.157	**.011**	1.034,1.296	.067	.041	2.65	1.069	.104	.986,1.159
HCR Dyn	.043	.053	.66	1.044	.415	.841,1.158	.081	.042	3.79	1.085	.052	.999,1.177
Post-Tx												
VRS Stat	.091	.041	5.05	1.095	**.025**	1.012,1.186	.078	.031	6.54	1.081	**.011**	1.018,1.148
VRS Dyn	.084	.030	8.13	1.088	**.004**	1.027,1.153	.038	.020	3.64	1.038	.057	.999,1.079
HCR H	.132	.051	6.58	1.141	**.010**	1.032,1.262	.100	.036	7.61	1.105	**.006**	1.029,1.186
HCR C	.192	.064	8.94	1.212	**.003**	1.068,1.375	.039	.054	.51	1.040	.474	.935,1.157
HCR H	.140	.055	6.59	1.151	**.010**	1.034,1.281	.094	.037	6.45	1.099	**.011**	1.022,1.182
HCR R	.148	.081	3.37	1.160	.066	.990,1.359	.063	.061	1.07	1.065	.301	.945,1.201
HCR H	.128	.053	5.78	1.137	**.016**	1.024,1.262	.095	.037	6.54	1.099	**.011**	1.022,1.182
HCR Dyn	.116	.041	8.06	1.124	**.005**	1.037,1.218	.032	.032	.98	1.033	.322	.969,1.100

N = 178; significant *p*-values bolded; Tx = treatment, stat = static, dyn = dynamic, H = historical, C = clinical, R = risk management

Table 3.1.17

Incremental Validity of Dynamic Scores over Static Scores in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Violent						Any					
Regression	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
Pre-Tx												
VRS Stat	.099	.070	1.99	1.104	.159	.962,1.267	.089	.030	8.70	1.094	**.003**	1.030,1.161
VRS Dyn	.046	.045	1.03	1.047	.310	.958,1.144	.034	.019	3.10	1.035	.078	.996,1.075
HCR H	.196	.097	4.09	1.216	**.043**	1.006,1.471	.095	.039	6.08	1.100	**.014**	1.020,1.186
HCR C	-.054	.159	.12	.947	.733	.694,1.294	.108	.076	2.01	1.114	.156	.960,1.293
HCR H	.194	.090	4.62	1.214	**.032**	1.017,1.450	.105	.037	8.01	1.111	**.005**	1.033,1.195
HCR R	-.053	.121	.20	.948	.658	.748,1.201	.073	.059	1.55	1.076	.214	.959,1.207
HCR H	.203	.097	4.40	1.225	**.036**	1.013,1.481	.092	.039	5.54	1.096	**.019**	1.015,1.183
HCR Dyn	-.042	.085	.24	.959	.623	.812,1.133	.064	.040	2.60	1.066	.107	.986,1.152
Post-Tx												
VRS Stat	.082	.068	1.46	1.085	.227	.950,1.239	.086	.029	8.84	1.090	**.003**	1.030,1.154
VRS Dyn	.086	.047	3.33	1.090	.068	.994,1.196	.045	.019	5.60	1.046	**.018**	1.008,1.086
HCR H	.143	.088	2.65	1.154	.104	.971,1.371	.108	.034	9.79	1.114	**.002**	1.041,1.191
HCR C	.168	.102	2.74	1.183	.098	.969,1.444	.089	.052	2.96	1.093	.085	.988,1.209
HCR H	.158	.091	3.00	1.171	.083	.979,1.400	.112	.036	9.91	1.119	**.002**	1.043,1.199
HCR R	.085	.128	.44	1.089	.506	.847,1.400	.068	.058	1.35	1.070	.245	.954,1.200
HCR H	.142	.091	2.45	1.153	.117	.965,1.377	.106	.035	8.95	1.111	**.003**	1.037,1.191
HCR Dyn	.091	.065	1.93	1.095	.165	.963,1.244	.052	.031	2.77	1.053	.096	.991,1.119

N = 178; significant *p*-values bolded; Tx = treatment, stat = static, dyn = dynamic, H = historical, C = clinical, R = risk management

3.3.3.3 Positive community outcomes.

3.3.3.3.1 Multiple Regression.

To test whether VRS dynamic scores demonstrate incremental validity in the prediction of positive community outcomes (summed total of the five outcome categories) over VRS static scores, hierarchical multiple regression was used. Similarly, hierarchical multiple regression was used to examine whether HCR-20 clinical, risk management, and dynamic scores demonstrate incremental validity in the prediction of positive community outcomes over HCR-20 historical (static) scores. Dynamic, clinical, and risk management scores (at both pre-treatment and post-treatment) uniquely predicted total positive community outcomes score, after controlling for static and historical components (see Table 3.1.18).

Table 3.1.18

Incremental Validity of Dynamic Scores over Static Scores in the Prediction of Positive Community Outcomes: Hierarchical Multiple Regression

Regression Model	b	SE	β	*p*	r_{part}^2
VRS Static (pre)	-.209	.073	-.270	**.005**	.23
VRS Dynamic (pre)	-.144	.043	-.322	**.001**	.06
(constant)	13.707	1.503			
$R = .54$, $R^2 = .29$, $F\ (2, 134) = 27.28$, $p < .001$					
VRS Static (post)	-.204	.068	-.265	**.003**	.23
VRS Dynamic (post)	-.162	.039	-.267	**.000**	.09
(constant)	13.674	1.284			
$R = .57$, $R^2 = .32$, $F\ (2, 134) = 31.37$, $p < .001$					
HCR Historical (pre)	-.248	.090	-.254	**.007**	.18
HCR Clinical (pre)	-.569	.178	-.297	**.002**	.06
(constant)	11.703	1.139			
$R = .49$, $R^2 = .24$, $F\ (2, 134) = 21.35$, $p < .001$					
HCR Historical (pre)	-.312	.087	-.320	**.000**	.18
HCR Risk Management (pre)	-.334	.143	-.209	**.021**	.03
(constant)	11.531	1.175			
$R = .46$, $R^2 = .22$, $F\ (2, 134) = 18.43$, $p < .001$					
HCR Historical (pre)	-.237	.092	-.243	**.012**	.18
HCR Dynamic (pre)	-294	.092	-.304	**.002**	.06
(constant)	11.999	1.171			
$R = .49$, $R^2 = .24$, $F\ (2, 134) = 21.36$, $p < .001$					
HCR Historical (post)	-.296	.081	-.308	**.000**	.20
HCR Clinical (post)	-.459	.131	-.295	**.001**	.07
(constant)	10.736	1.049			
$R = .52$, $R^2 = .27$, $F\ (2, 134) = 24.73$, $p < .001$					
HCR Historical (post)	-.318	.080	-.331	**.000**	.20
HCR Risk Management (post)	-.436	.137	-.265	**.002**	.06
(constant)	11.914	1.114			
$R = .51$, $R^2 = .26$, $F\ (2, 134) = 23.38$, $p < .001$					
HCR Historical (post)	-.271	.082	-.282	**.001**	.20
HCR Dynamic (post)	-.288	.075	-.327	**.000**	.08
(constant)	11.500	1.057			
$R = .53$, $R^2 = .28$, $F\ (2, 134) = 26.27$, $p < .001$					

N = 137; significant *p*-values bolded; pre = pre-treatment, post = post-treatment

3.4 Validity of Risk Change Scores

3.4.1 Convergent validity.

3.4.1.1 Correlations.

To examine convergent validity between the VRS and the HCR-20's measurements of change, correlations were computed between the two sets of change scores on these measures. Significant correlations were identified between most sets of change scores (see Table 3.2.1). Strongest correlations were observed between dynamic and total change scores. Correlations with historical or static change scores were generally small or not significant as would be expected.

Table 3.2.1

Convergence Correlations between VRS and HCR-20 Change Scores

Change Score	VRS Dyn Change	VRS Tot Change	HCR H Change	HCR C Change	HCR R Change	HCR Dyn Change	HCR Tot Change
VRS Stat	.07	.12	.17*	.03	.14	.10	.13
VRS Dyn		.99***	.19*	.64***	.41***	.63***	.63***
VRS Tot			.20**	.64***	.41***	.64***	.63***
HCR H				.12	.23**	.20**	.44***
HCR C					.44***	.88***	.84***
HCR R						.81***	.80***
HCR Dyn							.97***

N = 178; * = *p* < .05, ** = *p* < .01, *** = *p* < .001; stat = static, dyn = dynamic, tot = total, H = historical, C = clinical, R = risk management

3.4.2 Predictive validity.

3.4.2.1 Community recidivism.

3.4.2.1.1 Correlations and semi-partial correlations.

To test the predictive validity of the VRS and HCR-20 change scores, predictive accuracy analyses were conducted using point-biserial correlations (i.e., a correlation between a continuous and dichotomous variable) and semi-partial correlations (i.e., the correlation between the change score and the outcome with the covariate pre-treatment risk partialled out of the change score via regression thereby controlling for the effect of pre-treatment risk on change) with the community recidivism criteria. Small significant and trending point-biserial correlations were observed between most change scores and violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism)(see Table 3.2.2 and 3.2.3). After controlling for pre-treatment risk, semi-partial correlations (r_{part}) between change scores and recidivism were generally stronger.

Table 3.2.2

Predictive Validity of VRS and HCR-20 Change Scores for Community Recidivism (Convictions): point-biserial and semi-partial correlations

	Any Violent		Nonsexual Violent		Any Recidivism	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
VRS Static	-.17*	-.18*	-.17*	-.18*	-.04	-.05
VRS Dynamic	-.09	*-.15*	-.09	*-.14*	-.12	-.18*
VRS Total	-.10	*-.15*	-.10	*-.15*	-.12	-.19*
HCR Historical	-.20*	-.20*	-.20*	-.20*	*-.13*	-.13
HCR Clinical	*-.13*	-.17*	*-.15*	-.18*	-.06	-.11
HCR RiskM	-.13	-.20*	-.13	-.20*	-.08	-.18*
HCR Dynamic	*-.15*	-.21**	-.16*	-.22**	-.09	-.17*
HCR Total	-.19*	-.25**	-.20*	-.25**	-.11	-.19*

N = 155; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$; riskm = risk management

Table 3.2.3

Predictive Validity of VRS and HCR-20 Change Scores for Community Recidivism (All Charges): point-biserial and semi-partial correlations

	Any Violent		Nonsexual Violent		Any Recidivism	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
VRS Static	-.22**	-.23**	-.22**	-.23**	-.05	-.06
VRS Dynamic	-.12	-.17*	-.11	-.17*	-.11	-.17*
VRS Total	-.13	-.18*	-.12	-.18*	-.11	-.17*
HCR Historical	*-.15*	*-.15*	*-.15*	*-.15*	*-.14*	*-.14*
HCR Clinical	*-.16*	-.20*	-.17*	-.21**	-.06	-.11
HCR RiskM	-.10	-.19*	-.10	-.19*	-.11	-.21**
HCR Dynamic	*-.15*	-.23**	-.16*	-.24**	-.10	-.18*
HCR Total	-.18*	-.24**	-.19*	.25**	-.13	-.20*

N = 155; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$; riskm = risk management

3.4.2.2 Institutional recidivism.

3.4.2.2.1 Correlations and semi-partial correlations.

To test the predictive validity of the VRS and HCR-20 change scores, predictive accuracy analyses were conducted using point-biserial correlations and semi-partial correlations (controlling for pre-treatment risk) with the institutional recidivism criteria. Sporadic significant and trending point-biserial correlations were observed between change scores and major, minor, violent, and any institutional misconduct (see Table 3.2.4). After controlling for pre-treatment risk, semi-partial correlations between change scores and recidivism were generally stronger but still small in magnitude. Magnitude of the correlations remained remarkably similar when one week (see Table 3.2.5) and one month minimum follow-ups (see Table 3.2.6) were examined.

Table 3.2.4

Predictive Validity of VRS and HCR-20 Change Scores for Institutional Recidivism: point-biserial and semi-partial correlations (no minimum follow-up)

	Major		Minor		Violent		Any	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
VRS Static	-.02	-.02	-.08	-.08	-.06	-.06	-.09	-.10
VRS Dynamic	-.09	-.11	.05	.04	-.05	-.06	-.01	-.02
VRS Total	-.09	-.11	.05	.04	-.05	-.06	-.01	-.02
HCR Historical	.02	.02	.04	.04	.04	.04	.00	.00
HCR Clinical	*-.14*	-.15*	.08	.08	-.12	-.13	-.01	-.01
HCR RiskM	-.10	*-.13*	.08	.07	-.08	-.09	-.04	.02
HCR Dynamic	*-.15*	-.17*	.10	.09	-.12	*-.13*	.01	.00
HCR Total	*-.13*	*-.15*	.10	.09	-.10	-.11	.01	.01

N = 178; *italicized* = *p* < .10, * = *p* < .05; riskm = risk management

Table 3.2.5

Predictive Validity of VRS and HCR-20 Change Scores for Institutional Recidivism: point-biserial and semi-partial correlations (one week minimum follow-up)

	Major		Minor		Violent		Any	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
VRS Static	-.00	-.00	-.06	-.06	-.05	-.06	-.08	-.08
VRS Dynamic	-.09	-.12	.06	.04	-.05	-.06	-.00	-.02
VRS Total	-.09	-.12	.06	.04	-.05	-.07	-.01	-.03
HCR Historical	.02	.02	.05	.05	.05	.05	.01	.01
HCR Clinical	*-.13*	*-.15*	.12	.11	-.12	-.13	.02	.01
HCR RiskM	-.10	*-.14*	.10	.08	-.08	-.10	.05	.03
HCR Dynamic	*-.14*	-.17*	.13	.11	-.12	*-.13*	.04	.02
HCR Total	-.12	*-.15*	.13	.11	-.10	-.11	.04	.02

N = 164; *italicized* = *p* < .10, * = *p* < .05; riskm = risk management

Table 3.2.6

Predictive Validity of VRS and HCR-20 Change Scores for Institutional Recidivism: point-biserial and semi-partial correlations (one month minimum follow-up)

	Major		Minor		Violent		Any	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
VRS Static	.04	.03	-.02	-.02	-.05	-.05	-.03	-.03
VRS Dynamic	-.10	-.13	.05	.03	-.05	-.07	-.01	-.04
VRS Total	-.10	-.13	.05	.03	-.05	-.07	-.01	-.04
HCR Historical	.01	.01	.04	.04	.05	.05	-.00	-.00
HCR Clinical	*-.14*	*-.15*	.12	.11	-.12	-.13	.03	.01
HCR RiskM	-.10	-.13	.13	.10	-.08	-.09	.08	.05
HCR Dynamic	*-.14*	-.17*	*.15*	.13	-.12	*-.13*	.06	.03
HCR Total	-.12	*-.15*	*.15*	.13	-.10	-.11	.05	.03

N = 157; *italicized* = $p < .10$, * = $p < .05$; riskm = risk management

3.4.2.3 Positive Community Outcomes.

3.4.2.3.1 Correlations and semi-partial correlations.

To test whether change scores on the HCR-20 and the VRS are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations and semi-partial correlations (controlling for pre-treatment risk) were computed between scores on these measures and operationalized measurements of positive community outcomes. Again, small significant and trending correlations were observed between the change scores and positive community outcomes. After controlling for pre-treatment risk, semi-partial correlations between change scores and positive community outcomes improved but continued to remain small. Change score correlations were largest with stable housing, and were weakest with successful supervision and prosocial activities.

Table 3.2.7

The Relationship between Risk Change Scores and Positive Community Outcomes: correlations and semi-partial correlations.

	Employment		Stable Housing		Stable Relationships		Successful Supervision		Prosocial Activities		Total	
Change Score	r	r_{part}	r	r_{part}	r	r_{part}	r	r_{part}	r	r_{part}	r	r_{part}
VRS Static	.08	.09	.09	.09	*.15*	*.15*	.08	.09	.06	.07	.12	.13
VRS Dynamic	.09	*.15*	*.16*	.21*	.07	.14	-.10	-.01	.10	*.16*	.08	*.16*
VRS Total	.09	*.16*	*.16*	.21*	.07	.14	-.10	.-.01	.10	*.17*	.08	*.17*
HCR Historical	.04	.04	*.16*	*.16*	.14	.14	.08	.08	.09	.09	.12	.12
HCR Clinical	.14	.18*	*.15*	.18*	.12	*.16*	-.06	.00	.05	.09	.10	*.16*
HCR RiskM	.02	.11	.06	.12	.13	.21*	-.07	.04	.02	.11	.04	*.15*
HCR Dynamic	.10	.18*	.13	.18*	*.15*	.22**	-.08	.02	.04	.12	.09	.19*
HCR Total	.10	.17*	*.16*	.21*	.17*	.24**	-.05	.04	.06	.13	.11	.20*

N = 137; *italicized* = *p* < .10, * = *p* < .05, ** = *p* < .01; riskm = risk management

3.4.3 Incremental predictive validity.

3.4.3.1 Community recidivism.

3.4.3.1.1 Cox regression survival analysis.

To test whether VRS change scores demonstrate incremental validity in the prediction of community recidivism over VRS pre-treatment scores, a series of hierarchical Cox regression survival analyses were used controlling for individual differences in follow-up time. Similarly, Cox regressions were used to examine whether HCR-20 change scores demonstrate incremental validity in the prediction of community recidivism over HCR-20 pre-treatment scores. Separate regressions were conducted for conviction-only community recidivism (see Table 3.2.8 and 3.2.9) and all charges community recidivism (see Table 3.2.10 and 3.2.11).

As seen in Table 3.2.8 and 3.2.10, the VRS static change score did not uniquely predict all violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism), after controlling for the VRS pre-treatment total score. The VRS dynamic change score approached significance for uniquely predicting all violent and nonsexual violent recidivism and significantly uniquely predicted any recidivism (conviction-only), after controlling for pre-treatment VRS total score. When examining all charges recidivism, the VRS dynamic change score significantly predicted all violent, nonsexual violent, and any recidivism. Lastly, the VRS total change score significantly predicted all violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism), after controlling for the VRS pre-treatment total score. Examining the exponentiated beta reveals that for each one point increase in total change score, the hazard of reconviction drops by roughly 7-11%, after controlling for the VRS pre-treatment total score.

As seen in Table 3.2.9 and 3.2.11, the HCR-20 historical (static) change score uniquely predicted all violent and nonsexual violent recidivism (for both conviction-only and all charges recidivism), after controlling for the HCR-20 pre-treatment total score. The HCR-20 historical change score did not uniquely predict the any community recidivism outcome. The HCR-20 clinical, risk management, dynamic, and total change scores uniquely predicting all violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism), after controlling for pre-treatment HCR-20 total score. Again, examining the exponentiated beta reveals that for each one point increase in total change score, the hazard of reconviction drops by roughly 10-12%, after controlling for the HCR-20 pre-treatment total score.

Table 3.2.8

The Incremental Validity of VRS Change Scores over Pre-Treatment Risk in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.054	.014	15.7	1.056	**.000**	1.028, 1.084
VRS Static Change	-12.193	230.35	4.00	.000	.958	.000, 6.007E190
VRS Total (pre)	.056	.014	17.09	1.058	**.000**	1.030, 1.087
VRS Dyn Change	-.067	.034	3.75	.936	.053	.875, 1.001
VRS Total (pre)	.057	.014	19.96	1.058	**.000**	1.030, 1.087
VRS Total Change	-.071	.034	4.25	.932	**.039**	.871, .997
	Nonsexual Violent Recidivism					
VRS Total (pre)	.053	.014,	15.18	1.054	**.000**	1.027, 1.083
VRS Static Change	-12.171	237.18	.003	.000	.959	.000, 4.014E196
VRS Total (pre)	.055	.014	16.53	1.057	**.000**	1.029, 1.086
VRS Dyn Change	-.066	.034	3.67	.936	.055	.875, 1.002
VRS Total (pre)	.056	.014	16.65	1.057	**.000**	1.029, 1.086
VRS Total Change	-.070	.034	4.13	.932	**.042**	.871, .998
	All Recidivism					
VRS Total (pre)	.053	.011	21.93	1.054	**.000**	1.031, 1.078
VRS Static Change	-.588	.715	.68	.555	.411	.137, 2.257
VRS Total (pre)	.065	.012	29.29	1.067	**.000**	1.042, 1.093
VRS Dyn Change	-.116	.030	15.05	.890	**.000**	.840, .944
VRS Total (pre)	.065	.012	29.38	1.067	**.000**	1.042, 1.093
VRS Total Change	-.177	.030	15.38	.890	**.000**	.839, .943

N = 155; significant *p*-values bolded; pre = pre-treatment, dyn = dynamic

Table 3.2.9

The Incremental Validity of HCR-20 Change Scores over Pre-Treatment Risk in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
HCR Total (pre)	.084	.023	13.65	1.087	**.000**	1.040, 1.137
HCR H change	-.341	.132	6.634	.711	**.010**	.549, .922
HCR Total (pre)	.081	.021	14.43	1.085	**.000**	1.040, 1.131
HCR C change	-.146	.062	5.534	.864	**.019**	.765, .976
HCR Total (pre)	.091	.023	16.32	1.096	**.000**	1.048, 1.145
HCR R change	-.199	.080	6.108	.820	**.013**	.700, .960
HCR Total (pre)	.088	.022	16.24	1.091	**.000**	1.046, 1.139
HCR Dyn change	-.118	.041	8.412	.888	**.004**	.820, .962
HCR Total (pre)	.088	.022	16.35	1.092	**.000**	1.047, 1.140
HCR Total change	-.119	.036	10.84	.888	**.001**	.827, .953
	Nonsexual Violent Recidivism					
HCR Total (pre)	.085	.023	13.89	1.089	**.000**	1.041, 1.139
HCR H change	-.339	.133	6.51	.713	**.011**	.549, .924
HCR Total (pre)	.083	.022	14.73	1.086	**.000**	1.041, 1.133
HCR C change	-.152	.062	6.03	.859	**.014**	.760, .970
HCR Total (pre)	.093	.023	16.52	1.097	**.000**	1.049, 1.147
HCR R change	-.198	.081	6.01	.821	**.014**	.701, .961
HCR Total (pre)	.089	.022	16.52	1.093	**.000**	1.047, 1.141
HCR Dyn change	-.121	.041	8.72	.886	**.003**	.818, .960
HCR Total (pre)	.090	.022	16.60	1.094	**.000**	1.048, 1.142
HCR Total change	-.121	.036	11.10	.886	**.001**	.826, .952
	All Recidivism					
HCR Total (pre)	.100	.021	23.27	1.105	**.000**	1.061, 1.151
HCR H change	-.134	.118	1.30	.875	.255	.694, 1.101
HCR Total (pre)	.103	.020	26.22	1.108	**.000**	1.066, 1.153
HCR C change	-.141	.057	6.05	.868	**.014**	.776, .972
HCR Total (pre)	.109	.021	26.75	1.116	**.000**	1.070, 1.163
HCR R change	-.152	.066	5.36	.859	**.021**	.756, .977
HCR Total (pre)	.110	.021	28.48	1.116	**.000**	1.072, 1.162
HCR Dyn change	-.111	.037	8.95	.895	**.003**	.832, .962
HCR Total (pre)	.110	.021	28.00	1.116	**.000**	1.071, 1.162
HCR Total change	-.101	.033	9.22	.904	**.002**	.847, .965

N = 155; significant *p*-values bolded; pre = pre-treatment, H = historical, C = clinical, R = risk management, Dyn = dynamic

Table 3.2.10

The Incremental Validity of VRS Change Scores over Pre-Treatment Risk in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.052	.012	18.84	1.053	**.000**	1.029, 1.078
VRS Static change	-12.281	198.191	.00	.000	.951	.000, 2.327E163
VRS Total (pre)	.055	.012	21.62	1.057	**.000**	1.033, 1.082
VRS Dyn change	-.086	.031	7.76	.917	**.005**	.863, .975
VRS Total (pre)	.056	.012	21.89	1.057	**.000**	1.033, 1.082
VRS Total change	-.092	.031	8.73	.912	**.003**	.859, .970
	Nonsexual Violent Recidivism					
VRS Total (pre)	.052	.012	18.64	1.053	**.000**	1.029, 1.078
VRS Static change	-12.231	206.238	.00	.000	.953	.000, 1.731E170
VRS Total (pre)	.055	.012	21.33	1.057	**.000**	1.032, 1.082
VRS Dyn change	-.085	.031	7.53	.918	**.006**	.864, .976
VRS Total (pre)	.055	.012	21.58	1.057	**.000**	1.033,1.082
VRS Total change	-.090	.031	8.41	.914	**.004**	.860,.971
	All Recidivism					
VRS Total (pre)	.053	.011	22.83	1.054	**.000**	1.032, 1.077
VRS Static change	-.681	.715	.91	.506	.341	.125, 2.055
VRS Total (pre)	.065	.012	30.42	1.067	**.000**	1.043, 1.092
VRS Dyn change	-.113	.029	14.84	.893	**.000**	.843, .946
VRS Total (pre)	.065	.012	30.55	1.067	**.000**	1.043, 1.092
VRS Total change	-.115	.029	15.25	.892	**.000**	.842, .945

N = 155; significant *p*-values bolded; pre = pre-treatment, dyn = dynamic

Table 3.2.11

The Incremental Validity of HCR-20 Change Scores over Pre-Treatment Risk in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
HCR Total (pre)	.096	.021	20.91	1.101	**.000**	1.056, 1.147
HCR H change	-.274	.122	5.06	.761	**.024**	.599, .965
HCR Total (pre)	.099	.020	24.25	1.104	**.000**	1.061, 1.148
HCR C change	-.194	.057	11.47	.824	**.001**	.736, .921
HCR Total (pre)	.105	.021	24.43	1.110	**.000**	1.065, 1.157
HCR R change	-.181	.070	6.69	.834	**.010**	.727, .957
HCR Total (pre)	.105	.020	26.49	1.111	**.000**	1.067, 1.156
HCR Dyn change	-.137	.037	13.46	.872	**.000**	.810, .938
HCR Total (pre)	.106	.021	26.38	1.112	**.000**	1.068, 1.157
HCR Total change	-.131	.033	15.47	.878	**.000**	.822, .937
	Nonsexual Violent Recidivism					
HCR Total (pre)	.098	.021	21.31	1.103	**.000**	1.058, 1.149
HCR H change	-.272	.122	4.98	.762	**.026**	.600, .967
HCR Total (pre)	.100	.020	24.68	1.106	**.000**	1.063, 1.150
HCR C change	-.197	.057	11.80	.821	**.001**	7.34, .919
HCR Total (pre)	.106	.021	24.75	1.112	**.000**	1.066, 1.159
HCR R change	-.179	.070	6.50	.836	**.011**	.728, .959
HCR Total (pre)	.107	.021	26.87	1.112	**.000**	1.069, 1.158
HCR Dyn change	-.137	.037	13.49	.872	**.000**	.810, .938
HCR Total (pre)	.107	.021	26.75	1.113	**.000**	1.069, 1.159
HCR Total change	-.130	.033	15.43	.878	**.000**	.822, .937
	All Recidivism					
HCR Total (pre)	.098	.020	24.12	1.103	**.000**	1.061, 1.147
HCR H change	-.127	.114	1.25	.881	.264	.705, 1.101
HCR Total (pre)	.102	.020	27.34	1.107	**.000**	1.066, 1.150
HCR C change	-.138	.057	5.94	.871	**.015**	.780, .973
HCR Total (pre)	.109	.021	28.26	1.115	**.000**	1.071, 1.161
HCR R change	-.163	.063	6.66	.850	**.010**	.751, .962
HCR Total (pre)	.109	.020	29.98	1.115	**.000**	1.073, 1.160
HCR Dyn change	-.114	.036	9.92	.892	**.002**	.831, .958
HCR Total (pre)	.109	.020	29.39	1.115	**.000**	1.072, 1.160
HCR Total change	-.102	.032	10.06	.903	**.002**	.848, .962

N = 155; significant *p*-values bolded; pre = pre-treatment, H = historical, C = clinical, R = risk management, Dyn = dynamic

3.4.3.2 Institutional recidivism.

3.4.3.2.1 Cox regression survival analysis.

To test whether VRS change scores demonstrate incremental validity in the prediction of institutional recidivism over VRS pre-treatment scores, a series of hierarchical Cox regression survival analyses were used controlling for individual differences in follow-up time. Similarly, Cox regressions were used to examine whether HCR-20 change scores demonstrate incremental validity in the prediction of institutional recidivism over HCR-20 pre-treatment scores.

As seen in Table 3.2.12 and 3.2.13, the VRS static change score did not uniquely predict major, minor, violent, and any institutional recidivism, after controlling for the VRS pre-treatment total score. The VRS dynamic change score uniquely predicted major institutional recidivism and approached significance in predicting violent and any institutional recidivism after controlling for pre-treatment VRS total score. Similarly, the VRS total change uniquely predicted major institutional recidivism and approached significance in predicting violent and any institutional recidivism after controlling for pre-treatment VRS total score. None of the VRS change scores uniquely predicted minor institutional recidivism, Examining the exponentiated beta reveals that for each one point increase in total change score, the hazard of reconviction for a major institutional misconduct drops by roughly 13% (after controlling for the VRS pre-treatment total score).

The HCR-20 historical (static) change score did not uniquely predict major, minor, violent, or any institutional recidivism after controlling for the HCR-20 pre-treatment total score. The HCR-20 clinical, risk management, dynamic, and total change scores uniquely predicted major institutional recidivism after controlling for pre-treatment HCR-20 total score. Further, the HCR-20 clinical, dynamic, and total change scores uniquely predicted violent institutional recidivism. None of the HCR-20 change scores predicted minor or any institutional recidivism. Examining the exponentiated beta reveals that for each one point increase in total change score, the hazard of reconviction for a major institutional misconduct drops by roughly 14% after controlling for the HCR-20 pre-treatment total score (see Table 3.2.12 and 3.2.13).

Table 3.2.12

The Incremental Validity of Change Scores over Pre-Treatment Risk in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Major						Minor					
Regression Model	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.068	.018	13.91	1.070	**.000**	1.033, 1.109	.051	.013	16.26	1.052	**.000**	1.026, 1.078
VRS Static change	-.050	1.013	.00	.952	.961	.131, 6.927	-.254	1.009	.063	.776	.801	.107, 5.601
VRS Total (pre)	.083	.020	18.12	1.087	**.000**	1.046, 1.129	.054	.013	17.03	1.055	**.000**	1.029, 1.082
VRS Dyn change	-.143	.048	8.78	.867	**.003**	.788, .953	-.031	.034	.85	.969	.357	.908, 1.036
VRS Total (pre)	.083	.019	18.07	1.086	**.000**	1.046, 1.129	.054	.013	17.04	1.055	**.000**	1.029, 1.082
VRS Total change	-.141	.048	8.63	.868	**.003**	.790, .954	-.031	.033	.86	.969	.354	.908, 1.035
HCR Total (pre)	.093	.029	10.26	1.098	**.001**	1.037, 1.162	.074	.021	12.65	1.077	**.000**	1.034, 1.122
HCR H change	-.077	.186	.17	.926	.678	.644, 1.332	-.073	.140	.27	.929	.601	.706, 1.223
HCR Total (pre)	.109	.030	12.93	1.115	**.000**	1.051, 1.184	.074	.021	12.05	1.077	**.001**	1.033, 1.123
HCR C change	-.233	.079	8.80	.792	**.003**	.679, .924	.001	.067	.00	1.001	.982	.878, 1.143
HCR Total (pre)	.107	.030	12.59	1.113	**.000**	1.049, 1.181	.072	.021	11.43	1.074	**.001**	1.031, 1.120
HCR R change	-.221	.104	4.50	.802	**.034**	.653, .983	.041	.074	.31	1.042	.579	.901, 1.205
HCR Total (pre)	.114	.031	13.90	1.121	**.000**	1.055, 1.190	.072	.021	11.35	1.075	**.001**	1.031, 1.121
HCR Dyn change	-.165	.054	9.45	.848	**.002**	.764, .942	.014	.043	.10	1.014	.752	.931, 1.103
HCR Total (pre)	.113	.031	13.64	1.120	**.000**	1.055, 1.189	.073	.021	11.706	1.076	**.001**	1.032, 1.122
HCR Total change	-.148	.050	8.65	.863	**.003**	.782, .952	.006	.039	.024	1.006	.877	.932, 1.086

N = 178; significant *p*-values bolded; pre = pre-treatment, dyn = dynamic, H = historical, C = clinical, R = risk management

Table 3.2.13

The Incremental Validity of Change Scores over Pre-Treatment Risk in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Violent						Any					
Regression Model	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.065	.029	5.12	1.067	**.024**	1.009, 1.129	.054	.012	19.38	1.055	**.000**	1.030, 1.081
VRS Static change	-12.242	587.326	.00	.000	.983	.000, infinite	-.416	1.008	.17	.660	.680	.092, 4.757
VRS Total (pre)	.079	.031	6.60	1.083	**.010**	1.019, 1.150	.060	.013	22.00	1.062	**.000**	1.036, 1.089
VRS Dyn change	-.131	.072	3.29	.877	.070	.761, 1.011	-.062	.033	3.49	.940	.062	.880, 1.003
VRS Total (pre)	.079	.031	6.63	1.083	**.010**	1.019, 1.150	.060	.013	22.00	1.062	**.000**	1.036, 1.089
VRS Total change	-.132	.072	3.37	.876	.066	.761, 1.009	-.062	.033	3.51	.940	.061	.881, 1.003
HCR Total (pre)	.074	.046	2.64	1.077	.104	.985, 1.178	.079	.020	15.54	1.082	**.000**	1.040, 1.125
HCR H change	.022	.290	.01	1.022	.940	.579, 1.806	-.094	.132	.51	.910	.477	.702, 1.180
HCR Total (pre)	.090	.047	3.61	1.094	.057	.997, 1.201	.083	.020	16.45	1.086	**.000**	1.044, 1.130
HCR C change	-.269	.120	4.99	.764	**.026**	.604, .968	-.072	.064	1.25	.931	.263	.821, 1.055
HCR Total (pre)	.088	.048	3.41	1.092	.065	.995, 1.198	.080	.020	15.24	1.083	**.000**	1.040, 1.127
HCR R change	-.247	.172	2.06	.781	.152	.558, 1.095	-.024	.072	.11	.977	.742	.849, 1.124
HCR Total (pre)	.093	.048	3.85	1.098	.050	1.000, 1.205	.083	.021	16.19	1.086	**.000**	1.043, 1.131
HCR Dyn change	-.185	.084	4.82	.831	**.028**	.705, .980	-.038	.041	.85	.963	.357	.888, 1.044
HCR Total (pre)	.093	.048	3.74	1.097	.053	.999, 1.205	.083	.021	16.37	1.087	**.000**	1.044, 1.131
HCR Total change	-.163	.080	4.15	.850	**.043**	.727, .994	-.039	.038	1.07	.961	.301	.892, 1.036

N = 178; significant *p*-values bolded; pre = pre-treatment, dyn = dynamic, H = historical, C = clinical, R = risk management

3.4.3.3 Positive community outcomes.

3.4.3.3.1 Multiple regression.

To test whether VRS change scores demonstrate incremental validity in the prediction of positive community outcomes over VRS pre-treatment total scores, hierarchical multiple regression was used. Similarly, hierarchical multiple regressions were used to examine whether HCR-20 change scores demonstrate incremental validity in the prediction of positive community outcomes over HCR-20 pre-treatment total scores.

As seen in Table 3.2.14, VRS static change score did not uniquely predict positive community outcomes total score after controlling for pre-treatment VRS total score. However, VRS dynamic and total change scores did uniquely predict positive community outcomes total scores after controlling for pre-treatment VRS total score. Similarly, the HCR-20 historical (static) change score did not uniquely predict positive community outcomes total score after controlling for pre-treatment HCR-20 total score. However, clinical, risk management, dynamic, and total change scores all uniquely predicted total positive community outcomes score, after controlling for HCR-20 pre-treatment total score.

Table 3.2.14

The Incremental Validity of Change Scores over Pre-Treatment Risk in the Prediction of Positive Community Outcomes: Hierarchical Multiple Regression

Regression Model	B	SE	β	*p*	r_{part}^2
VRS Total (pre)	-.165	.023	-.532	**.000**	.29
VRS Static change	2.377	1.885	.091	.210	.01
(constant)	14.038	1.319			
$R = .54$, $R^2 = .30$, F (2, 134) = 28.17, $p < .001$					
VRS Total (pre)	-.175	.022	-.565	**.000**	.29
VRS Dynamic change	.184	.077	.172	**.019**	.03
(constant)	13.795	1.306			
$R = .56$, $R^2 = .32$, F (2, 134) = 31.037, $p < .001$					
VRS Total (pre)	-.175	.022	-.565	**.000**	.29
VRS Total change	.186	.077	.175	**.017**	.03
(constant)	13.781	1.305			
$R = .56$, $R^2 = .32$, F (2, 134) = 31.19, $p < .001$					
HCR Total pre	-.266	.040	-.492	**.000**	.24
HCR Historical change	.545	.330	.123	.100	.02
(constant)	12.028	1.157			
$R = .51$, $R^2 = .26$, F (2, 134) = 23.18, $p < .001$					
HCR Total (pre)	-.276	.040	-.511	**.000**	.24
HCR Clinical change	.324	.148	.163	**.030**	.03
(constant)	11.639	1.162			
$R = .52$, $R^2 = .27$, F (2, 134) = 24.53, $p < .001$					
HCR Total (pre)	-.284	.041	-.525	**.000**	.24
HCR Risk Management change	.356	.178	.152	**.047**	.02
(constant)	12.155	1.153			
$R = .51$, $R^2 = .26$, F (2, 134) = 24.03, $p < .001$					
HCR Total (pre)	-.286	.040	-.529	**.000**	.24
HCR Dynamic change	.248	.097	.192	**.011**	.04
(constant)	11.817	1.144			
$R = .53$, $R^2 = .28$, F (2, 134) = 25.71, $p < .001$					
HCR Total (pre)	-.286	.040	-.528	**.000**	.24
HCR Total change	.242	.087	.206	**.006**	.04
(constant)	11.821	1.139			
$R = .53$, $R^2 = .28$, F (2, 134) = 26.45, $p < .001$					

N = 137; significant *p*-values bolded; pre = pre-treatment

3.5 Validity of Protective Factors.

3.5.1 Convergent validity.

3.5.1.1 Correlations.

To test convergent validity between scores on the PF List and scores on the SAPROF, correlation coefficients were computed. Summarized in Table 3.3.1, all scales from the SAPROF significantly correlate with the PF List at pre-treatment, post-treatment, and at release.

Table 3.3.1

Convergence Correlations between Protective Factor Scales

	PF List		SAPROF Pre				SAPROF Post				SAPROF Rel			
	Post	Rel	Int	Mot	Ext	Tot	Int	Mot	Ext	Tot	Int	Mot	Ext	Tot
PF List (pre)	.71	.57	.68	.75	.42	.73	.58	.62	.39	.64	.56	.50	.37	.56
PF List (post)		.83	.58	.62	.47	.66	.70	.76	.49	.79	.66	.66	.48	.70
PF List (rel)			.51	.59	.42	.60	.63	.71	.42	.71	.75	.80	.53	.82
SAPROF Int (pre)				.68	.58	.86	.79	.59	.54	.76	.71	.53	.56	.68
SAPROF Mot (pre)					.47	.86	.59	.80	.44	.75	.60	.69	.47	.70
SAPROF Ext (pre)						.81	.53	.41	.93	.74	.49	.40	.85	.64
SAPROF Tot (pre)							.73	.72	.76	.89	.69	.64	.74	.80
SAPROF Int (post)								.71	.50	.87	.88	.67	.53	.80
SAPROF Mot (post)									.39	.87	.69	.86	.45	.80
SAPROF Ext (post)										.75	.45	.37	.90	.63
SAPROF Tot (post)											.80	.78	.74	.90
SAPROF Int (rel)												.79	.54	.90
SAPROF Mot (rel)													.49	.91
SAPROF Ext (rel)														.76

N = 178, all $p < .001$; pre = pre-treatment, post = post-treatment, rel = at release,
Int = internal, Mot = motivational, Ext = external, Tot = total

Although the PF List currently does not have protection-level bins, the convergent validity between PF List scores and SAPROF protection categories were computed. Again, PF List scores significantly correlated with SAPROF protection categories at pre-treatment, post-treatment, and at release (see Table 3.3.2).

Table 3.3.2

Convergence Correlations between PF List total scores and SAPROF SPJ Protection Category

	SAPROF SPJ (pre)	SAPROF SPJ (post)	SAPROF SPJ (rel)
PF List total (pre)	.65	.48	.38
PF List total (post)	.46	.61	.53
PF List total (rel)	.42	.48	.66

N = 178, all $p < .001$; SPJ = structured professional judgement, pre = pre-treatment,
post = post-treatment, rel = at release

3.5.2 Predictive validity.

3.5.2.1 Community recidivism.

3.5.2.1.1 Correlations and area under the curve.

The predictive validity of the protection measures was examined with respect to violent recidivism, nonsexual violent recidivism, and any recidivism. Separate analyses were conducted to examine conviction-only recidivism (see Table 3.3.3) and all charges recidivism (see Table 3.3.4) following release into community after participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values.

All PF List and SAPROF total scores (with the exception of SAPROF external scores) were found to significantly predict violent, nonsexual violent, and any recidivism. Slightly larger correlations for the all charges analyses than the conviction-only analyses were observed. Slightly larger correlations were observed for post-treatment and at release scores over pre-treatment scores. Similarly, all total scores (with the exception of SAPROF external scores) were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined; again, with all charges analyses generating slightly larger AUC values than the conviction-only analyses. Slightly larger AUC values were observed for post-treatment and at release scores over pre-treatment scores.

Table 3.3.3

Predictive Validity of PF List and SAPROF Scores for Community Recidivism (Convictions): point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx									
PF List	-.25**	.61*	.51, .70	-.25**	.61*	.52, .70	-.34***	.68**	.57, .79
SAP Int	-.27**	.64**	.55, .73	-.27**	.64**	.55, .73	-.39***	.73***	.63, .83
SAP Mot	-.31***	.66**	.57, .75	-.32***	.67***	.58, .75	-.42***	.75***	.66, .84
SAP Ext	-.11	.56	.46, .65	-.13	.57	.48, .66	-.17*	.61	.50, .72
SAP Total	-.27**	.64**	.55, .73	-.28***	.65**	.56, .74	-.38***	.73***	.64, .83
Post-Tx									
PF List	-.27**	.66**	.57, .75	-.26**	.66**	.59, .74	-.37***	.77***	.69, .86
SAP Int	-.29***	.66**	.58, .75	-.31***	.67***	.59, .76	-.38***	.74***	.65, .83
SAP Mot	-.32***	.67***	.59, .76	-.33***	.68***	.60, .77	-.37***	.75***	.66, .84
SAP Ext	-.09	.55	.46, .65	-.12	.56	.47, .66	-.13	.59	.49, .70
SAP Total	-.28***	.65**	.57, .74	-.30***	.66**	.58, .75	-.35***	.72***	.63, .81
Rel									
PF List	-.37***	.72***	.63, .80	-.36**	.71***	.63, .79	-.42***	.79***	.70, .87
SAP Int	-.36***	.70***	.61, .78	-.37***	.70***	.62, .79	-.41***	.76***	.67, .85
SAP Mot	-.40***	.73***	.65, .81	-.41***	.73***	.65, .82	-.41***	.77***	.69, .86
SAP Ext	-.17*	.60*	.52, .69	-.20*	.62*	.53, .70	-.18*	.62*	.52, .72
SAP Total	-.37***	.71***	.63, .80	-.38***	.72***	.64, .80	-.39***	.76***	.67, .85

N = 155; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; AUCs reversed for continuity and ease of interpretation; Tx = treatment, rel = at release

Table 3.3.4

Predictive Validity of PF List and SAPROF Scores for Community Recidivism (All Charges): point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx									
PF List	-.33***	.66**	.56, .77	-.32***	.66**	.56, .77	-.31***	.66**	.54, .78
SAP Int	-.35***	.69***	.60, .79	-.35***	.69***	.60, .79	-.38***	.72***	.61, .83
SAP Mot	-.40***	.72***	.62, .81	-.40***	.72***	.63, .81	-.40***	.75***	.65, .85
SAP Ext	-.15	.59	.49, .69	-.17*	.60	.50, .70	-.14	.59	.48, .71
SAP Total	-.35***	.70***	.61, .79	-.36***	.71***	.62, .80	-.36***	.72***	.62, .83
Post-Tx									
PF List	-.33***	.72***	.63, .81	-.32***	.71***	.62, .80	-.34***	.76***	.66, .85
SAP Int	-.34***	.71***	.62, .80	-.35***	.72***	.63, .80	-.34***	.72***	.63, .82
SAP Mot	-.38***	.73***	.64, .82	-.39***	.73***	.65, .82	-.36***	.75***	.65, .84
SAP Ext	-.14	.58	.49, .68	-.16*	.60	.50, .70	-.12	.59	.47, .70
SAP Total	-.34***	.71***	.62, .80	-.36***	.72***	.64, .81	-.33***	.72***	.62, .82
Rel									
PF List	-.40***	.76***	.67, .85	-.39***	.75***	.66, .84	-.38***	.77***	.68, .87
SAP Int	-.41***	.75***	.66, .83	-.42***	.75***	.67, .84	-.38***	.76***	.66, .85
SAP Mot	-.43***	.76***	.67, .85	-.44***	.76***	.67, .85	-.40***	.78***	.68, .87
SAP Ext	-.20*	.62*	.53, .72	-.22**	.64**	.54, .73	-.18*	.62*	.51, .73
SAP Total	-.41***	.75***	.67, .84	-.42***	.76***	.68, .85	-.38***	.75***	.66, .85

N = 155; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; AUCs reversed for continuity and ease of interpretation; Tx = treatment, rel = at release

The predictive validity of the SAPROF SPJ protection categories was examined with respect to violent recidivism, nonsexual violent recidivism, and any recidivism. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values (see Table 3.3.5). All SAPROF SPJ protection ratings were found to significantly correlate with violent, nonsexual violent, and any recidivism. Slightly larger correlations for the all charges analyses than the conviction-only analyses were observed. Slightly smaller correlations were observed for post-treatment and slightly larger correlations were observed for at release in comparison to pre-treatment scores. When AUC values are examined, pre-treatment and post-treatment SAPROF SPJ protection ratings were only found to significantly predict any recidivism (convictions-only), whereas at release SAPROF SPJ protection ratings predicted all violent, nonsexual violent, and any recidivism. Again, all charges analyses generating slightly larger AUC values than the conviction-only analyses. When all charges AUC values are examined, pre-treatment and post-treatment SPJ protection ratings also predict all violent and nonsexual violent recidivism. Slightly smaller AUC values were observed for post-treatment and slightly larger AUC values were observed for at release in comparison to pre-treatment scores.

Table 3.3.5

Predictive Validity of SAPROF Protection Category for Community Recidivism: point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
SPJ Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Convictions									
SAPROF (pre)	-.25**	.59	.50, .68	-.24**	.59	.49, .68	-.38***	.66**	.55, .78
SAPROF (post)	-.17*	.58	.49, .67	-.19*	.59	.49, .68	-.27**	.64*	.53, .75
SAPROF (rel)	-.37***	.69***	.60, .77	-.38***	.69***	.61, .78	-.33***	.69**	.58, .79
All Charges									
SAPROF (pre)	-.34***	.64**	.53, .74	-.33***	.63*	.53, .73	-.39***	.67**	.55, .80
SAPROF (post)	-.22**	.61*	.51, .71	-.24**	.62*	.52, .72	-.27**	.65*	.53, .77
SAPROF (rel)	-.37***	.69***	.60, .79	-.38***	.70***	.60, .79	-.33***	.69**	.58, .80

N = 155; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; AUCs reversed for continuity and ease of interpretation; pre = pre-treatment, post = post-treatment, rel = at release

3.5.2.1.2 Kaplan-Meier survival analysis.

Survival graphs were created for the SAPROF (pre-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.1 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 128) was significantly higher than the moderate-protection group (n = 24), Log Rank χ^2 (1) = 5.322, p = .021. The failure rate for the high-protection (n = 3) group was not significantly different than the low-protection group, Log Rank χ^2 (1) = 3.453, p = .063. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection group, Log Rank χ^2 (1) = 7.791, p = .005. Figure 3.3.2 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's pre-treatment SPJ protection levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the moderate-protection group, Log Rank χ^2 (1) = 5.265, *p* = .022. The failure rate of the high-protection group was not significantly different than the low-protection group, Log Rank χ^2 (1) = 3.453, *p* = .063. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection group, Log Rank χ^2 (1) = 7.729, *p* = .005.Lastly, Figure 3.3.3 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (pre-treatment) SPJ protection groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 7.941, *p* = .005 and Log Rank χ^2 (1) = 5.991, *p* = .014. None of offenders in the high-protection group had a documented reconviction.

Figure 3.3.1
Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Pre-Treatment Protection Category (Convictions)

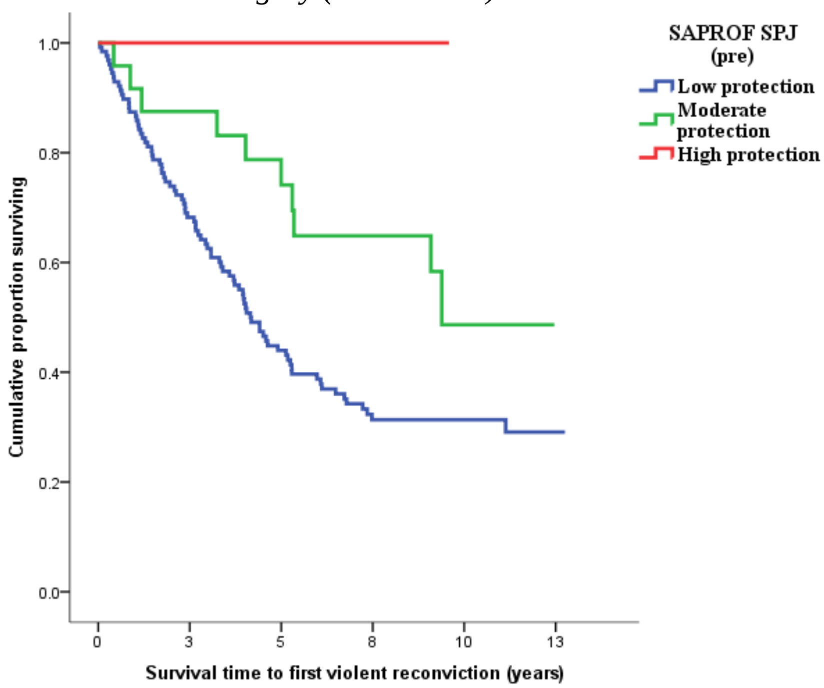


Figure 3.3.2

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Pre-Treatment Protection Category (Convictions)

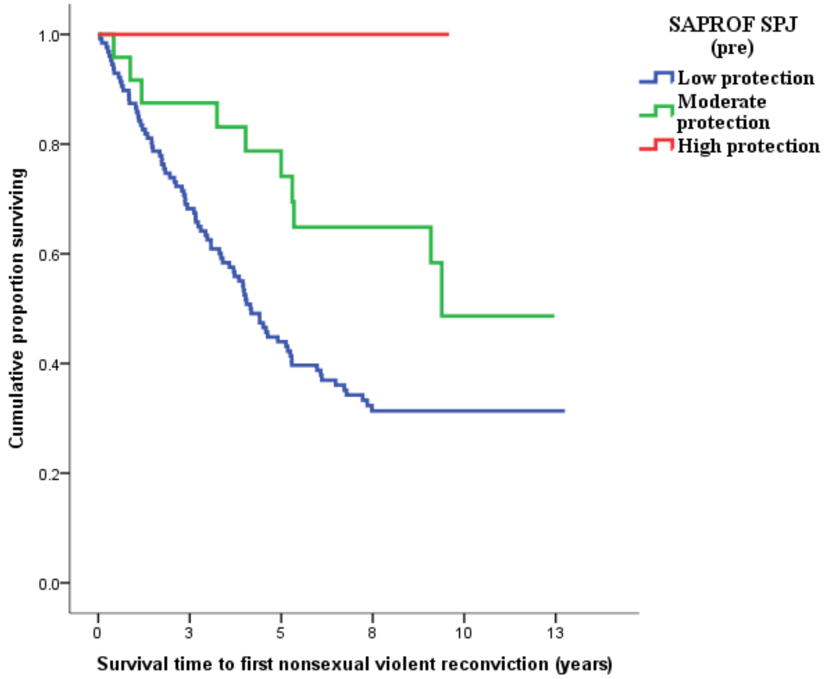
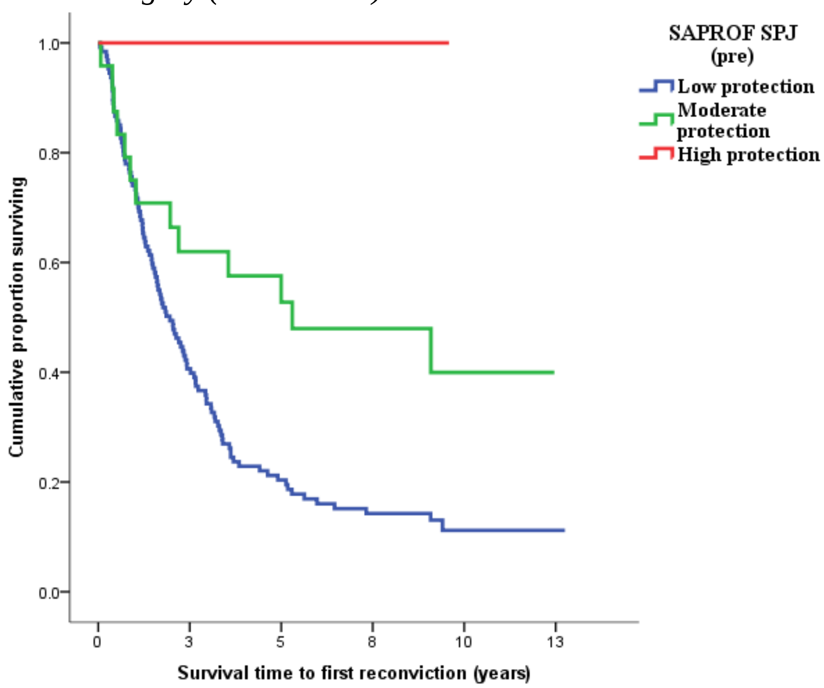


Figure 3.3.3

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Pre-Treatment Protection Category (Convictions)



Survival graphs were created for the SAPROF (post-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.4 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 92) was not significantly different than the moderate-protection (n = 60) and high-protection (n = 3) groups, Log Rank χ^2 (1) = 3.490, p = .062 and Log Rank χ^2 (1) = 3.450, p = .063, respectively. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection group, Log Rank χ^2 (1) = 4.826, p = .028. Figure 3.3.5 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's post-treatment SPJ protection levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the moderate-protection group, Log Rank χ^2 (1) = 4.066, p = .044. The failure rate of the high-protection group was not significantly different than the low-protection group, Log Rank χ^2 (1) = 3.450, p = .063. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection group, Log Rank χ^2 (1) = 5.506, p = .019. Lastly, Figure 3.3.6 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF SPJ protection groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the high-protection groups, Log Rank χ^2 (1) = 5.939, p = .015. The failure rate of the moderate-protection group was not significantly different from the low-protection group, Log Rank χ^2 (1) = 3.421, p = .064. However, when the moderate-protection and high-protection groups are merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection group, Log Rank χ^2 (1) = 5.420, p = .020. None of the offenders in the high-protection group had a documented reconviction.

Figure 3.3.4

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Post-Treatment Protection Category (Convictions)

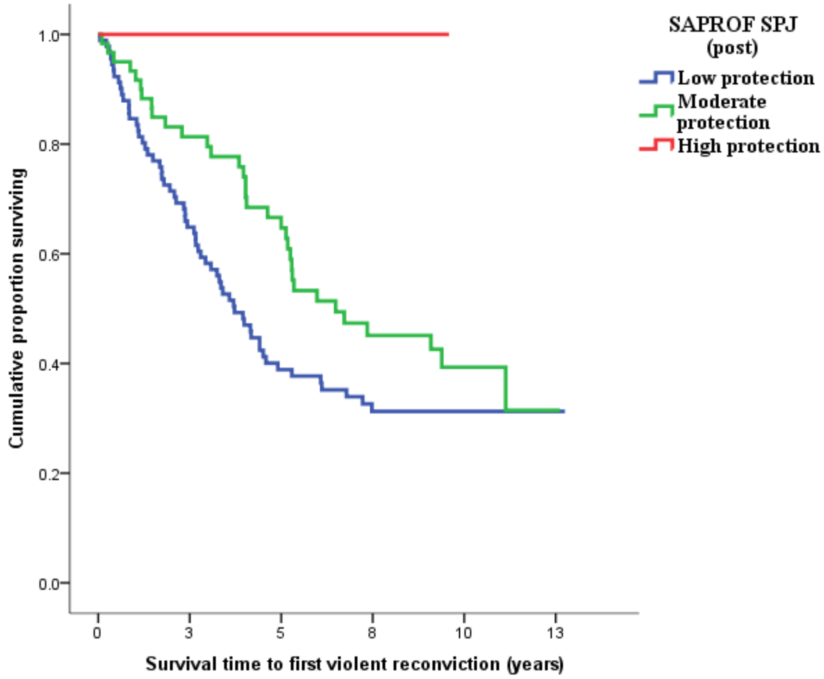


Figure 3.3.5

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Post-Treatment Protection Category (Convictions)

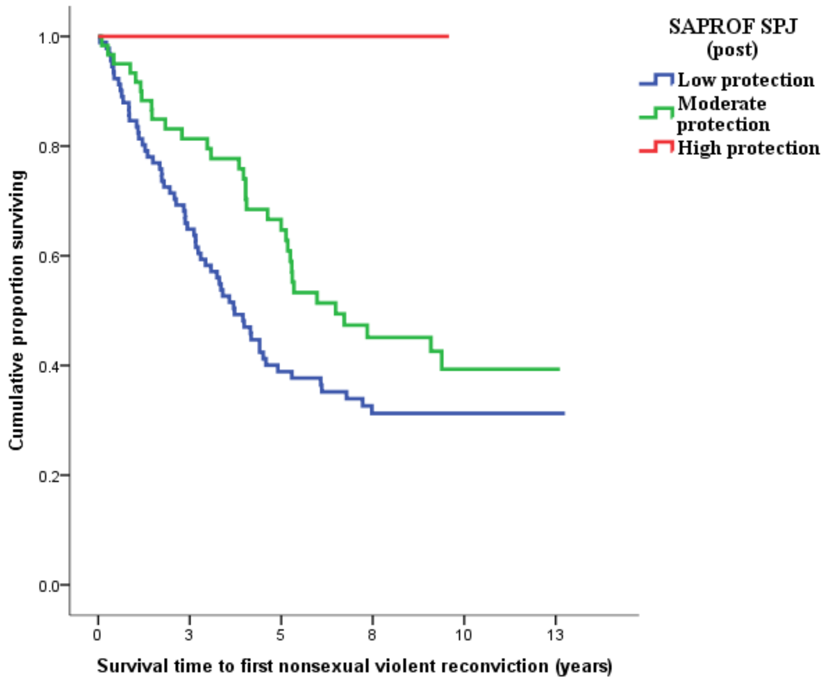
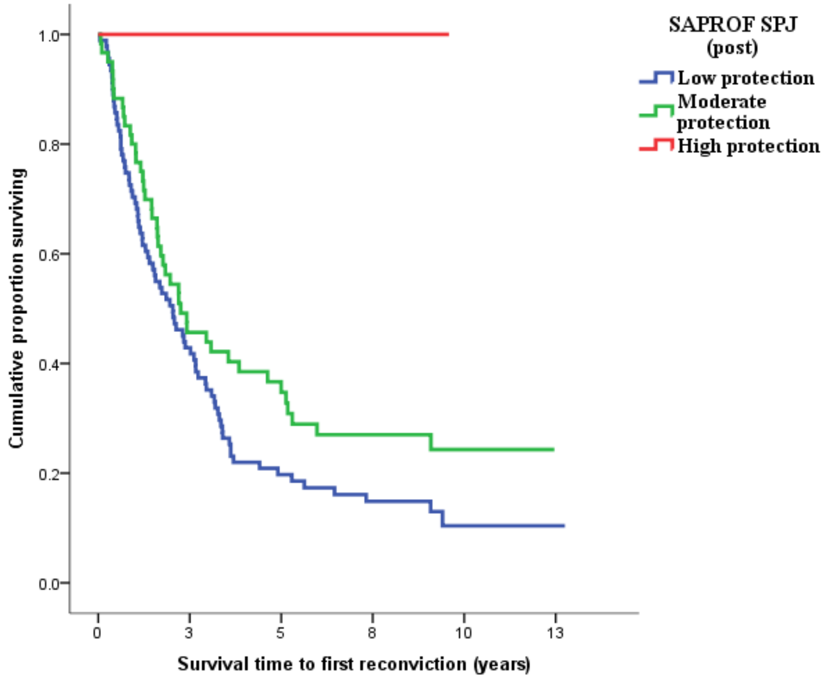


Figure 3.3.6

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Post-Treatment Protection Category (Convictions)



Survival graphs were created for the SAPROF (at release) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.7 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 74) was significantly higher than the moderate-protection (n = 74) and high-protection (n = 7) groups, Log Rank χ^2 (1) = 16.920, p = .000 and Log Rank χ^2 (1) = 9.200, p = .002, respectively. Figure 3.3.8 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (at release) SPJ protection levels in relation to nonsexual, violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than both the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 17.82, p = .000 and Log Rank χ^2 (1) = 9.200, p = .002, respectively. Lastly, Figure 3.3.9 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (at release) SPJ protection groups in relation to any reoffending (convictions-only). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rates than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 8.461, p = .004 and Log Rank χ^2 (1) = 9.175, p = .002. None of the offenders in the high-protection group had a documented violent reconviction.

Figure 3.3.7

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Protection Category at Release (Convictions)

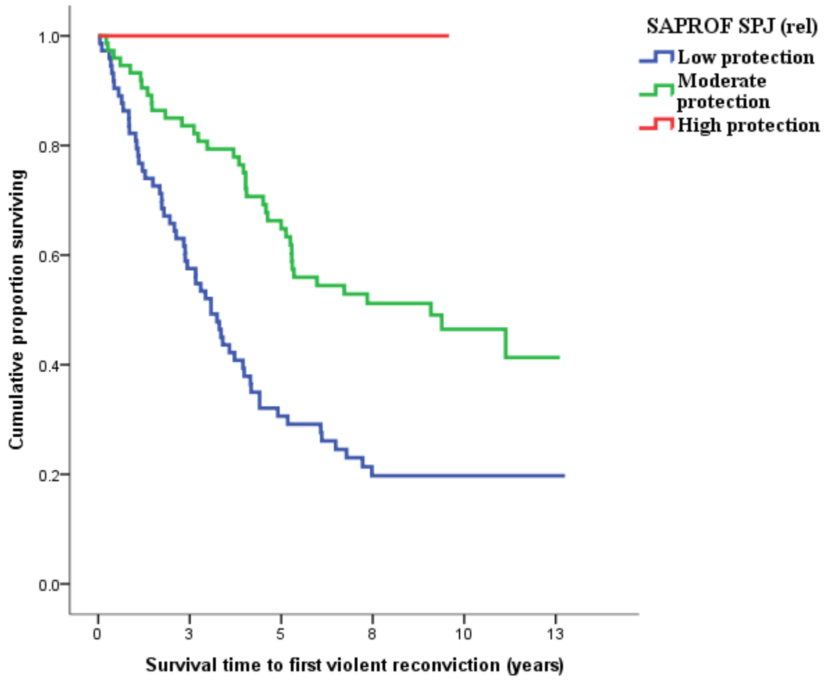


Figure 3.3.8

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Protection Category at Release (Convictions).

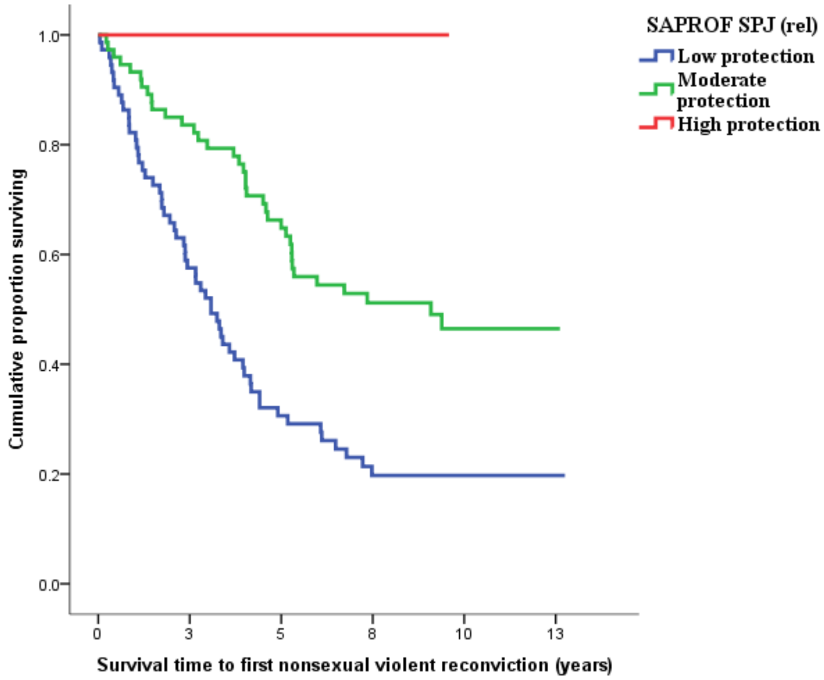
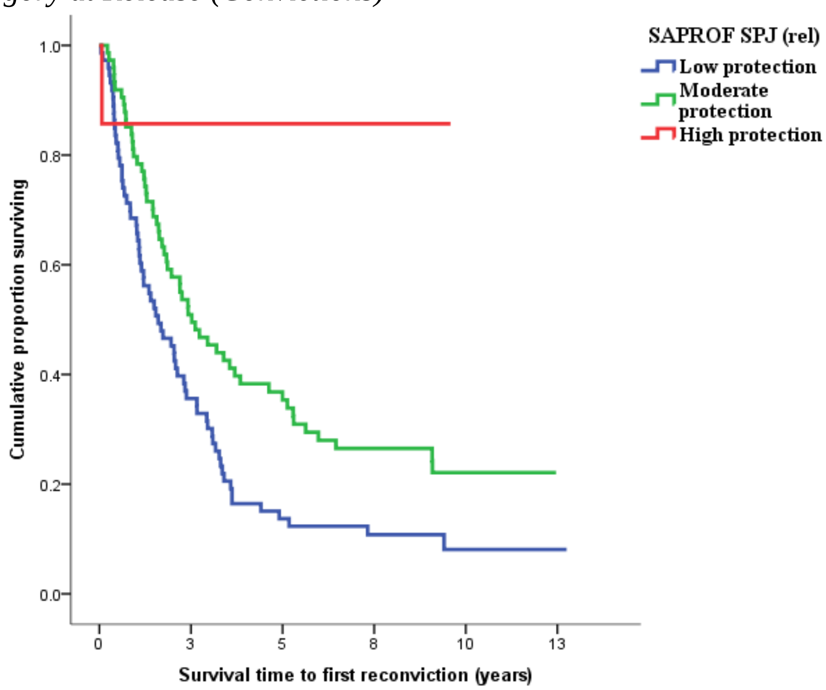


Figure 3.3.9

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Protection Category at Release (Convictions)



Survival graphs were created for the SAPROF (pre-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.10 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 128) was significantly higher than the moderate-protection (n = 24) and high-protection (n = 3) groups, Log Rank χ^2 (1) = 8.968, p = .003 and Log Rank χ^2 (1) = 4.813, p = .028, respectively. Figure 3.3.11 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (pre-treatment) SPJ protection levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 8.968, p = .003 and Log Rank χ^2 (1) = 4.813, p = .028, respectively. Lastly, Figure 3.3.12 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (pre-treatment) SPJ protection groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 8.155, p = .004 and Log Rank χ^2 (1) = 6.436, p = .011. None of the offenders in the high-protection group had a documented reconviction.

Figure 3.3.10

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Pre-Treatment Protection Category (All Charges)

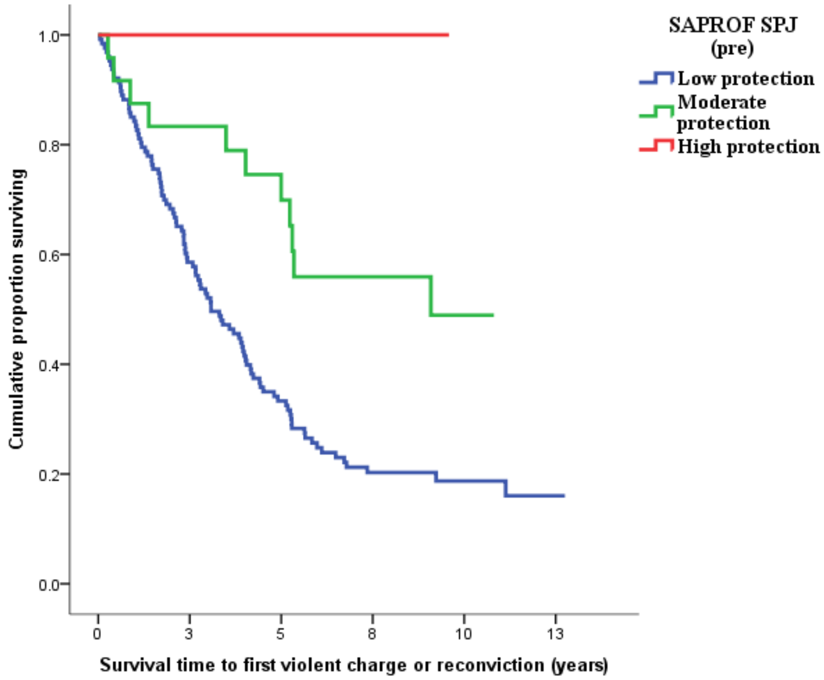


Figure 3.3.11

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Pre-Treatment Protection Category (All Charges)

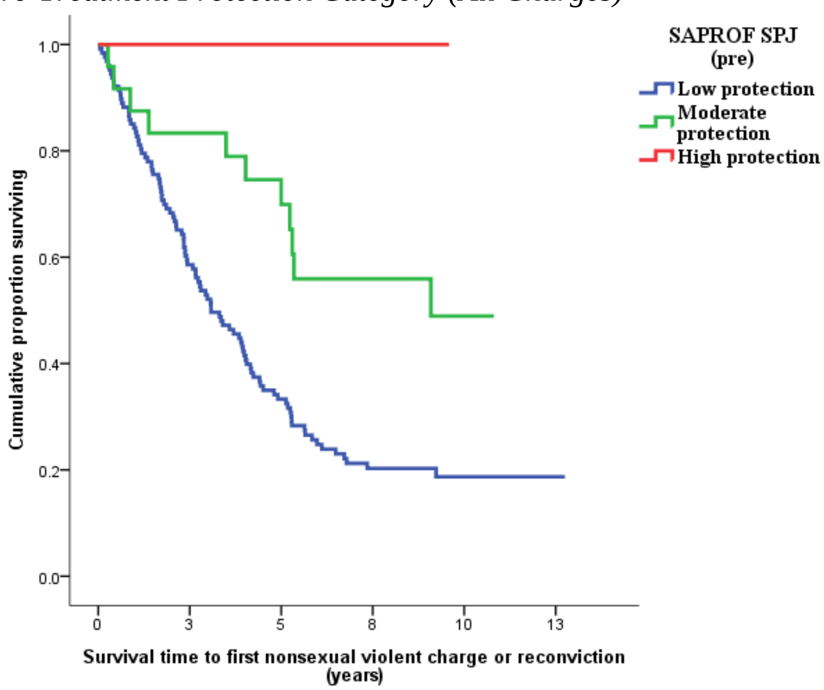
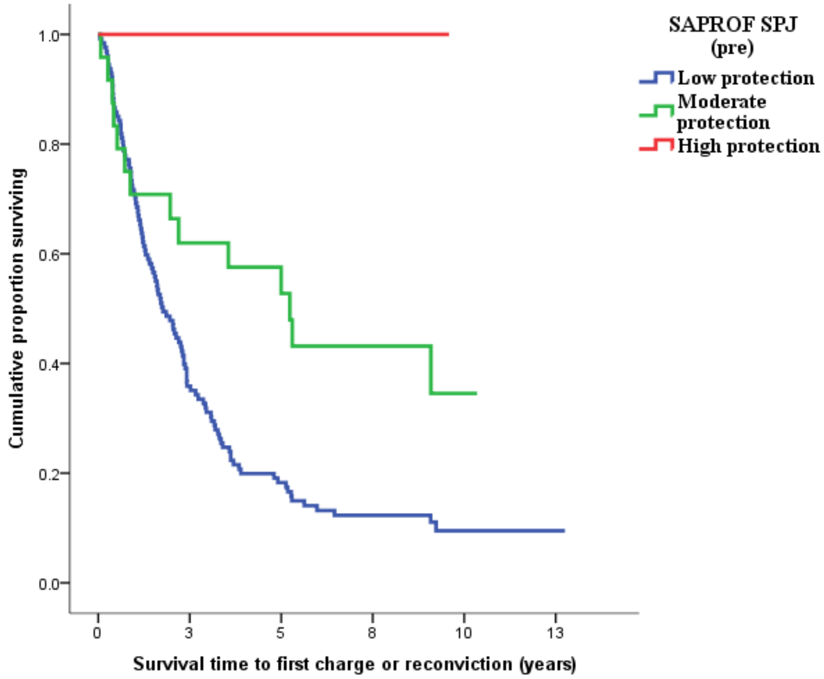


Figure 3.3.12

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Pre-Treatment Protection Category (All Charges)



Survival graphs were created for the SAPROF (post-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.13 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 128) was significantly higher than the moderate-protection (n = 24) and high-protection (n = 3) groups, Log Rank χ^2 (1) = 5.693, p = .017 and Log Rank χ^2 (1) = 4.711, p = .030, respectively. Figure 3.3.14 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (post-treatment) SPJ protection levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 6.282, p = .012 and Log Rank χ^2 (1) = 4.711, p = .030, respectively. Lastly, Figure 3.3.15 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (post-treatment) SPJ protection groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 3.997, p = .046 and Log Rank χ^2 (1) = 6.496, p = .011. None of the offenders in the high-protection group had a documented reconviction.

Figure 3.3.13

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Post-Treatment Protection Category (All Charges)

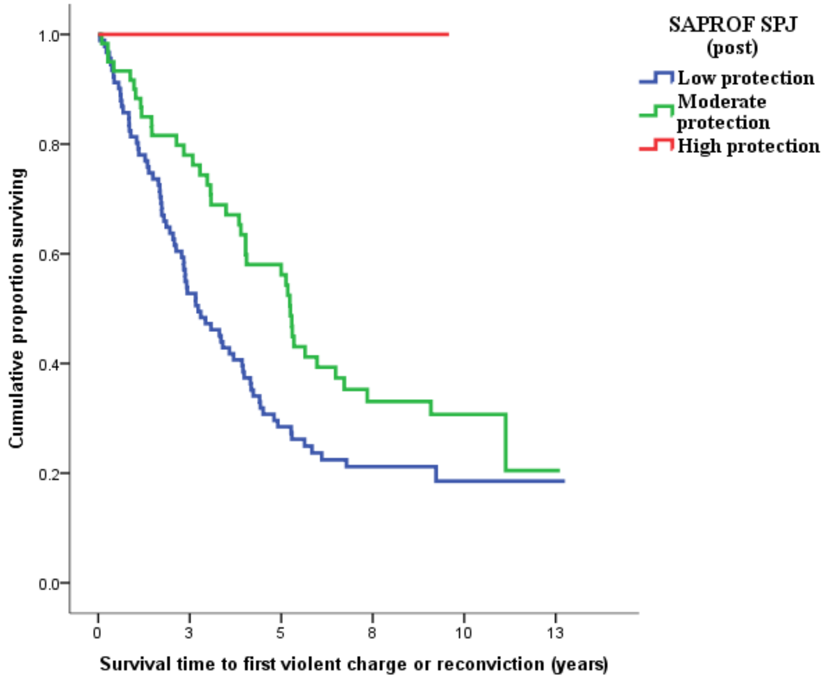


Figure 3.3.14

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Post-Treatment Protection Category (All Charges)

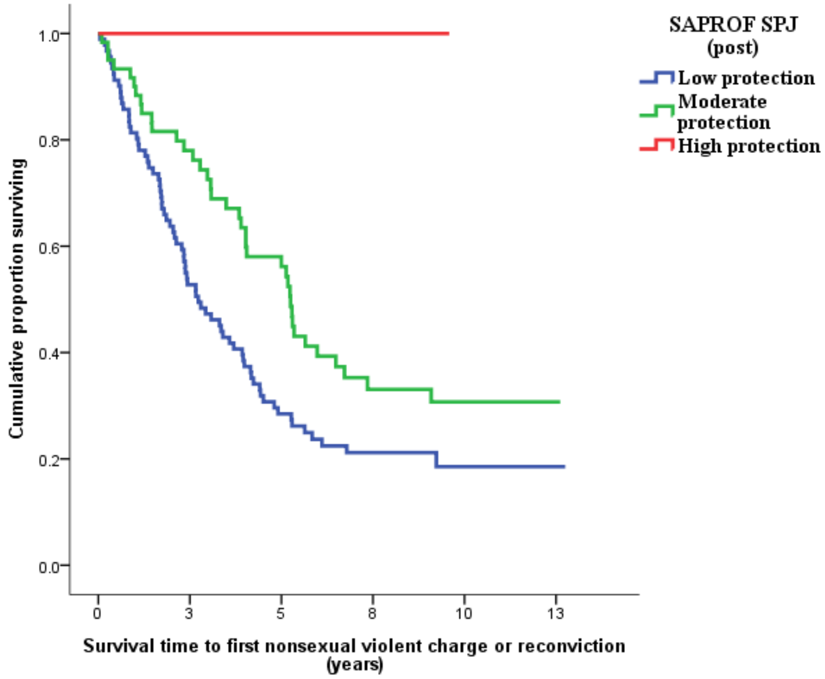
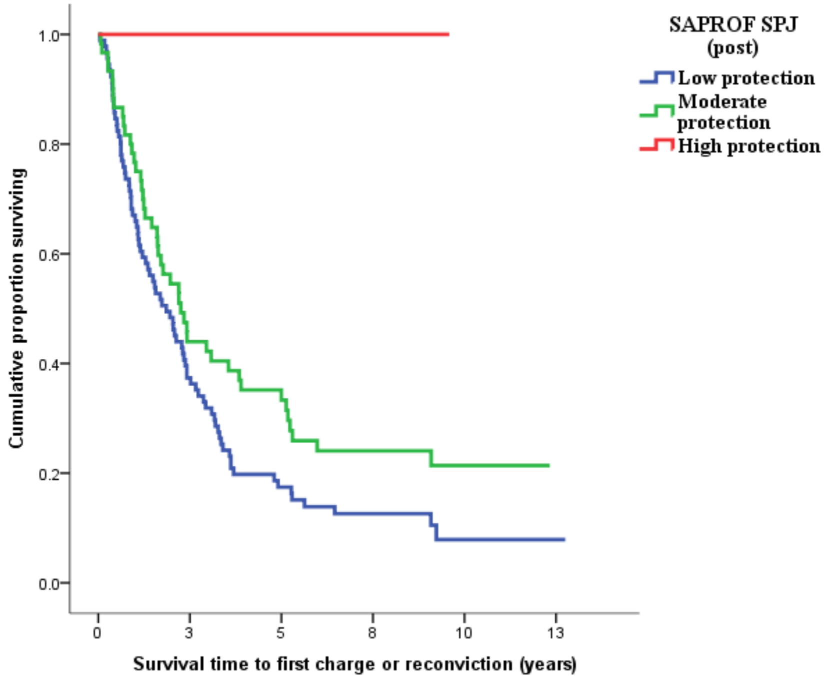


Figure 3.3.15

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Post-Treatment Protection Category (All Charges)



Survival graphs were created for the SAPROF (at release) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.16 shows the cumulative proportion of offenders surviving over the follow-up period for each protection rating on the SAPROF in relation to all violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group (n = 74) was significantly higher than the moderate-protection (n = 74) and high-protection (n = 7) groups, Log Rank χ^2 (1) = 14.381, p = .000 and Log Rank χ^2 (1) = 11.413, p = .001, respectively. Figure 3.3.17 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (at release) SPJ protection levels in relation to nonsexual, violent reoffending (all charges). Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than both moderate-protection and high-protection groups, Log Rank χ^2 (1) = 15.169, p = .000 and Log Rank χ^2 (1) = 11.413, p = .001, respectively. Lastly, Figure 3.3.18 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (at release) SPJ protection groups in relation to any reoffending (all charges). Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 8.117, p = .004 and Log Rank χ^2 (1) = 9.803, p = .002. None of the offenders in the high-protection group had a documented violent charge or reconviction.

Figure 3.3.16

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF SPJ Protection Category at Release (All Charges)

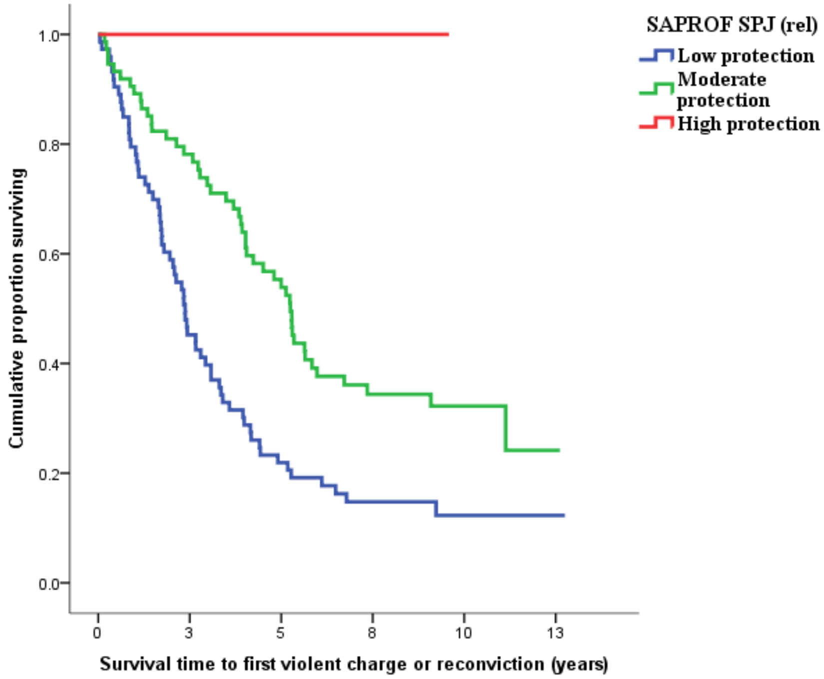


Figure 3.3.17

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF SPJ Protection Category at Release (All Charges)

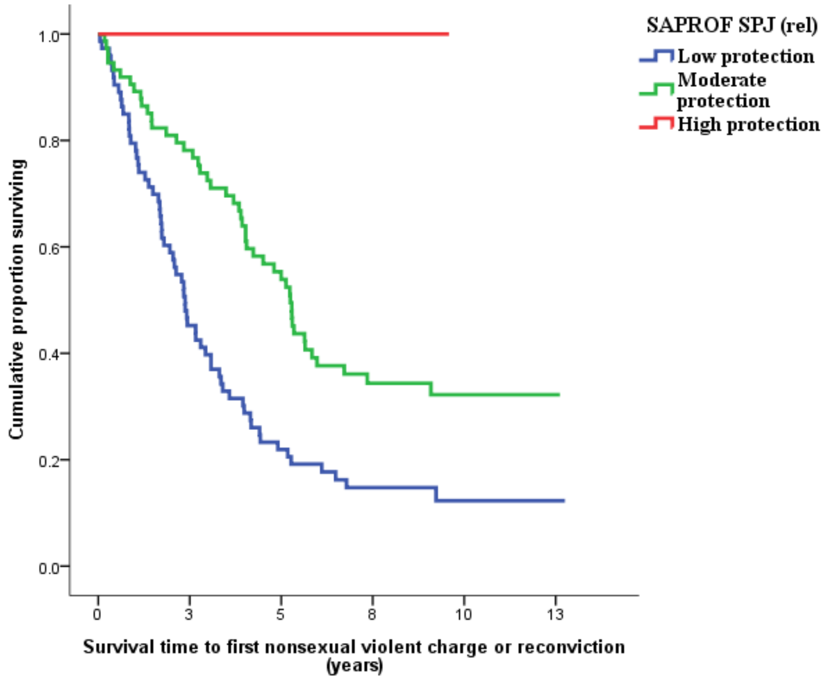
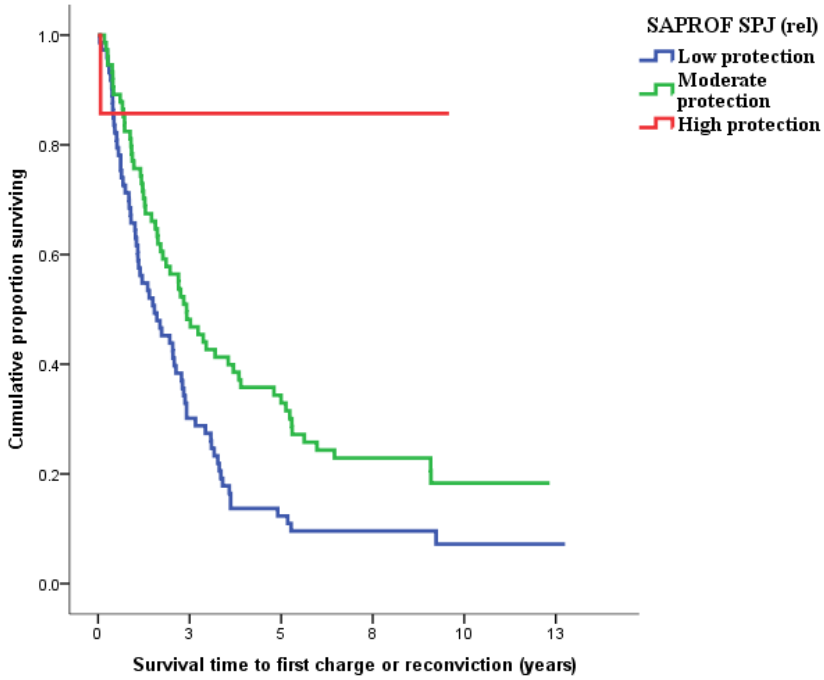


Figure 3.3.18

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF SPJ Protection Category at Release (All Charges)



3.5.2.2 Institutional recidivism.

3.5.2.2.1 Correlations and area under the curve.

The predictive validity of the protection measures was examined with respect to major, minor, violent, and any institutional recidivism (i.e., institutional misconduct) following participation in the ABC program. Separate analyses were conducted to examine institutional recidivism with no minimum follow-up, a one week minimum follow-up, and a one month minimum follow-up. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. Point-biserial correlations revealed sporadic small correlations with institutional recidivism when no minimum follow-up was examined (see Table 3.3.6). PF List (post-treatment) and SAPROF motivational (both pre- and post-treatment) scores had small negative correlations with major institutional misconducts. Similarly, AUC values identified sporadic significant predictors of institutional recidivism by the protections measures when no minimum follow-up was examined. Post-treatment PF List and SAPROF motivational scores had significant AUC values for major institutional misconducts only. None of the measures significantly predicted minor, violent, and any institutional misconducts.

Table 3.3.6
Predictive Validity of the PF List and SAPROF Scores for Institutional Recidivism: point-biserial correlations and AUCs

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
PF List	-.07	.53	.44, .62	-.03	.50	.42, .59	-.02	.47	.37, .58	-.05	.52	.43, .60
SAPROF Int	-.08	.55	.45, .64	-.02	.49	.41, .58	-.01	.47	.36, .58	-.07	.53	.44, .61
SAPROF Mot	-.15*	*.58*	.49, .67	-.05	.50	.42, .59	-.12	.59	.47, .71	-.06	.51	.43, .60
SAPROF Ext	-.00	.49	.40, .58	.01	.49	.41, .58	.07	.43	.32, .54	-.01	.50	.42, .59
SAPROF Total	-.10	.55	.46, .64	-.03	.50	.41, .59	-.03	.50	.38, .62	-.05	.52	.43, .60
Post-Tx												
PF List	-.19*	.62*	.53, .70	-.06	.53	.45, .62	-.06	.54	.41, .66	-.09	.55	.46, .63
SAPROF Int	*-.13*	.57	.48, .67	-.04	.51	.43, .60	-.05	.52	.40, .65	-.09	.54	.45, .62
SAPROF Mot	-.17*	.60*	.51, .68	.01	.49	.41, .58	-.05	.52	.41, .64	-.02	.51	.42, .59
SAPROF Ext	-.04	.52	.43, .61	-.06	.54	.45, .62	.03	.47	.34, .59	-.07	.55	.46, .63
SAPROF Total	*-.14*	.57	.47, .66	-.03	.51	.42, .59	-.03	.49	.37, .61	-.07	.53	.44, .61

N = 178; *italicized* = $p < .10$, * = $p < .05$; AUCs reversed for continuity and ease of interpretation; Tx = treatment, Int = internal, Mot = motivational; Ext = external

Using a minimum of one week (see Table 3.3.7) and one month (see Table 3.3.8) follow-up, a similar pattern of significant point-biserial correlations with institutional recidivism were revealed. PF List (post-treatment), SAPROF internal (post-treatment), SAPROF motivational (pre- and post-treatment), and SAPROF total (post-treatment) scores predicted major institutional misconducts. PF List (post-treatment) and SAPROF motivational (both pre- and post-treatment) scores also had significant AUCs for major institutional misconducts. None of the measures significantly predicted minor, violent, or any institutional recidivism.

Table 3.3.7

Predictive Validity of the PF List and SAPROF Scores for Institutional Recidivism: point-biserial correlations and AUCs (one week minimum follow-up)

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
PF List	-.10	.54	.45, .63	-.06	.52	.43, .61	-.04	.48	.37, .59	-.09	.53	.44, .63
SAPROF Int	-.11	.56	.47, .65	-.06	.51	.42, .60	-.02	.48	.37, .59	-.11	.55	.46, .64
SAPROF Mot	-.18*	.60*	.51, .69	-.10	.53	.44, .62	*-.14*	.60	.48, .72	-.11	.54	.45, .63
SAPROF Ext	-.02	.50	.41, .59	-.01	.51	.42, .60	.06	.44	.33, .55	-.03	.52	.42, .61
SAPROF Total	-.12	.56	.47, .66	-.07	.52	.43, .61	-.04	.51	.40, .63	-.10	.54	.45, .63
Post-Tx												
PF List	-.21**	.62*	.53, .71	-.08	.54	.45, .63	-.07	.54	.42, .66	-.12	.56	.47, .65
SAPROF Int	-.16*	*.59*	.50, .68	-.08	.54	.45, .62	-.07	.54	.42, .66	*-.14*	.57	.48, .66
SAPROF Mot	-.20**	.61*	.52, .70	-.03	.51	.42, .60	-.06	.53	.42, .65	-.06	.53	.44, .62
SAPROF Ext	-.04	.52	.43, .61	-.07	.54	.45, .63	.03	.47	.34, .59	-.08	.55	.46, .64
SAPROF Total	-.17*	*.58*	.49, .67	-.07	.52	.43, .61	-.04	.51	.39, .62	-.11	.55	.46, .64

N = 164; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$; AUCs reversed for continuity and ease of interpretation; Tx = treatment, Int = internal, Mot = motivational, Ext = external

Table 3.3.8

Predictive Validity of the PF List and SAPROF Scores for Institutional Recidivism: point-biserial correlations and AUCs (one month minimum follow-up)

	Major			Minor			Violent			Any		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Pre-Tx												
PF List	-.09	.53	.44, .63	-.05	.50	.41, .60	-.03	.47	.37, .58	-.08	.52	.43, .62
SAPROF Int	-.12	.57	.47, .66	-.07	.52	.43, .61	-.02	.79	.38, .60	-.13	.56	.47, .65
SAPROF Mot	-.19*	.60*	.51, .69	-.11	.53	.44, .62	*-.14*	.60	.48, .72	-.13	.54	.45, .64
SAPROF Ext	-.02	.50	.41, .59	-.02	.51	.42, .60	.06	.44	.33, .55	-.04	.52	.43, .62
SAPROF Total	*-.14*	.57	.48, .66	-.08	.53	.44, .62	-.05	.52	.40, .63	-.12	.55	.46, .64
Post-Tx												
PF List	-.19*	.61*	.52, .71	-.05	.52	.43, .62	-.06	.53	.40, .65	-.09	.54	.45, .64
SAPROF Int	-.17*	*.60*	.50, .69	-.09	.54	.45, .63	-.07	.54	.41, .66	*-.15*	.57	.48, .67
SAPROF Mot	-.21**	.61*	.52, .70	-.03	.51	.41, .60	-.06	.53	.42, .65	-.07	.53	.44, .62
SAPROF Ext	-.05	.52	.43, .62	-.07	.55	.45, .64	.03	.47	.35, .59	-.09	.55	.46, .65
SAPROF Total	-.17*	*.58*	.49, .68	-.07	.53	.44, .62	-.04	.51	.39, .63	-.12	.55	.46, .65

N = 157; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$; AUCs reversed for continuity and ease of interpretation; Tx = treatment, Int = internal, Mot = motivational, Ext = external

The predictive validity of the SAPROF protection categories was examined with respect to major, minor, violent, and any institutional recidivism. Separate analyses were conducted to examine one week, one month, and no minimum follow-up (summarized in Table 3.3.9) following participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. None of the protection ratings were found to significantly predict institutional recidivism.

Table 3.3.9
Predictive Validity of SAPROF SPJ Protection Category for Institutional Recidivism: point-biserial correlations and AUCs

	Major			Minor			Violent			Any		
Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
No minimum[a]												
SAPROF (pre)	-.02	.50	.41, .59	-.05	.51	.42, .59	-.05	.53	.40, .65	-.04	.50	.42, .59
SAPROF (post)	-.03	.51	.42, .60	-.02	.50	.41, .59	-.05	.53	.40, .66	-.03	.50	.42, .59
One week[b]												
SAPROF (pre)	-.05	.51	.42, .61	-.09	.53	.44, .62	-.07	.54	.41, .66	-.09	.52	.43, .61
SAPROF (post)	-.05	.52	.43, .61	-.05	.51	.42, .60	-.06	.54	.41, .66	-.06	.52	.43, .61
One month[c]												
SAPROF (pre)	-.07	.52	.43, .61	-.12	.54	.45, .63	-.08	.54	.42, .67	-.12	.53	.44, .63
SAPROF (post)	-.05	.52	.43, .62	-.05	.51	.42, .61	-.06	.54	.41, .66	-.06	.52	.42, .61

[a] N = 178, [b] N = 164, [c] N = 157; All p-values not significant; AUCs reversed for continuity and ease of interpretation; pre = pre-treatment, post = post-treatment

3.5.2.2.2 Kaplan-Meier survival analysis.

Survival graphs were created for the SAPROF (pre-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.19 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ protection rating on the SAPROF in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group (n = 146) was not significantly different from the moderate-protection (n = 3) and high-protection (n = 29) groups, Log Rank χ^2 (1) = 1.351, p = .245 and Log Rank χ^2 (1) = 1.734, p = .188, respectively. Similarly, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the merged moderate/high-protection group, Log Rank χ^2 (1) = 2.210, p = .137. Figure 3.3.20 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (pre-treatment) SPJ protection levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the moderate-protection group, Log Rank χ^2 (1) = 3.868, p = .049. The failure rate of the high-protection group was not significantly different than the low-protection group, Log Rank χ^2 (1) = 3.574, p = .059. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was significantly higher than the merged moderate/high-protection, Log Rank χ^2 (1) = 5.895, p = .015. Figure 3.3.21 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (pre-treatment) SPJ protection levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group was not significantly shorter than both moderate-protection and high-protection groups, Log Rank χ^2 (1) = 1.243, p = .265 and Log Rank χ^2 (1) = .661, p = .416, respectively. Similarly, when the moderate-protection and high-protection groups are merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly shorter than the merged moderate/high-protection group, Log Rank χ^2 (1) = 1.663, p = .197. Lastly, Figure 3.3.22 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF (pre-treatment) SPJ protection groups in relation to any institutional misconducts. Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = 4.254, p = .039 and Log Rank χ^2 (1) = 4.316, p = .038. None of the offenders in the high-protection group had a new documented institutional misconduct.

Figure 3.3.19

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Pre-Treatment SPJ Protection Category (Major Misconduct)

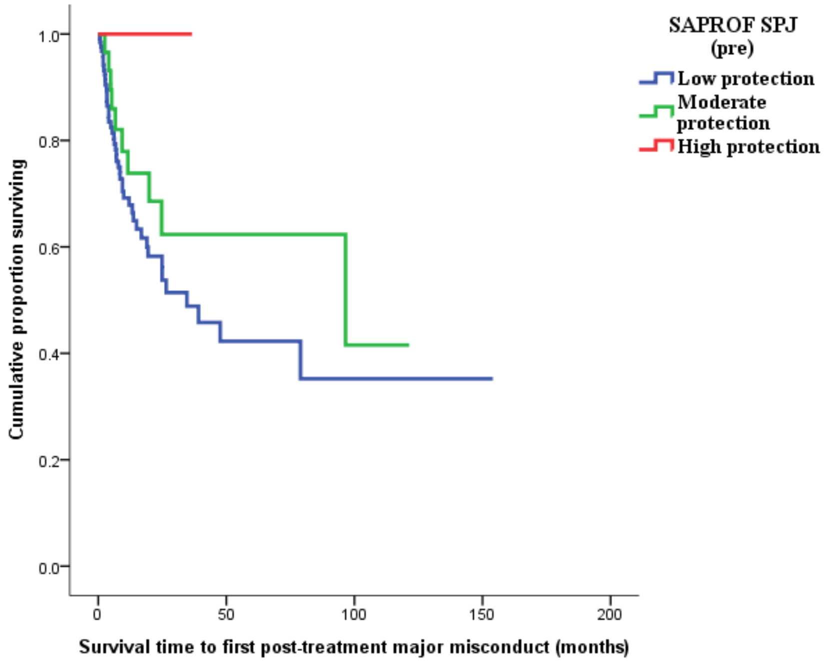


Figure 3.3.20

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Pre-Treatment SPJ Protection Category (Minor Misconduct)

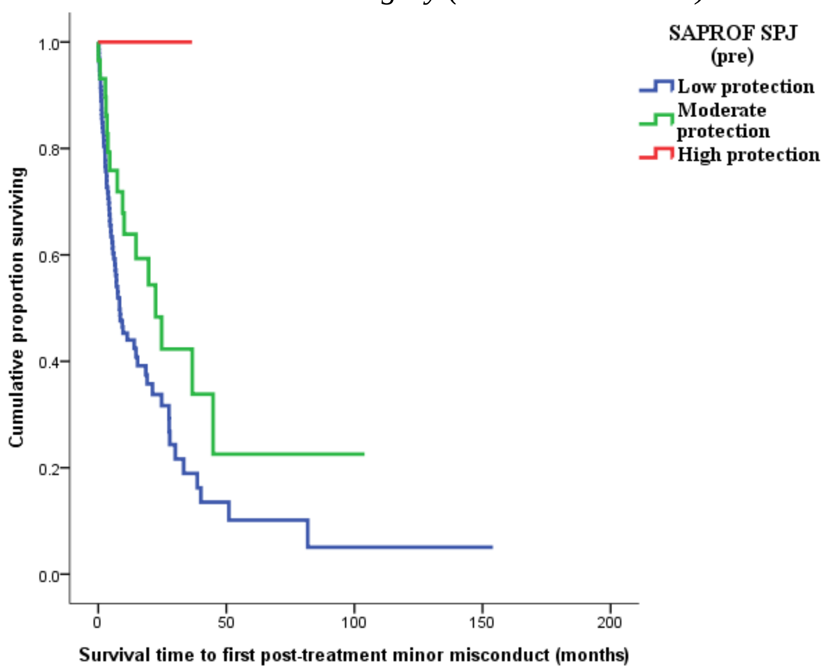


Figure 3.3.21

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Pre-Treatment SPJ Protection Category (Violent Misconduct)

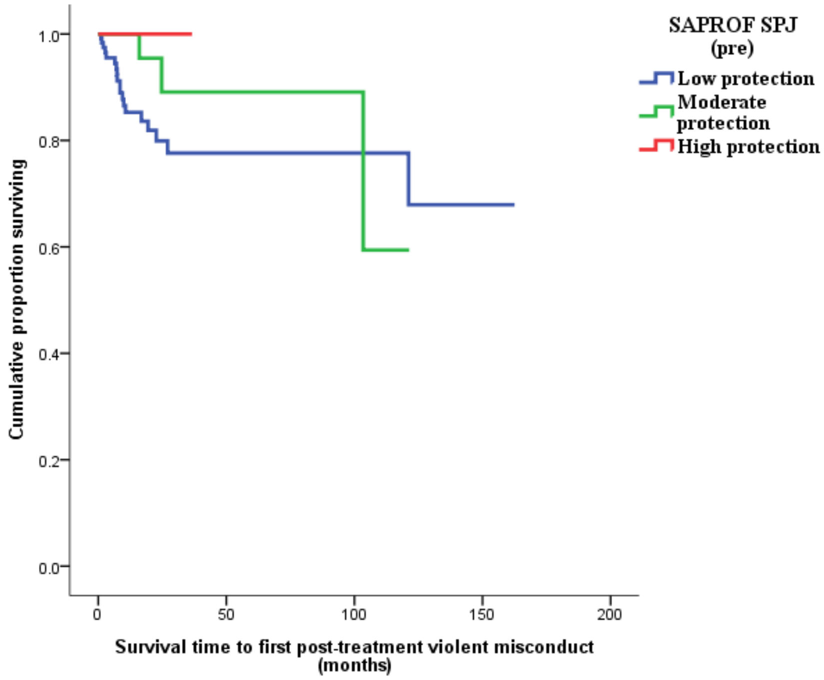
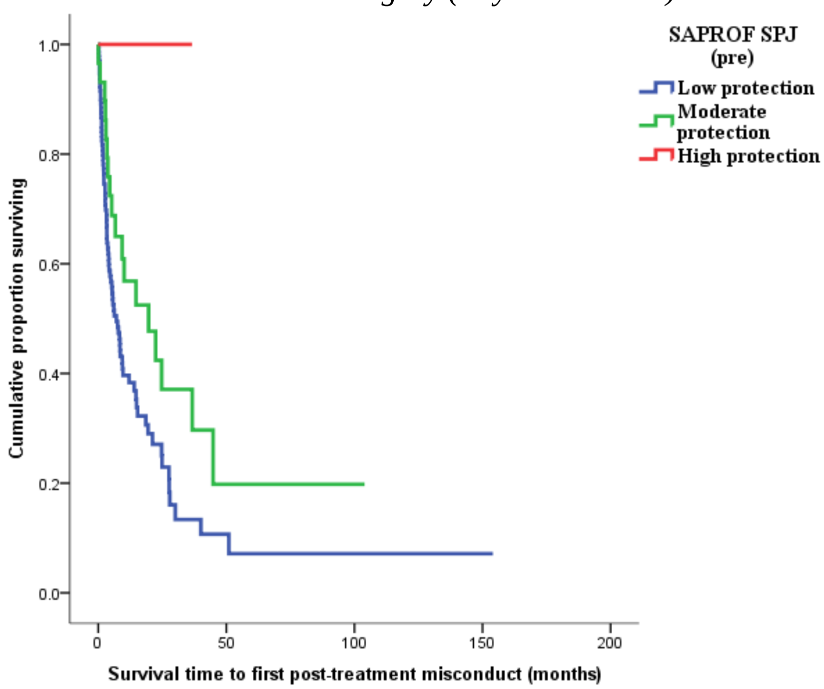


Figure 3.3.22

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Pre-Treatment SPJ Protection Category (Any Misconduct)



Survival graphs were created for the SAPROF (post-treatment) as offenders were SPJ rated as low, moderate, or high protection against violence; thus, statistical comparisons were made among individual survival curves. Figure 3.3.23 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ risk rating on the SAPROF in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group (n = 105) was not significantly different from the moderate-protection (n = 70) and high-protection (n = 3) groups, Log Rank χ^2 (1) = .660, p = .417 and Log Rank χ^2 (1) = 1.579, p = .209, respectively. Similarly, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the merged moderate/high-protection group, Log Rank χ^2 (1) = 1.078, p = .299. Figure 3.3.24 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (post-treatment) SPJ protection risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than both moderate-protection and high-protection groups, Log Rank χ^2 (1) = .676, p = .441 and Log Rank χ^2 (1) = 3.280, p = .070, respectively. Similarly, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the merged moderate/high-protection group, Log Rank χ^2 (1) = 1.338, p = .247. Figure 3.3.25 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF's (post-treatment) SPJ protection levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the moderate-protection and high-protection groups, Log Rank χ^2 (1) = .475, p = .491 and Log Rank χ^2 (1) = .660, p = .417, respectively. Similarly, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the merged moderate/high-protection group, Log Rank χ^2 (1) = .669, p = .413. Lastly, Figure 3.3.26 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF's (post-treatment) SPJ protection groups in relation to any institutional misconducts. Pairwise comparisons revealed that the low-protection group had a significantly higher failure rate than the high-protection group, Log Rank χ^2 (1) = 3.938, p = .047. The failure rate of the moderate-protection group was not significantly different than the low-protection group, Log Rank χ^2 (1) = 1.606, *p* = .205. However, when the moderate-protection and high-protection groups were merged, pairwise comparisons revealed that the failure rate for the low-protection group was not significantly different than the merged moderate/high-protection group, Log Rank χ^2 (1) = 2.667, *p* = .102. None of the offenders in the high-protection group had a new documented institutional misconduct.

Figure 3.3.23
Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Post-Treatment SPJ Protection Category (Major Misconduct)

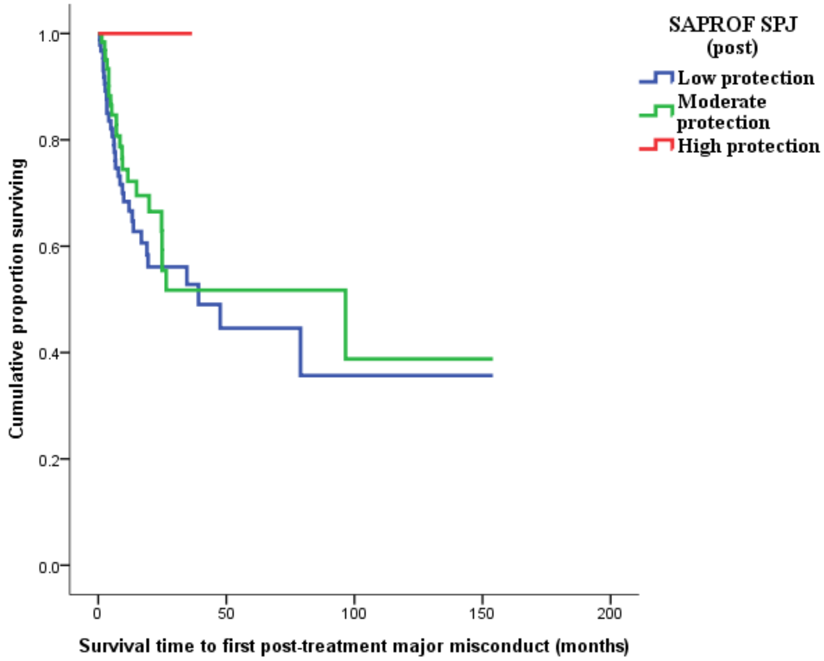


Figure 3.3.24

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Post-Treatment SPJ Protection Category (Minor Misconduct)

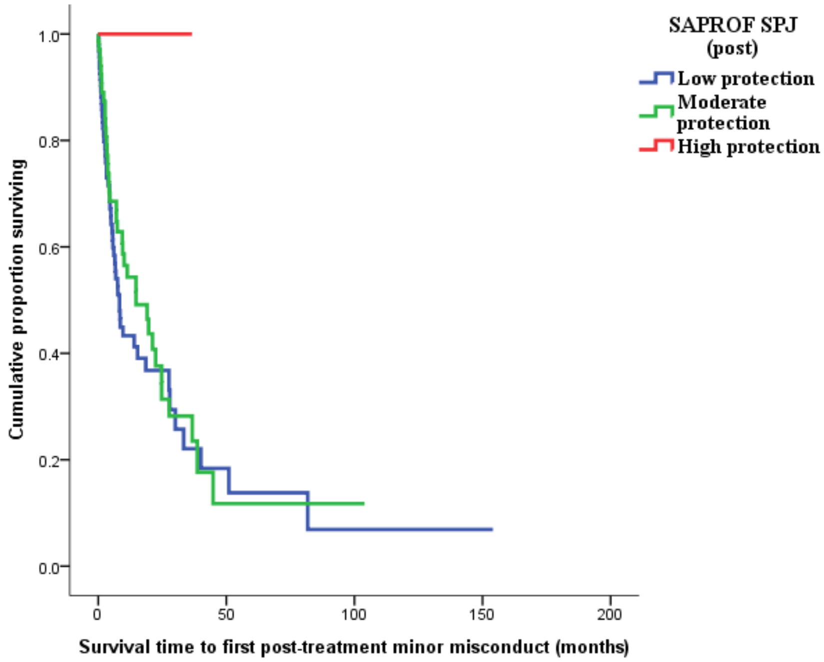


Figure 3.3.25

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Post-Treatment SPJ Protection Category (Violent Misconduct)

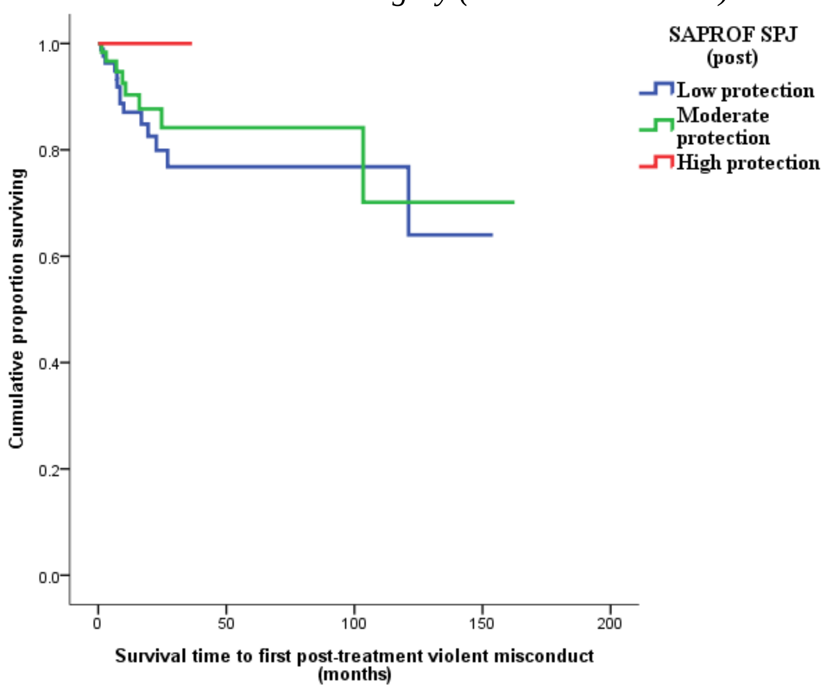
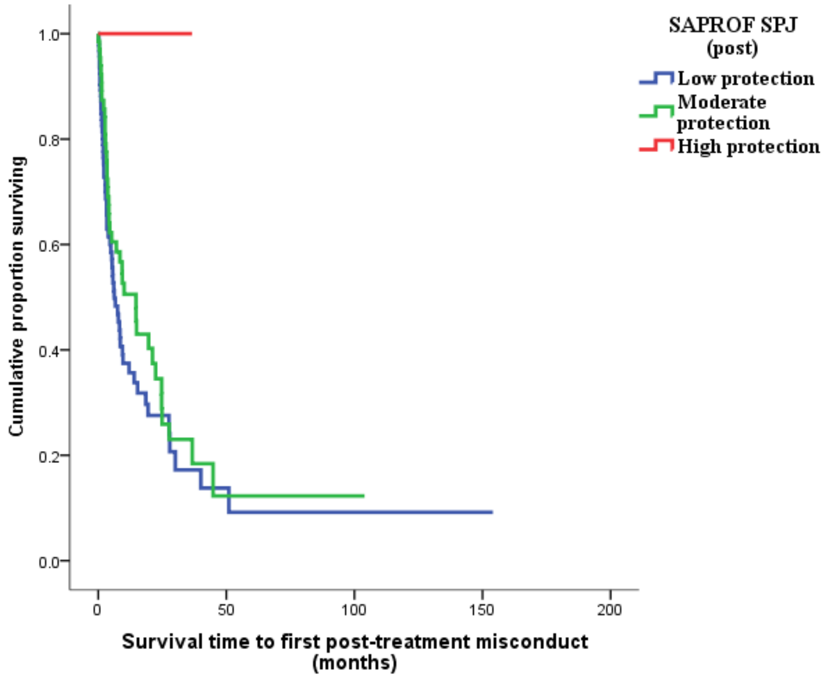


Figure 3.3.26

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Post-Treatment SPJ Protection Category (Any Misconduct)



3.5.2.3 Positive community outcomes.

3.5.2.3.1 Correlations.

To test whether scores on the SAPROF and PF List are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations coefficients were computed between scores on these measures and the operationalized measurements of positive community outcomes. Significant correlations were observed between all measures and all positive outcomes with the exception of the SAPROF external scores (pre-treatment, post-treatment, and at release) with employment, successful supervision, and prosocial activities (see Table 3.3.10).

Table 3.3.10

The Relationship between Protective Factors and Positive Community Outcomes: Correlations

	Employment	Stable Housing	Stable Relationships	Successful Supervision	Prosocial Activities	Total
Pre-Tx						
PF List	.40***	.29**	.42***	.40***	.38***	.48***
SAPROF Int	.34***	.42***	.41***	.39***	.37***	.48***
SAPROF Mot	.40***	.38***	.50***	.42***	.45***	.54***
SAPROF Ext	.13	.34***	.22*	.06	.05	.20*
SAPROF Total	.34***	.44***	.44***	.33***	.33***	.47***
Post-Tx						
PF List	.33***	.38***	.41***	.35***	.38***	.46***
SAPROF Int	.33***	.42***	.46***	.35***	.29**	.46***
SAPROF Mot	.38***	.42***	.44***	.32***	.38***	.49***
SAPROF Ext	.08	.33***	.25**	.06	.04	.18*
SAPROF Total	.32***	.47***	.46***	.29**	.29**	.45***
Rel						
PF List	.35***	.39***	.41***	.34***	.45***	.49***
SAPROF Int	.42***	.47***	.52***	.43***	.37***	.56***
SAPROF Mot	.45***	.44***	.49***	.38***	.41***	.55***
SAPROF Ext	.14	.37***	.31***	.06	.12	.24**
SAPROF Total	.41***	.49***	.52***	.35***	.37***	.53***

N = 137; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; Tx = treatment, rel = at release, int = internal, mot = motivational, ext = external

Similarly, correlations coefficients were calculated to examine the relationship between SAPROF protection categories with positive community outcomes. Again, significant correlations were observed between all measures and all positive community outcomes (see Table 3.3.11).

Table 3.3.11

The Relationship between SAPROF SPJ Protection Category and Positive Community Outcomes: Correlations

Protection Category	Employment	Stable Housing	Stable Relationships	Successful Supervision	Prosocial Activities	Total
SAPROF (pre)	.33***	.27**	.32***	.35***	.35***	.41***
SAPROF (post)	.26**	.21*	.26**	.18*	.23**	.29**
SAPROF (rel)	.36***	.33***	.34***	.28**	.33***	.41***

N = 137; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; pre = pre-treatment, post = post-treatment, rel = at release, SPJ = structured professional judgment

3.6 Validity of Protection Change Scores.

3.6.1 Convergent validity.

3.6.1.1 *Correlations.*

To examine convergent validity between the PF List and the SAPROF's measurements of change, correlations were computed between the two sets of change scores on these measures. Significant correlations were identified between most sets of change scores with the exception of SAPROF external change scores (see Table 3.4.1). Strongest correlations were observed between the measures pre-treatment to at release change scores.

Table 3.4.1
Convergence Correlations between Protective Factor Change Scores

	PF List	SAPROF Pre-Post				SAPROF Pre-Rel			
Change Score	Pre-Rel	Int	Mot	Ext	Tot	Int	Mot	Ext	Tot
PF List (pre – post)	.75	.45	.55	$.14^{ns}$	.58	.36	.45	$.10^{ns}$	.43
PF List (pre – rel)		.38	.42	$.05^{ns}$	.45	.57	.64	.29	.69
SAPROF Int (pre – post)			.53	$.03^{ns}$	.79	.75	.48	$.05^{ns}$	.59
SAPROF Mot (pre – post)				$.03^{ns}$	.86	.37	.71	$.10^{ns}$	.59
SAPROF Ext (pre – post)					.36	$-.01^{ns}$	$-.01^{ns}$	.58	$.18^{.05}$
SAPROF Tot (pre – post)						.56	.65	.27	.69
SAPROF Int (pre – rel)							.61	$.17^{.05}$	.80
SAPROF Mot (pre – rel)								$.21^{.01}$	.89
SAPROF Ext (pre – rel)									.51

N = 178, all $p < .001$ unless specified; pre = pre-treatment, post = post-treatment, rel = at release, int = internal, mot = motivational, ext = external

3.6.2 Predictive validity.

3.6.2.1 Community recidivism.

3.6.2.1.1 Correlations and semi-partial correlations.

To test the predictive validity of the PF List and SAPROF change scores, predictive accuracy analyses were conducted using point-biserial correlations and semi-partial correlations (controlling for pre-treatment protection) with the community recidivism criteria. Small significant and trending point-biserial correlations were observed between most pre-treatment to at release change scores and violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism)(see Table 3.4.2 and 3.4.3). Pre-treatment to post-treatment change scores generally did not significantly correlate with community recidivism. After controlling for pre-treatment protection, semi-partial correlations (r_{part}) between change scores and recidivism were generally stronger and mirrored the same pattern observed with the point-biserial correlations.

Table 3.4.2
Predictive Validity of PF List and SAPROF Change Scores for Community Recidivism (Convictions): point-biserial and semi-partial correlations

	Any Violent		Nonsexual Violent		Any Recidivism	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
PF List (pre – post)	-.09	-.13	-.08	-.12	-*.14*	-.19*
PF List (pre – rel)	-.23**	-.29***	-.23**	-.28***	-.21*	-.28***
SAPROF Int. (pre – post)	-.11	-.10	-.13	-.13	-.09	-.08
SAPROF Mot. (pre – post)	-.03	-.07	-.04	-.08	.05	-.01
SAPROF Ext. (pre – post)	-.04	-.01	.05	-.01	.11	-.04
SAPROF Total (pre – post)	-.06	-.10	-.07	-.11	.03	-.03
SAPROF Int. (pre – rel)	-.22**	-.21*	-.23**	-.22**	-*.15*	-*.14*
SAPROF Mot. (pre – rel)	-.19*	-.22**	-.19*	-.23**	-.08	-.12
SAPROF Ext. (pre – rel)	-.10	-.17*	-.09	-.16*	.02	-.08
SAPROF Total (pre – rel)	-.23**	-.27**	-.24**	-.28**	-.10	-*.15*

N = 155; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$; pre = pre-treatment, post = post-treatment, rel = at release, int = internal, mot = motivational, ext = external

Table 3.4.3
Predictive Validity of PF List and SAPROF Change Scores for Community Recidivism (All Charges): point-biserial and semi-partial correlations

	Any Violent		Nonsexual Violent		Any Recidivism	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
PF List (pre – post)	-.08	-*.14*	-.07	-.13	-.13	-.18*
PF List (pre – rel)	-.20*	-.27**	-.19*	-.26**	-.19*	-.26**
SAPROF Int. (pre – post)	-.07	-.07	-.10	-.09	-.04	-.03
SAPROF Mot. (pre – post)	.00	-.06	-.01	-.06	.05	-.01
SAPROF Ext. (pre – post)	.05	-.02	*.05*	-.02	.06	-.01
SAPROF Total (pre – post)	-.02	-.07	-.03	-.09	.03	-.02
SAPROF Int. (pre – rel)	-.20*	-.19*	-.22**	-.20*	-.12	-.11
SAPROF Mot. (pre – rel)	-*.14*	-.18*	-*.14*	-.18*	-.08	-.12
SAPROF Ext. (pre – rel)	-.05	-*.15*	-.05	-*.14*	-.03	-.12
SAPROF Total (pre – rel)	-.18*	-.23**	-.18*	-.23**	-.11	-*.15*

N = 155; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$; pre = pre-treatment, post = post-treatment, rel = at release, int = internal, mot = motivational, ext = external

3.6.2.2 Institutional recidivism.

3.6.2.2.1 Correlations and semi-partial correlations.

To test the predictive validity of the SAPROF and PF List change scores, predictive accuracy analyses were conducted using point-biserial correlations and semi-partial correlations (controlling for pre-treatment protection) with the institutional recidivism criteria. Relatively few significant and trending point-biserial correlations were observed between change scores and major, minor, violent, and any institutional misconduct (see Table 3.4.4). PF List pre-treatment to post-treatment change scores consistently predicted Major institutional recidivism at all three minimum follow-up times. Additionally, the pre-treatment to post-treatment SAPROF external change scores generally predicted minor and any institutional recidivism. After controlling for pre-treatment protection, semi-partial correlations between change scores and recidivism were generally stronger and mirrored the same pattern as the point-biserial correlations. None of the change scores significantly predicted violent institutional recidivism.

Table 3.4.4

Predictive Validity of SAPROF and PF List Change Scores for Institutional Recidivism: point-biserial and semi-partial correlations

	Major		Minor		Violent		Any	
Change Score	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}	r_{pb}	r_{part}
No minimum[a]								
PF List (pre – post)	-.17*	-.19*	-.05	-.05	-.06	-.06	-.07	-.08
SAPROF Int. (pre – post)	-.10	-.10	-.03	-.03	-.08	.08	-.06	-.06
SAPROF Mot. (pre – post)	-.04	-.06	.10	.10	.11	.11	.06	.06
SAPROF Ext. (pre – post)	-.10	-.12	-.17*	-.18*	-.10	-.11	-.17*	-.18*
SAPROF Total (pre – post)	-.10	-.12	-.01	-.02	.00	-.01	-.04	-.05
One week[b]								
PF List (pre – post)	-.16*	-.19*	-.01	-.05	-.04	-.06	-.03	-.08
SAPROF Int. (pre – post)	-.11	-.11	-.04	-.05	-.08	-.08	-.07	-.08
SAPROF Mot. (pre – post)	-.04	-.06	.13	.10	.12	.11	.09	.06
SAPROF Ext. (pre – post)	-.09	-.11	-.16*	-.17*	-.10	-.11	*-.15*	-.17*
SAPROF Total (pre – post)	-.09	-.12	.02	-.01	.01	-.00	-.02	-.05
One month[c]								
PF List (pre – post)	-.16*	-.18*	-.01	-.02	-.04	-.05	-.03	-.04
SAPROF Int. (pre – post)	-.11	-.10	-.04	-.04	-.08	-.08	-.07	-.07
SAPROF Mot. (pre – post)	-.04	-.06	.13	.12	.12	.12	.09	.07
SAPROF Ext. (pre – post)	-.09	-.12	-.16*	-.18*	-.10	-.12	*-.15*	-.18*
SAPROF Total (pre – post)	-.09	-.12	.02	.00	.00	.00	-.02	-.04

[a] N = 178, [b] N = 164, [c] N = 157; *italicized* = $p < .10$, * = $p < .05$; pre = pre-treatment, post = post-treatment, rel = at release, int = internal, mot = motivational, ext = external

3.6.2.3 Positive community outcomes.

3.6.2.3.1 Correlations and semi-partial correlations.

To test whether change scores on the SAPROF and the PF List are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations and semi-partial correlations (controlling for pre-treatment protection) were computed between change scores on these measures and operationalized measurements of positive community outcomes (see Table 3.4.5). For pre-treatment to post-treatment change scores, only the PF List and SAPROF internal change scores had significant correlations (stable housing and stable relationships, respectively). For pre-treatment to at release change scores, many small significant correlations emerged. After controlling for pre-treatment protection, semi-partial correlations between change scores and positive community outcomes largely mirrored the zero-order correlations.

Table 3.4.5

The Relationship between Protection Change Scores and Positive Community Outcomes: correlations and semi-partial correlations

	Employment		Stable Housing		Stable Relationships		Successful Supervision		Prosocial Activities		Total	
Change	*r*	r_{part}	*r*	r_{part}	*r*	r_{part}	*r*	r_{part}	*r*	r_{part}	*r*	r_{part}
Pre to Post												
PF List	-.03	.04	.18*	.24**	.06	.13	.00	.07	.07	.14	.07	.15
SAP Int.	.06	.06	.09	.08	.18*	.17*	.02	.02	-.04	-.05	.08	.07
SAP Mot.	-.03	.03	.07	*.14*	-.11	-.04	-*.16*	-.11	-.10	-.05	-.08	-.01
SAP Ext.	-*.15*	-.09	-.07	.02	.05	.14	-.01	.06	-.03	.04	-.06	.04
SAP Total	-.04	.01	.07	.14	.03	.10	-.09	-.04	-.10	.04	-.04	.04
Pre to Rel												
PF List	.03	.12	.19*	.26**	.08	.19*	.03	.12	.18*	.27**	.12	.24**
SAP Int.	.22*	.21*	.20*	.18*	.30***	.28**	.17*	*.16*	-.12	.10	.26**	.24**
SAP Mot.	*.14*	.18*	*.16*	.21*	.06	.12	.01	.05	.03	.07	.10	*.16*
SAP Ext.	-.03	.06	-.05	.07	.09	.22*	-.03	.06	.10	.19*	.02	*.15*
SAP Total	*.16*	.22*	*.16*	.23**	.19*	.26**	.07	.12	.10	*.15*	.18*	.25**

N = 137; *italicized* = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$; SAP = SAPROF, pre = pre-treatment, post = post-treatment, rel = at release, int = internal, mot = motivational, ext = external

3.6.3 Incremental predictive validity.

3.6.3.1 Community recidivism.

3.6.3.1.1 Cox regression survival analysis.

To test whether SAPROF and PF List change scores demonstrate incremental validity in the prediction of community recidivism over pre-treatment scores, a series of hierarchical Cox regression survival analysis were used controlling for individual differences in follow-up time. Separate regressions were conducted for conviction-only community recidivism (see Tables 3.4.6, 3.4.7.1, and 3.4.7.2) and all charges community recidivism (see Tables 3.4.9.1, 3.4.9.2, and 3.4.10).

As seen in Table 3.4.6 and 3.4.8, the PF List pre-treatment to post-treatment change score only uniquely predicted any recidivism (conviction-only), after controlling for the PF List pre-treatment total score. The PF List pre-treatment to at release change score uniquely predicting all violent, nonsexual violent, and any recidivism, after controlling for pre-treatment PF-List total score. When examining all charges recidivism, the PF List pre-treatment to post-treatment and pre-treatment to at release change score significantly predicted all violent, nonsexual violent, and any recidivism. Examining the exponentiated beta reveals that for each one point increase in total change score, the hazard that an offender will be reconvicted drops by roughly 7-10% (after controlling for the PF List pre-treatment total score).

As seen in Tables 3.4.7.1, 3.4.7.2, 3.4.9.1, and 3.4.9.2, none of the SAPROF pre-treatment to post treatment change scores uniquely predicted all violent, nonsexual violent, or any recidivism (for both conviction-only and all charges recidivism), after controlling for the SAPROF pre-treatment total score. All of the SAPROF pre-treatment to post-treatment change scores (with the exception of SAPROF external change score) uniquely predicted all violent, nonsexual violent, and any recidivism (for both conviction-only and all charges recidivism). Examining the exponentiated beta reveals that for each one point increase in total change score, the hazard that an offender will be reconvicted drops by roughly 7-8% (after controlling for the SAPROF pre-treatment total score).

Table 3.4.6

The Incremental Validity of PF List Change Scores over Pre-Treatment Protection in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

Regression Model	B	SE	Wald	e^B	*p*	95% CI
	All Violent Recidivism					
PF List (pre)	-.112	.033	11.31	.894	**.001**	.838, .955
PF List change (pre – post)	-.067	.035	3.63	.935	.057	.873, 1.002
PF List (pre)	-.113	.032	12.30	.893	**.000**	.838, .951
PF List change (pre – rel)	-.097	.029	11.08	.908	**.001**	.858, .961
	Nonsexual Violent Recidivism					
PF List (pre)	-.112	.033	11.26	.894	**.001**	.838, .955
PF List change (pre – post)	-.066	.035	3.45	.936	.063	.874, 1.004
PF List (pre)	-.114	.032	12.26	.892	**.000**	.837, .951
PF List change (pre – rel)	-.096	.029	10.78	.909	**.001**	.858, .962
	All Recidivism					
PF List (pre)	-.144	.031	21.33	.866	**.000**	.815, .921
PF List change (pre – post)	-.106	.032	10.87	.900	**.001**	.845, .958
PF List (pre)	-.148	.031	23.05	.863	**.000**	.812, .916
PF List change (pre – rel)	-.105	.026	16.54	.900	**.000**	.855, .947

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.4.7.1

The Incremental Validity of SAPROF Change Scores over Pre-Treatment Protection in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
SAPROF (pre)	-.036	.026	1.94	.964	.163	.916, 1.015
SAPROF I change (pre – post)	-.120	.073	2.66	.887	.103	.768, 1.024
SAPROF (pre)	-.070	.019	13.74	.932	**.000**	.898, .967
SAPROF M change (pre – post)	-.065	.057	1.31	.937	.253	.839, 1.047
SAPROF (pre)	-.066	.019	11.51	.936	**.001**	.901, .973
SAPROF E change (pre – post)	.007	.111	.00	1.007	.947	.810, 1.253
SAPROF (pre)	-.070	.019	13.64	.933	**.000**	.899, .968
SAPROF Total change (pre – post)	-.042	.035	1.42	.959	.234	.895, 1.028
SAPROF (pre)	-.058	.018	10.12	.943	**.001**	.910, .978
SAPROF I change (pre – rel)	-.170	.071	5.74	.843	**.017**	.734, .969
SAPROF (pre)	-.071	.018	14.96	.932	**.000**	.899, .966
SAPROF M change (pre – rel)	-.122	.044	7.61	.886	**.006**	.812, .965
SAPROF (pre)	-.077	.020	15.19	.926	**.000**	.891, .963
SAPROF E change (pre – rel)	-.156	.081	3.68	.855	.055	.729, 1.003
SAPROF (pre)	-.070	.018	14.73	.933	**.000**	.900, .966
SAPROF Total change (pre – rel)	-.082	.026	10.25	.921	**.001**	.876, .969
	Nonsexual Violent Recidivism					
SAPROF (pre)	-.068	.019	12.83	.935	**.000**	.901, .970
SAPROF I change (pre – post)	-.093	.081	1.33	.991	.249	.778, 1.067
SAPROF (pre)	-.073	.019	14.69	.929	**.000**	.895, .965
SAPROF M change (pre – post)	-.068	.057	1.42	.935	.234	.836, 1.045
SAPROF (pre)	-.069	.020	12.37	.933	**.000**	.898, .970
SAPROF E change (pre – post)	.004	.112	.00	1.004	.974	.806, 1.249
SAPROF (pre)	-.073	.019	14.66	.930	**.000**	.895, .965
SAPROF Total change (pre – post)	-.046	.035	1.67	.955	.196	.891, 1.024
SAPROF (pre)	-.061	.018	10.83	.941	**.001**	.908, .976
SAPROF I change (pre – rel)	-.179	.072	6.26	.836	**.012**	.726, .962
SAPROF (pre)	-.073	.018	15.85	.929	**.000**	.896, .963
SAPROF M change (pre – rel)	-.123	.044	7.67	.885	**.006**	.811, .965
SAPROF (pre)	-.080	.020	16.06	.923	**.000**	.888, .960
SAPROF E change (pre – rel)	-.156	.082	3.61	.856	.057	.729, 1.005
SAPROF (pre)	-.072	.018	15.63	.930	**.000**	.897, .964
SAPROF Total change (pre – rel)	-.083	.026	10.48	.920	**.001**	.875, .968

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release, I = internal, M = motivational, E = external

Table 3.4.7.2

The Incremental Validity of SAPROF Change Scores over Pre-Treatment Protection in the Prediction of Any Community Recidivism (Convictions): Hierarchical Cox Regression

	All Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
SAPROF (pre)	-.069	.017	16.66	.933	**.000**	.903, .965
SAPROF I change (pre – post)	-.082	.071	1.32	.921	.251	.801, 1.060
SAPROF (pre)	-.073	.017	18.12	.929	**.000**	.899, .961
SAPROF M change (pre – post)	-.058	.054	1.11	.944	.291	.849, 1.051
SAPROF (pre)	-.067	.018	14.83	.935	**.000**	.903, .967
SAPROF E change (pre – post)	.051	.102	.26	1.053	.614	.862, 1.285
SAPROF (pre)	-.073	.017	18.09	.929	**.000**	.899, .961
SAPROF Total change (pre – post)	-.038	.034	1.21	.963	.271	.901, 1.030
SAPROF (pre)	-.065	.017	15.55	.937	**.000**	.907, .968
SAPROF I change (pre – rel)	-.151	.061	6.03	.860	**.014**	.762, .970
SAPROF (pre)	-.073	.017	19.22	.929	**.000**	.899, .960
SAPROF M change (pre – rel)	-.089	.041	4.62	.915	**.032**	.843, .992
SAPROF (pre)	-.077	.018	18.79	.926	**.000**	.894, .959
SAPROF E change (pre – rel)	-.111	.071	2.42	.895	.120	.778, 1.029
SAPROF (pre)	-.074	.017	19.88	.929	**.000**	.899, .959
SAPROF Total change (pre – rel)	-.069	.024	8.03	.933	**.005**	.890, .979

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release, I = internal, M = motivational, E = external

Table 3.4.8

The Incremental Validity of PF List Change Scores over Pre-Treatment Protection in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
PF List (pre)	-.131	.031	18.47	.877	**.000**	.826, .931
PF List change (pre – post)	-.073	.032	5.08	.930	**.024**	.873, .991
PF List (pre)	-.130	.030	18.80	.879	**.000**	.829, .931
PF List change (pre – rel)	-.083	.026	10.24	.920	**.001**	.874, .968
	Nonsexual Violent Recidivism					
PF List (pre)	-.131	.031	18.35	.877	**.000**	.826, .931
PF List change (pre – post)	-.071	.032	4.77	.932	**.029**	.875, .993
PF List (pre)	-.130	.030	18.77	.878	**.000**	.828, .931
PF List change (pre – rel)	-.082	.026	9.92	.921	**.002**	.875, .969
	All Recidivism					
PF List (pre)	-.136	.030	20.40	.873	**.000**	.822, .926
PF List change (pre – post)	-.102	.032	10.46	.903	**.001**	.849, .961
PF List (pre)	-.142	.030	22.23	.868	**.000**	.818, .920
PF List change (pre – rel)	-.101	.025	16.07	.904	**.000**	.860, .949

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.4.9.1

The Incremental Validity of SAPROF Change Scores over Pre-Treatment Protection in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
SAPROF (pre)	-.074	.017	18.05	.929	**.000**	.898, .961
SAPROF I change (pre – post)	-.066	.075	.78	.936	.376	.809, 1.084
SAPROF (pre)	-.078	.017	20.37	.925	**.000**	.894, .957
SAPROF M change (pre – post)	-.074	.054	1.86	.929	.173	.835, 1.033
SAPROF (pre)	-.075	.018	17.44	.928	**.000**	.896, .961
SAPROF E change (pre – post)	.001	.105	.00	1.001	.989	.815, 1.230
SAPROF (pre)	-.078	.017	20.04	.925	**.000**	.894, .957
SAPROF Total change (pre – post)	-.044	.034	1.65	.957	.199	.895, 1.023
SAPROF (pre)	-.067	.017	15.32	.935	**.000**	.905, .967
SAPROF I change (pre – rel)	-.149	.067	5.01	.861	**.025**	.756, .982
SAPROF (pre)	-.077	.017	20.80	.926	**.000**	.896, .957
SAPROF M change (pre – rel)	-.104	.043	5.94	.901	**.015**	.829, .980
SAPROF (pre)	-.081	.018	20.85	.922	**.000**	.891, .955
SAPROF E change (pre – rel)	-.121	.074	2.68	.886	.102	.766, 1.024
SAPROF (pre)	-.075	.017	20.11	.928	**.000**	.898, .959
SAPROF Total change (pre – rel)	-.072	.025	8.29	.931	**.004**	.887, .977
	Nonsexual Violent Recidivism					
SAPROF (pre)	-.076	.017	18.78	.927	**.000**	.896, .959
SAPROF I change (pre – post)	-.076	.075	1.02	.927	.314	.800, 1.074
SAPROF (pre)	-.080	.017	21.25	.923	**.000**	.892, .955
SAPROF M change (pre – post)	-.075	.054	1.93	.927	.164	.834, 1.031
SAPROF (pre)	-.077	.018	18.27	.926	**.000**	.894, .959
SAPROF E change (pre – post)	-.002	.106	.00	.998	.986	.812, 1.227
SAPROF (pre)	-.080	.017	20.97	.923	**.000**	.892, .955
SAPROF Total change (pre – post)	-.047	.034	1.87	.954	.172	.893, 1.020
SAPROF (pre)	-.069	.017	15.94	.934	**.000**	.903, .966
SAPROF I change (pre – rel)	-.155	.067	5.37	.856	**.020**	.751, .976
SAPROF (pre)	-.079	.017	21.63	.924	**.000**	.894, .955
SAPROF M change (pre – rel)	-.104	.043	5.97	.901	**.015**	.829, .980
SAPROF (pre)	-.083	.018	21.67	.920	**.000**	.889, .953
SAPROF E change (pre – rel)	-.121	.075	2.61	.886	.106	.766, 1.026
SAPROF (pre)	-.077	.017	20.93	.926	**.000**	.896, .957
SAPROF Total change (pre – rel)	-.072	.025	8.38	.930	**.004**	.886, .977

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release, I = internal, M = motivational, E = external

Table 3.4.9.2

The Incremental Validity of SAPROF Change Scores over Pre-Treatment Protection in the Prediction of Any Community Recidivism (All Charges): Hierarchical Cox Regression

	All Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
SAPROF (pre)	-.066	.016	16.09	.936	**.000**	.906, .967
SAPROF I change (pre – post)	-.048	.070	.47	.953	.493	.831, 1.093
SAPROF (pre)	-.070	.017	17.51	.932	**.000**	.902, .963
SAPROF M change (pre – post)	-.060	.054	1.25	.942	.265	.848, 1.046
SAPROF (pre)	-.066	.017	19.95	.936	**.000**	.905, .968
SAPROF E change (pre – post)	.009	.102	.01	1.009	.928	.826, 1.233
SAPROF (pre)	-.070	.017	17.28	.933	**.000**	.902, .964
SAPROF Total change (pre – post)	-.035	.034	1.060	.966	.303	.904, 1.032
SAPROF (pre)	-.063	.016	15.08	.939	**.000**	.910, .969
SAPROF I change (pre – rel)	-.129	.061	4.52	.879	**.034**	.781, .990
SAPROF (pre)	-.070	.016	18.69	.932	**.000**	.903, .962
SAPROF M change (pre – rel)	-.091	.041	5.03	.913	**.025**	.843, .989
SAPROF (pre)	-.075	.017	19.03	.927	**.000**	.896, .959
SAPROF E change (pre – rel)	-.141	.071	3.96	.869	**.047**	.756, .998
SAPROF (pre)	-.071	.016	19.38	.931	**.000**	.902, .961
SAPROF Total change (pre – rel)	-.071	.024	8.55	.932	**.003**	.889, .977

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release, I = internal, M = motivational, E = external

3.6.3.2 Institutional recidivism.

3.6.3.2.1 Cox regression survival analysis.

To test whether SAPROF and PF List change scores demonstrate incremental validity in the prediction of institutional recidivism over pre-treatment scores, a series of hierarchical Cox regression survival analysis were used controlling for individual differences in follow-up time. As seen in Table 3.4.10 and 3.4.11, the PF List pre-treatment to post-treatment change score only uniquely predicted major institutional recidivism, after controlling for the PF List pre-treatment total score. Examining the exponentiated beta reveals that for each one point increase in total change score, the likelihood that an offender will be reconvicted of a major institutional misconduct drops by roughly 12% (after controlling for the PF List pre-treatment total score). None of the SAPROF pre-treatment to post treatment change scores uniquely predicted major, minor, violent, or any institutional recidivism, after controlling for the SAPROF pre-treatment total score.

Table 3.4.10

The Incremental Validity of Change Scores over Pre-Treatment Protection in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Major					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
PF List (pre)	-.100	.043	5.49	.905	**.019**	.832, .984
PF List change (pre – post)	-.133	.054	6.12	.876	**.013**	.788, .973
SAPROF (pre)	-.059	.024	5.83	.943	**.016**	.898, .989
SAPROF I change (pre – post)	-.138	.113	1.48	.871	.224	.698, 1.088
SAPROF (pre)	-.064	.025	6.54	.938	**.011**	.894, .985
SAPROF M change (pre – post)	-.088	.081	1.18	.916	.278	.781, 1.074
SAPROF (pre)	-.058	.024	5.838	.943	**.016**	.899, .989
SAPROF E change (pre – post)	-.123	.186	.433	.885	.511	.614, 1.275
SAPROF (pre)	-.064	.025	6.62	.938	**.010**	.894, .985
SAPROF Total change (pre – post)	-.070	.050	1.96	.932	.161	.844, 1.028
	Minor					
PF List (pre)	-.051	.030	2.90	.950	.089	.895, 1.008
PF List change (pre – post)	-.035	.039	.82	.966	.366	.895, 1.042
SAPROF (pre)	-.037	.018	4.35	.964	**.037**	.931, .998
SAPROF I change (pre – post)	-.011	.086	.02	.989	.894	.835, 1.170
SAPROF (pre)	-.029	.018	2.53	.971	.112	.937, 1.007
SAPROF M change (pre – post)	.114	.064	3.18	1.120	.074	.989, 1.270
SAPROF (pre)	-.040	.018	4.99	.961	**.026**	.927, .995
SAPROF E change (pre – post)	-.167	.148	1.28	.846	.258	.633, 1.130
SAPROF (pre)	-.035	.018	3.68	.966	.055	.933, 1.001
SAPROF Total change (pre – post)	.029	.040	.55	1.030	.460	.952, 1.114

N = 178; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, I = internal, M = motivational, E = external

Table 3.4.11

The Incremental Validity of Change Scores over Pre-Treatment Risk in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Violent					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
PF List (pre)	-.059	.065	.81	.943	.368	.830, 1.072
PF List change (pre – post)	-.056	.083	.46	.946	.498	.804, 1.112
SAPROF (pre)	-.034	.037	.867	.966	.352	.898, 1.039
SAPROF I change (pre – post)	-.195	.178	1.203	.823	.273	.581, 1.166
SAPROF (pre)	-.025	.038	.46	.975	.500	.906, 1.050
SAPROF M change (pre – post)	.125	.126	.98	1.134	.321	.885, 1.452
SAPROF (pre)	-.034	.037	.85	.967	.356	.899, 1.039
SAPROF E change (pre – post)	-.257	.300	.74	.773	.391	.429, 1.392
SAPROF (pre)	-.034	.037	.821	.967	.365	.899, 1.040
SAPROF Total change (pre – post)	-.009	.077	.013	.991	.908	.853, 1.152
	Any					
PF List (pre)	-.070	.030	5.48	.933	**.019**	.880, .989
PF List change (pre – post)	-.046	.037	1.50	.955	.221	.888, 1.028
SAPROF (pre)	-.047	.017	7.41	.954	**.006**	.922, .987
SAPROF I change (pre – post)	-.044	.083	.28	.957	.596	.814, 1.126
SAPROF (pre)	-.042	.018	5.49	.959	**.019**	.926, .993
SAPROF M change (pre – post)	.072	.061	1.40	1.075	.237	.954, 1.211
SAPROF (pre)	-.050	.018	8.13	.951	**.004**	.918, .984
SAPROF E change (pre – post)	-.148	.137	1.17	.862	.280	.659, 1.128
SAPROF (pre)	-.047	.018	6.93	.954	**.008**	.922, .988
SAPROF Total change (pre – post)	.007	.038	.03	1.007	.860	.935, 1.084

N = 178; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, I = internal, M = motivational, E = external

3.6.3.3 Positive community outcomes.

3.6.3.3.1 Multiple regression.

To test whether PF List and SAPROF change scores demonstrate incremental validity in the prediction of positive community outcomes over pre-treatment total protection scores, hierarchical multiple regression was used. As seen in Table 3.4.12, both pre-treatment to post-treatment change score and pre-treatment to at release change scores on the PF List uniquely predict positive community outcomes total score (after controlling for pre-treatment PF List total score). None of the pre-treatment to post treatment SAPROF change scores uniquely predicted positive community outcomes total score (after controlling for pre-treatment SAPROF total score). However, all four pre-treatment to at release change scores on the SAPROF (internal change, motivational change, external change, and total change) uniquely predicted total positive community outcomes score, after controlling for SAPROF pre-treatment total score.

Table 3.4.12

The Incremental Validity of Change Scores over Pre-Treatment Protection in the Prediction of Positive Community Outcomes: Hierarchical Multiple Regression

Regression Model	b	SE	β	*p*	r_{part}^2
PF List Total (pre)	.459	.067	.519	**.000**	.23
PF List change (pre – post)	.190	.079	.183	**.018**	.03
(constant)	2.134	.574			
$R = .51$, $R^2 = .26$, F (2, 134) = 23.59, $p < .001$					
PF List Total (pre)	.479	.066	.542	**.000**	.23
PF List change (pre – rel)	.223	.065	.258	**.001**	.06
(constant)	.676	.606			
$R = .54$, $R^2 = .29$, F (2, 134) = 27.47, $p < .001$					
SAPROF (pre)	.234	.038	.470	**.000**	.22
SAPROF I change (pre – post)	.205	.182	.085	.263	.01
(constant)	1.819	.537			
$R = .48$, $R^2 = .23$, F (2, 134) = 19.78, $p < .001$					
SAPROF (pre)	.236	.039	.474	**.000**	.22
SAPROF M change (pre – post)	.033	.133	.019	.808	.00
(constant)	2.065	.548			
$R = .47$, $R^2 = .22$, F (2, 134) = 19.00, $p < .001$					
SAPROF (pre)	.242	.039	.487	**.000**	.22
SAPROF E change (pre – post)	.211	.245	.068	.390	.00
(constant)	1.998	.485			
$R = .47$, $R^2 = .23$, F (2, 134) = 19.44, $p < .001$					
SAPROF Total (pre)	.242	.039	.487	**.000**	.22
SAPROF Total change (pre – post)	.083	.085	.076	.331	.01
(constant)	1.765	.595			
$R = .48$, $R^2 = .23$, F (2, 134) = 19.58, $p < .001$					
SAPROF (pre)	.227	.037	.457	**.000**	.22
SAPROF I change (pre – rel)	.470	.149	.232	**.002**	.05
(constant)	1.315	.514			
$R = .52$, $R^2 = .27$, F (2, 134) = 25.31, $p < .001$					
SAPROF (pre)	.243	.038	.488	**.000**	.22
SAPROF M change (pre – rel)	.218	.103	.159	**.037**	.03
(constant)	1.561	.527			
$R = .50$, $R^2 = .25$, F (2, 134) = 21.82, $p < .001$					
SAPROF (pre)	.269	.039	.541	**.000**	.22
SAPROF E change (pre – rel)	.484	.185	.208	**.010**	.04
(constant)	1.362	.536			
$R = .51$, $R^2 = .26$, F (2, 134) = 23.38, $p < .001$					
SAPROF Total (pre)	.255	.037	.514	**.000**	.22
SAPROF Total change (pre – rel)	.215	.061	.261	**.001**	.07
(constant)	.845	.571			
$R = .54$, $R^2 = .29$, F (2, 134) = 26.95, $p < .001$					

N = 137; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release, I = internal, M = motivational, E = external

3.7 The Relationship between Protective and Risk Factors.

3.7.1 Convergence.

3.7.1.1 Correlations.

To test whether protection scores correspond inversely to risk scores, correlations were computed between the sets of instruments. All correlations were significant at the $p < .001$ level, with the exception of correlations with SAPROF external (pre-treatment, post-treatment, and at release) scores. Correlations are summarized below in Table 3.5.1.1 and 3.5.1.2. Generally, the magnitude of the correlations between scale total scores was large, meaning significant shared variance exists between the examined risk and protective factors.

Table 3.5.1.1

The Relationship between Protection Scores and Pre-Treatment Risk Scores: Correlations

	VRS (pre-Tx)			HCR-20 (pre-Tx)				
Measure	Static	Dyn	Total	H	C	R	Dyn	Total
Pre-Tx								
PF List Total	-.44	-.56	-.57	-.57	-.66	-.64	-.73	-.73
SAPROF Internal	-.50	-.50	-.55	-.60	-.61	-.57	-.66	-.71
SAPROF Motivational	-.47	-.59	-.61	-.55	-.66	-.52	-.62	-.68
SAPROF External	$-.16^{.05}$	$-.18^{.05}$	$-.19^{.05}$	-.26	$-.23^{.01}$	-.32	-.32	-.33
SAPROF Total	-.43	-.50	-.53	-.55	-.59	-.55	-.63	-.66
Post-Tx								
PF List Total	-.37	-.39	-.42	-.42	-.55	-.53	-.61	-.58
SAPROF Internal	-.47	-.42	-.49	-.58	-.52	-.47	-.55	-.64
SAPROF Motivational	-.40	-.47	-.49	-.44	-.56	-.44	-.56	-.56
SAPROF External	$-.14^{ns}$	$-.18^{.05}$	$-.18^{.05}$	$-.22^{.01}$	$-.21^{.01}$	-.26	-.26	-.27
SAPROF Total	-.42	-.43	-.47	-.49	-.52	-.47	-.55	-.59
Rel								
PF List Total	-.29	-.38	-.39	-.33	-.51	-.44	-.53	-.48
SAPROF Internal	-.46	-.43	-.49	-.55	-.47	-.46	-.52	-.60
SAPROF Motivational	-.36	-.45	-.46	-.44	-.49	-.37	-.47	-.52
SAPROF External	$-.14^{ns}$	$-.20^{.01}$	$-.20^{.01}$	$-.20^{.01}$	$-.24^{.01}$	$-.21^{.01}$	$-.25^{.01}$	$-.25^{.01}$
SAPROF Total	-.38	-.43	-.45	-.47	-.48	-.40	-.49	-.54

N = 178; All $p < .001$ unless specified; Tx = treatment, Rel = at release, dyn = dynamic, H = historical, C = clinical, R = risk management

Table 3.5.1.2

The Relationship between Protection Scores and Post-Treatment Risk Scores: Correlations

	VRS (post-Tx)			HCR-20 (post-Tx)				
Measure	Static	Dyn	Total	H	C	R	Dyn	Total
Pre-Tx								
PF List Total	-.44	-.54	-.54	-.56	-.47	-.59	-.58	-.66
SAPROF Internal	-.50	-.49	-.52	-.60	-.43	-.56	-.54	-.66
SAPROF Motivational	-.47	-.59	-.56	-.55	-.49	-.51	-.55	-.64
SAPROF External	$-.15^{.05}$	$-.19^{.05}$	$-.17^{.05}$	$-.24^{.01}$	$-.21^{.01}$	-.26	-.26	-.29
SAPROF Total	-.43	-.50	-.49	-.53	-.44	-.51	-.52	-.62
Post-Tx								
PF List Total	-.37	-.56	-.49	-.44	-.66	-.72	-.76	-.71
SAPROF Internal	-.47	-.56	-.53	-.58	-.68	-59	-.70	-.75
SAPROF Motivational	-.40	-.60	-.51	-.48	-.70	-.62	-.73	-.71
SAPROF External	$-.14^{ns}$	$-.19^{.05}$	$-.17^{.05}$	$-.20^{.01}$	$-.21^{.01}$	-.27	-.26	-.27
SAPROF Total	-.40	-.54	-.49	-.50	-.64	-.60	-.69	-.70
Rel								
PF List Total	-.29	-.53	-.44	-.35	-.61	-.63	-.69	-.62
SAPROF Internal	-.46	-.54	-.52	-.56	-.59	-.56	-.63	-.70
SAPROF Motivational	-.36	-.56	-.47	-.47	-.62	-.54	-.64	-.65
SAPROF External	$-.14^{ns}$	$-.24^{.01}$	$-.19^{.05}$	$-.19^{.05}$	$-.25^{.01}$	-.28	-.29	-.28
SAPROF Total	-.38	-.53	-.47	-.48	-.58	-.54	-.62	-.64

N = 178; All $p < .001$ unless specified; Tx = treatment, Rel = at release, dyn = dynamic, H = historical, C = clinical, R = risk management

To test whether protection categories correspond inversely to risk categories, correlations were computed between the sets of instruments. All correlations were significant at the $p < .001$ level (see Table 3.5.2).

Table 3.5.2

The Relationship between Protection and Risk Categories: Correlations

	VRS Risk (pre)	VRS Risk (post)	HCR-20 SPJ Risk (pre)	HCR-20 SPJ Risk (post)
PF List total (pre)	-.46	-.46	-.50	-.57
PF List total (post)	-.34	-.36	-.38	-.52
PF List total (rel)	-.32	-.33	-.39	-.52
SAPROF SPJ Protection (pre)	-.53	-.46	-.51	-.48
SAPROF SPJ Protection (post)	-.37	-.37	-.37	-.37
SAPROF SPJ Protection (rel)	-.39	-.37	-.40	-.40

N = 178; All $p < .001$ unless specified; pre = pre-treatment, post = post-treatment, rel = at release, SPJ = structured professional judgement

Correlations between risk change scores and protective change scores were computed. Although in previous analyses we calculated risk change scores by subtracting post-treatment scores from pre-treatment scores, for these correlations we calculated risk change scores by subtracting pre-treatment scores from post-treatment scores. By doing so, it allows for the correlations to be in the same direction as the other convergence correlations presented in this section. Relatively few significant correlations were observed between static (historical) change scores and protective change scores. Additionally, relatively few significant correlations were observed between SAPROF external change scores and the risk change scores. All other correlations were significant at the $p < .001$ level. Correlations are summarized below in Table 3.5.3.

Table 3.5.3

The Relationship between Risk and Protection Change Scores: Correlations

	VRS Change			HCR-20 Change				
Change Score	Static	Dyn	Total	H	C	R	Dyn	Total
Pre-Tx – Post-Tx								
PF List Total	.01	-.57***	-.57***	-.11	-.47***	-.48***	-.56***	-.54***
SAPROF Internal	.01	-.53***	-.52***	-.07	-.63***	-.32***	-.58***	-.55***
SAPROF Motivation	-.04	-.50***	-.50***	-.24**	-.58***	-.43***	-.60***	-.61***
SAPROF External	.07	-.03	-.03	-.02	-.06	-.27***	-.19*	-.18*
SAPROF Total	.01	-.55***	-.55***	-.18*	-.66***	-.49***	-.69***	-.68***
Pre-Tx – Rel								
PF List Total	-.01	-.45***	-.45***	-.13	-.37***	-.41***	-.46***	-.45***
SAPROF Internal	-.02	-.38***	-.37***	-.07	-.45***	-.22**	-.41***	-.39***
SAPROF Motivation	-.04	-.36***	-.36***	-.16*	-.44***	-.34***	-.46***	-.46***
SAPROF External	-.13	-.13	-.14	-.15*	-.07	-.34***	-.23**	-.25**
SAPROF Total	-.07	-.40***	-.40***	-.17*	-.46***	-.40***	-.50***	-.50***

N = 178; *** $p < .001$, ** = $p < .01$, * = $p < .05$; Tx = treatment, rel = at release, dyn = dynamic, H = historical, C = clinical, R = risk management

3.7.2 Predictive validity.

3.7.2.1 Community recidivism.

3.7.2.1.1 Correlations and area under the curve.

The predictive validity of the integrated HCR-20/SAPROF risk categories was examined with respect to violent recidivism, nonsexual violent recidivism, and any recidivism. Separate analyses were conducted to examine conviction-only recidivism and all charges recidivism (summarized in Table 3.5.4) following release into community after participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. All risk categories were found to significantly predict violent, nonsexual violent, and any recidivism. Slightly larger correlations for the all charges analyses than the conviction-only analyses were observed. Similarly, all risk categories were found to significantly predict violent, nonsexual violent, and any recidivism when AUC values were examined; again, all charges analyses generating slightly larger AUC values than the conviction-only analyses.

Table 3.5.4
Predictive Validity of HCR-20/SAPROF Integrated SPJ Risk Categories for Community Recidivism: point-biserial correlations and AUCs

	All Violent			Nonsexual Violent			Any Recidivism		
Risk Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Convictions									
HCR/SAPROF (pre)	.36	$.66^{.01}$	.56, .75	.37	$.66^{.01}$	.57, .76	.38	.71	.59, .82
HCR/SAPROF (post)	.31	$.65^{.01}$	.56, .74	.32	$.66^{.01}$	.57, .75	.35	.70	.60, .81
HCR/SAPROF (rel)	.31	$.65^{.01}$	.56, .74	.32	$.66^{.01}$	.57, .75	.35	.71	.61, .81
All Charges									
HCR/SAPROF (pre)	.43	.70	.60, .80	.45	.71	.61, .81	.37	$.70^{.01}$	.59, .82
HCR/SAPROF (post)	.38	.69	.60, .79	.38	.70	.61, .79	.34	$.70^{.01}$	.59, .81
HCR/SAPROF (rel)	.41	.72	.63, .82	.42	.73	.64, .82	.35	.72	.61, .82

N = 155; all $p < .001$ unless specified; pre = pre-treatment, post = post-treatment, rel = at release

3.7.2.1.2 Kaplan-Meier survival analysis.

Survival graphs were created for the integrated SAPROF/HCR-20 (pre-treatment) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.1 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 120) was significantly higher than the low-risk (n = 7) and moderate-risk (n = 28) groups were significantly different from, Log Rank χ^2 (1) = 6.351, p = .012 and Log Rank χ^2 (1) = 12.143, p = .000, respectively. Figure 3.5.2 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (pre-treatment) SPJ integrated risk levels in relation to nonsexual violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.351, *p* = .012 and Log Rank χ^2 (1) = 13.551, *p* = .000, respectively. Lastly, Figure 3.5.3 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (pre-treatment) SPJ integrated risk groups in relation to any recidivism (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.054, *p* = .014 and Log Rank χ^2 (1) = 16.304, *p* = .000.

Figure 3.5.1
Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (Convictions)

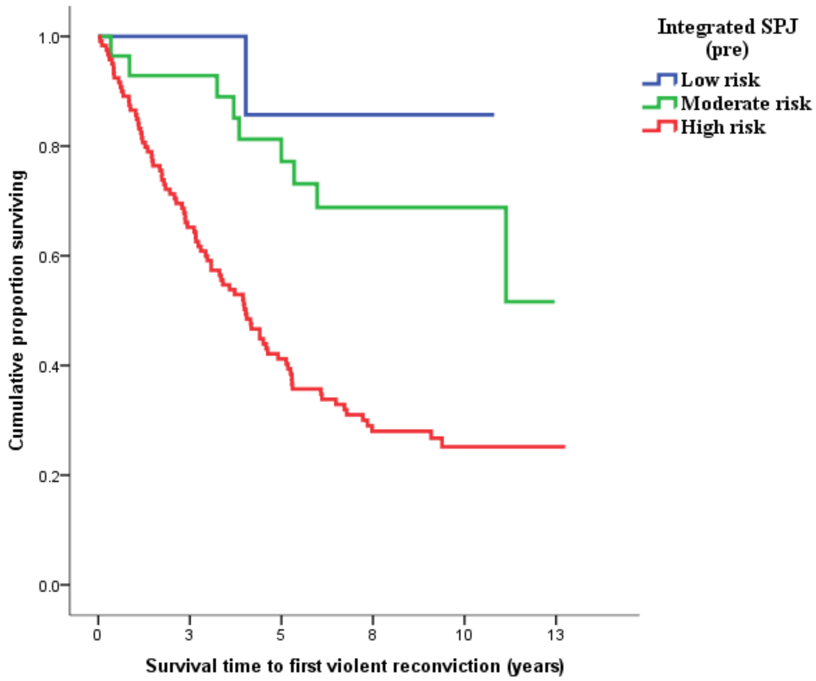


Figure 3.5.2

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (Convictions)

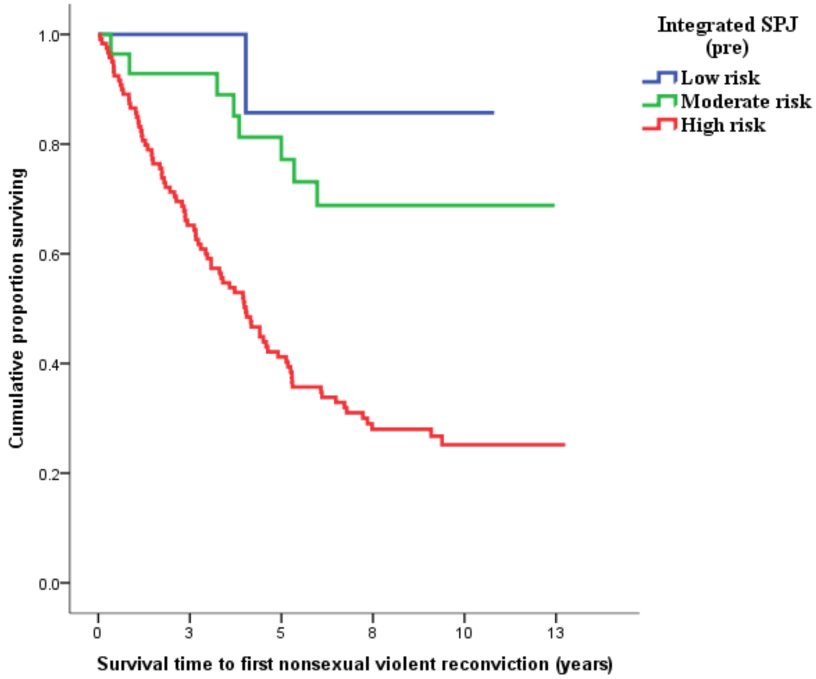
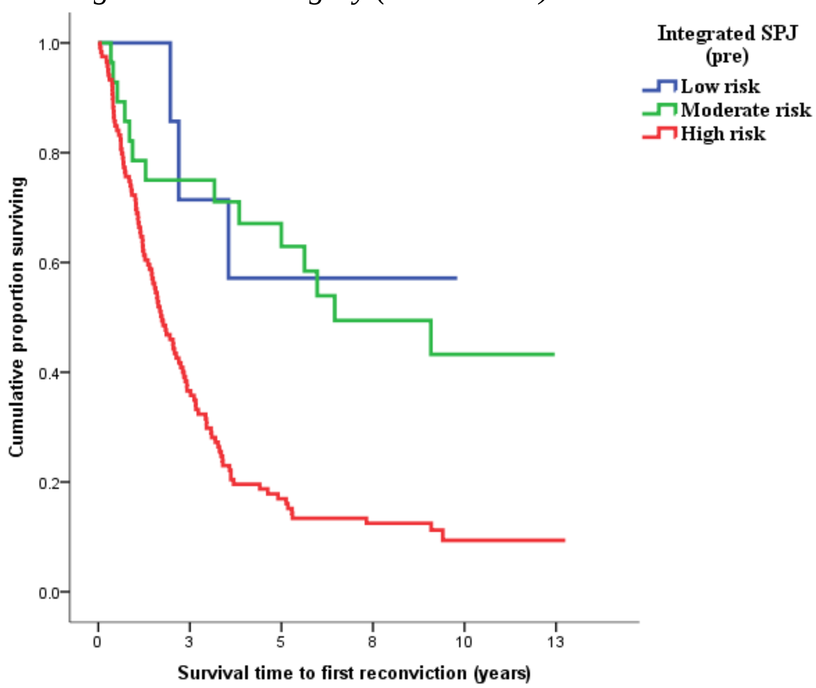


Figure 3.5.3

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (Convictions)



Survival graphs were created for the integrated SAPROF/HCR-20 (post-treatment) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.4 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 86) was significantly higher than the low-risk (n = 9) and moderate-risk (n = 60) groups, Log Rank χ^2 (1) = 8.428, p = .004 and Log Rank χ^2 (1) = 7.006, p = .008, respectively. Figure 3.5.5 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (post-treatment) SPJ integrated risk levels in relation to nonsexual violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 8.428, p = .004 and Log Rank χ^2 (1) = 7.614, p = .006, respectively. Lastly, Figure 3.5.6 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (post-treatment) SPJ integrated risk groups in relation to any recidivism (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 8.749, p = .003 and Log Rank χ^2 (1) = 6.341, p = .012.

Figure 3.5.4

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (Convictions)

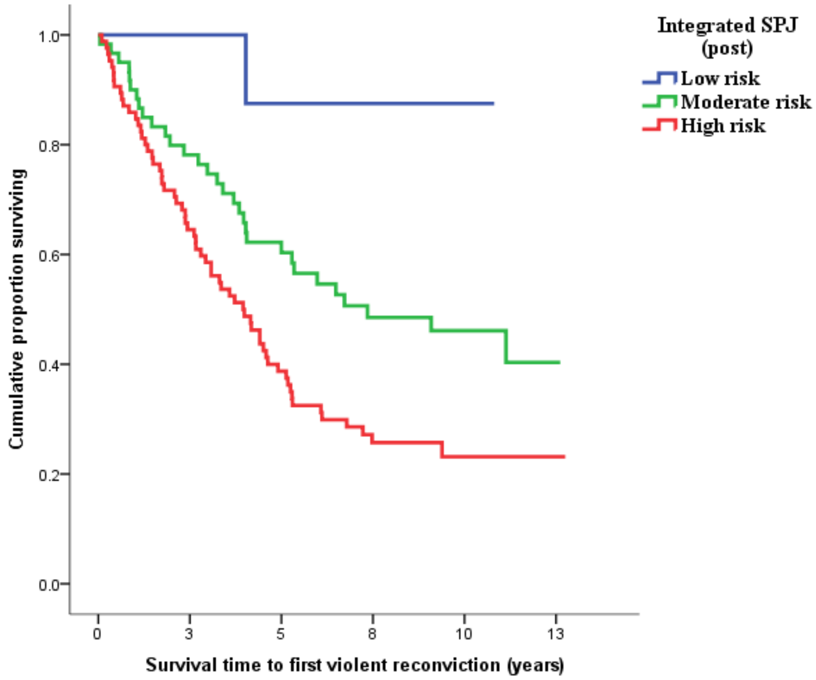


Figure 3.5.5

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (Convictions)

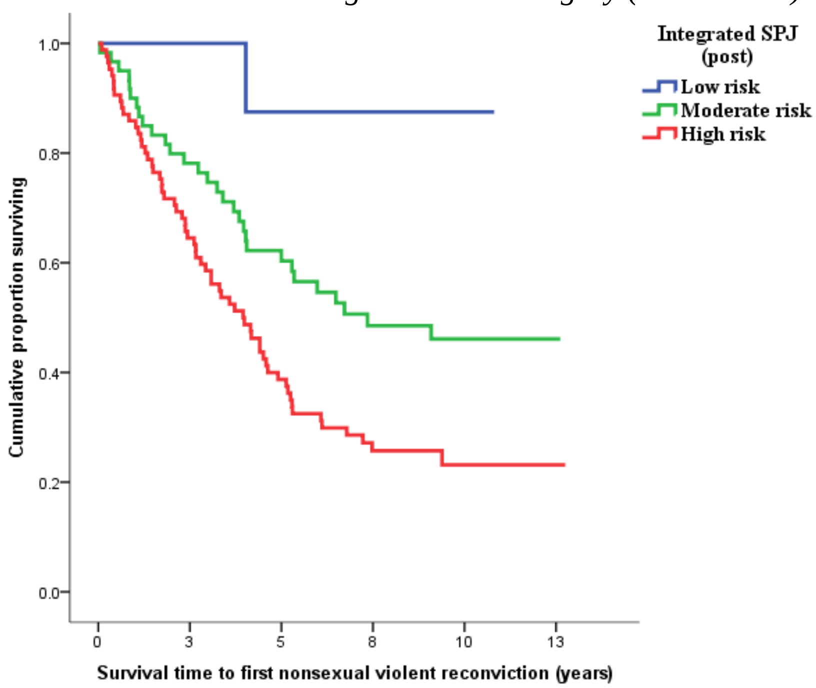
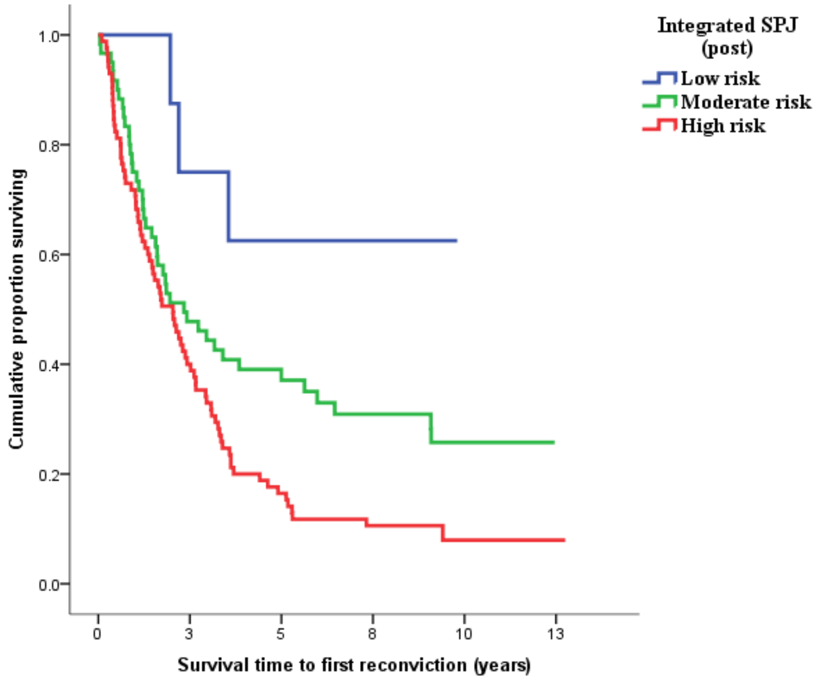


Figure 3.5.6
Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (Convictions)



Survival graphs were created for the integrated SAPROF/HCR-20 (at release) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. As no at release rating of the HCR-20 was available, the at release integrated risk rating relied on integrating post-treatment HCR-20 risk with at release SAPROF protection. Figure 3.5.7 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 76) was significantly higher than the low-risk (n = 14) and moderate-risk (n = 65) groups were significantly different from, Log Rank χ^2 (1) = 11.926, p = .001 and Log Rank χ^2 (1) = 4.367, p = .037, respectively. Figure 3.5.8 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (at release) SPJ integrated risk levels in relation to nonsexual violent recidivism (convictions-only). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 11.926, p = .001 and Log Rank χ^2 (1) = 4.973, p = .026, respectively. Lastly, Figure 3.5.9

presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (at release) SPJ integrated risk groups in relation to any recidivism (convictions-only). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 13.17, *p* = .000 and Log Rank χ^2 (1) = 8.481, *p* = .004.

Figure 3.5.7

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (Convictions)

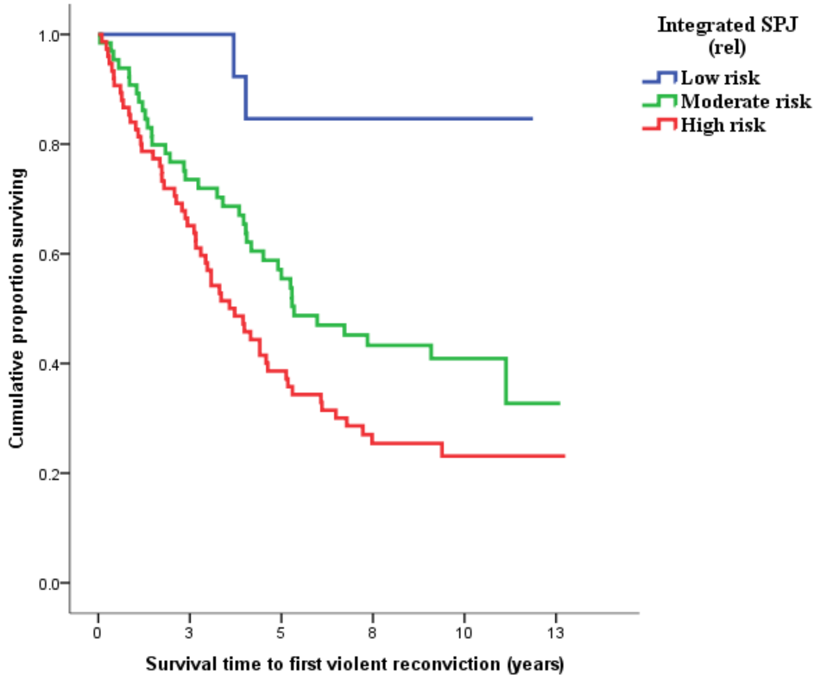


Figure 3.5.8

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (Convictions)

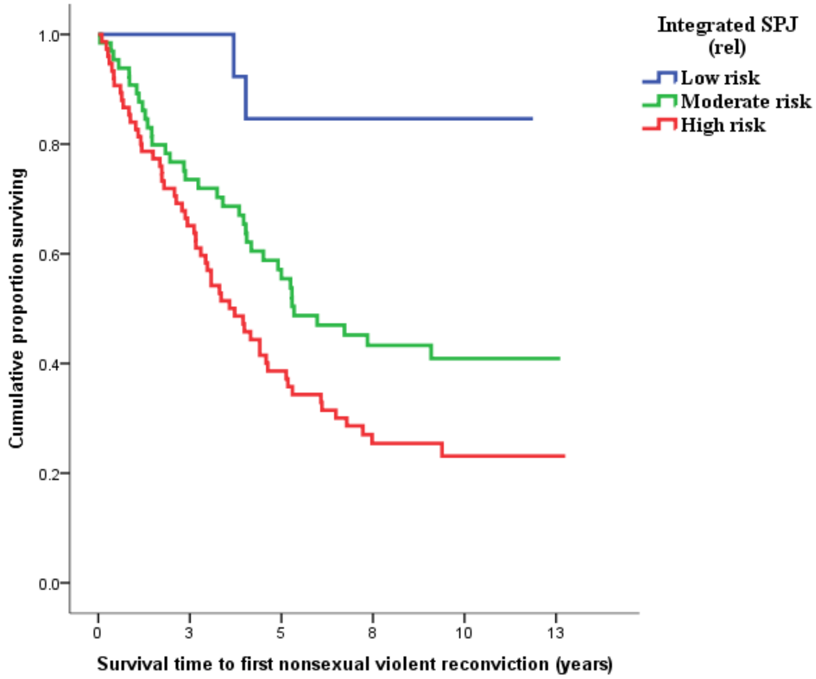
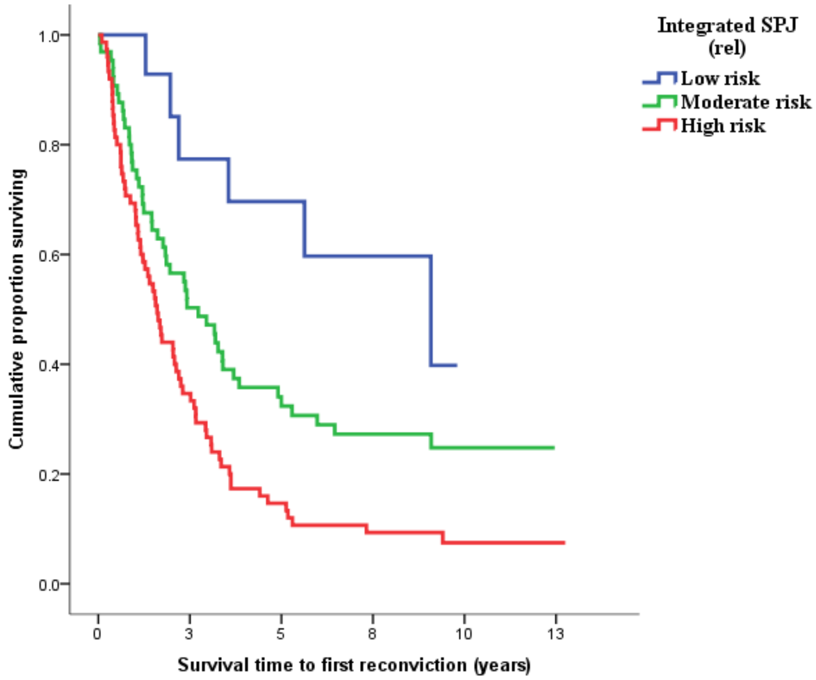


Figure 3.5.9

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (Convictions)



Survival graphs were created for the integrated SAPROF/HCR-20 (pre-treatment) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.10 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 120) was significantly higher than the low-risk (n = 7) and moderate-risk (n = 28) groups, Log Rank χ^2 (1) = 9.807, p = .002 and Log Rank χ^2 (1) = 16.360, p = .000, respectively. Figure 3.5.11 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (pre-treatment) SPJ integrated risk levels in relation to nonsexual violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 9.807, p = .002 and Log Rank χ^2 (1) = 17.794, p = .000, respectively. Lastly, Figure 3.5.12 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (pre-treatment) SPJ integrated risk groups in relation to any recidivism (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 6.834, p = .009 and Log Rank χ^2 (1) = 16.128, p = .000.

Figure 3.5.10

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (All Charges)

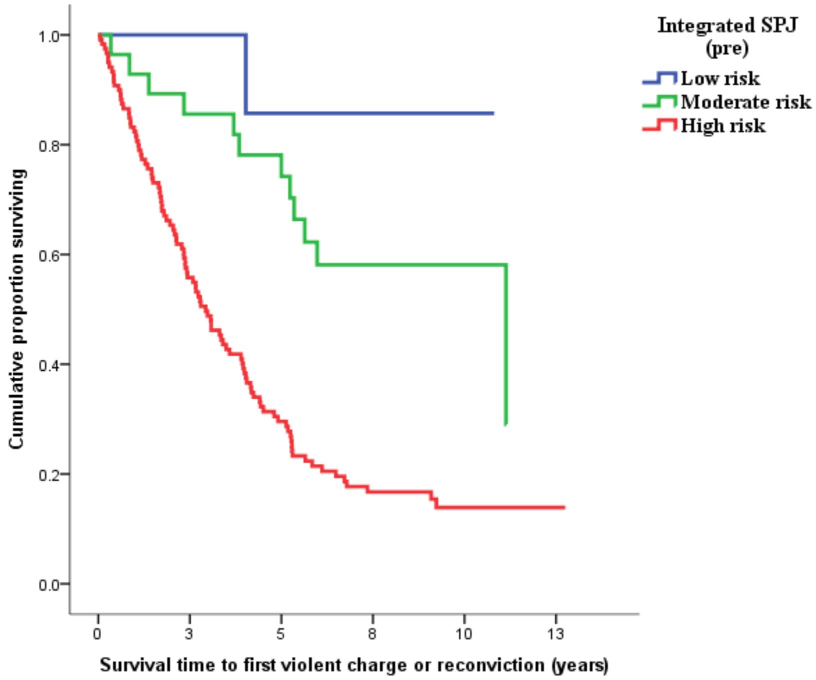


Figure 3.5.11

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (All Charges)

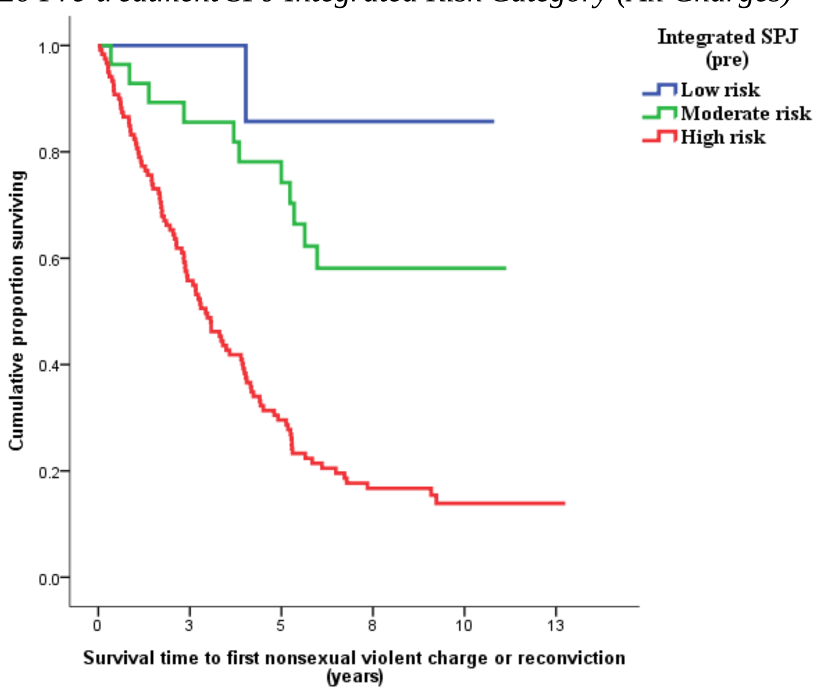
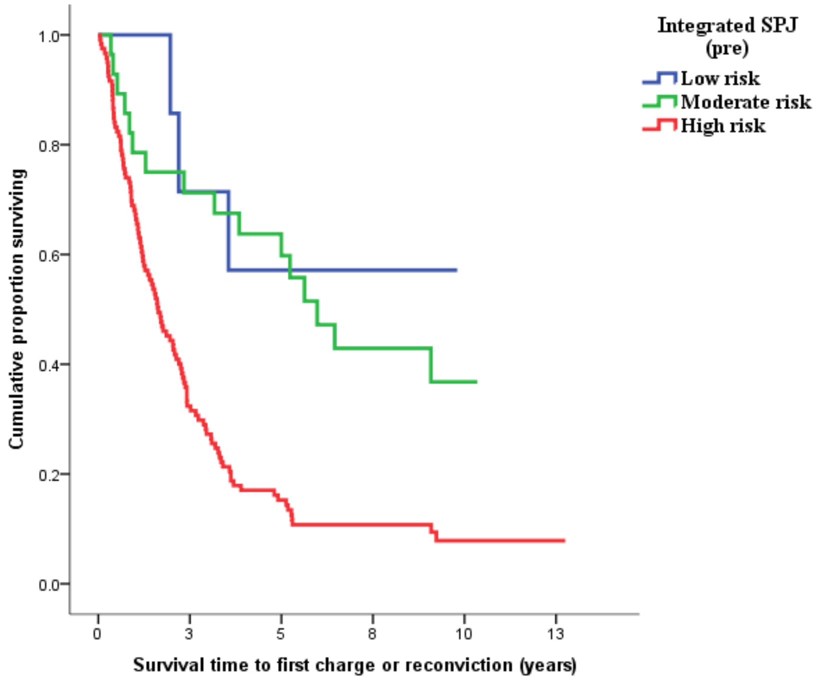


Figure 3.5.12

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 Pre-treatment SPJ Integrated Risk Category (All Charges)



Survival graphs were created for the integrated SAPROF/HCR-20 (post-treatment) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.13 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 86) was significantly higher than the low-risk (n = 9) and moderate-risk (n = 60) groups, Log Rank χ^2 (1) = 12.753, p = .000 and Log Rank χ^2 (1) = 11.415, p = .001, respectively. Figure 3.5.14 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (post-treatment) SPJ integrated risk levels in relation to nonsexual violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 12.753, p = .000 and Log Rank χ^2 (1) = 12.090, p = .001, respectively. Lastly, Figure 3.5.15 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (post-treatment) SPJ integrated risk groups in relation to any recidivism (all charges).

Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 9.822, p = .002 and Log Rank χ^2 (1) = 6.310, p = .012.

Figure 3.5.13

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (All Charges)

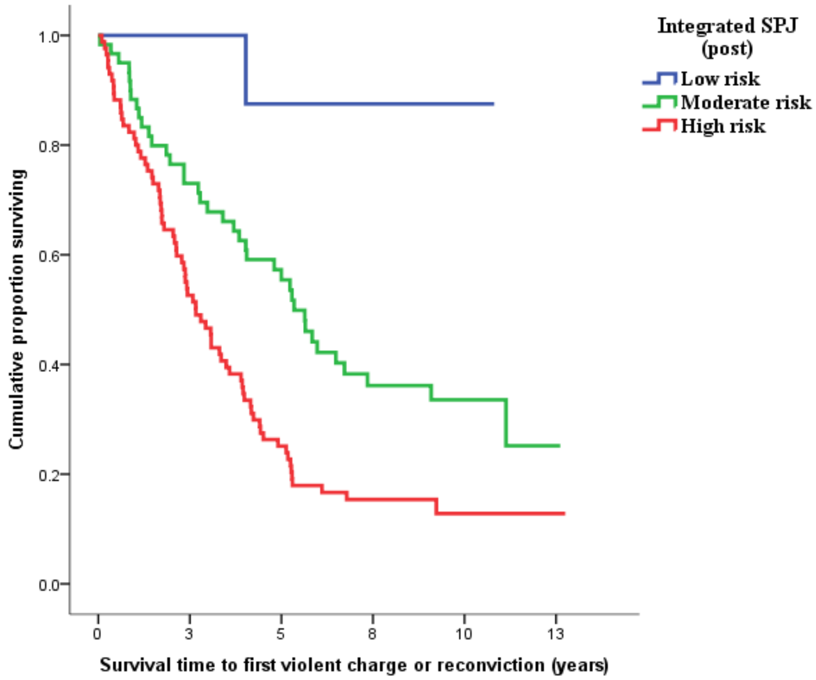


Figure 3.5.14

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (All Charges)

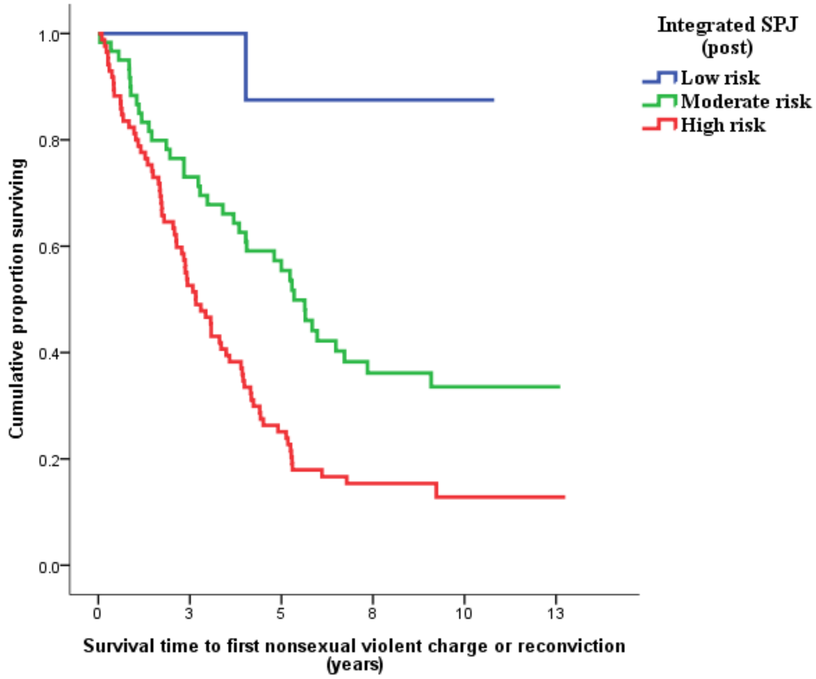
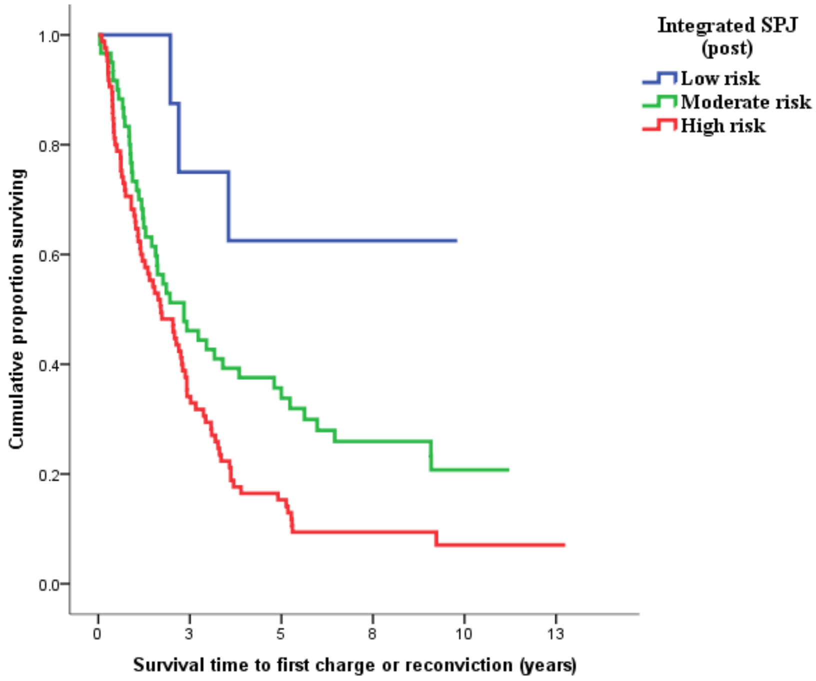


Figure 3.5.15

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 Post-treatment SPJ Integrated Risk Category (All Charges)



Survival graphs were created for the integrated SAPROF/HCR-20 (at release) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.16 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group (n = 76) was significantly higher than the low-risk (n = 14) and moderate-risk (n = 65) groups, Log Rank χ^2 (1) = 18.290, p = .000 and Log Rank χ^2 (1) = 12.495, p = .000, respectively. Figure 3.5.17 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (at release) SPJ integrated risk levels in relation to nonsexual violent recidivism (all charges). Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 18.290, p = .000 and Log Rank χ^2 (1) = 13.326, p = .000, respectively. Lastly, Figure 3.5.18 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (at release) SPJ integrated risk groups in relation to any recidivism (all charges). Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 15.227, p = .000 and Log Rank χ^2 (1) = 9.073, p = .003.

Figure 3.5.16

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (All Charges)

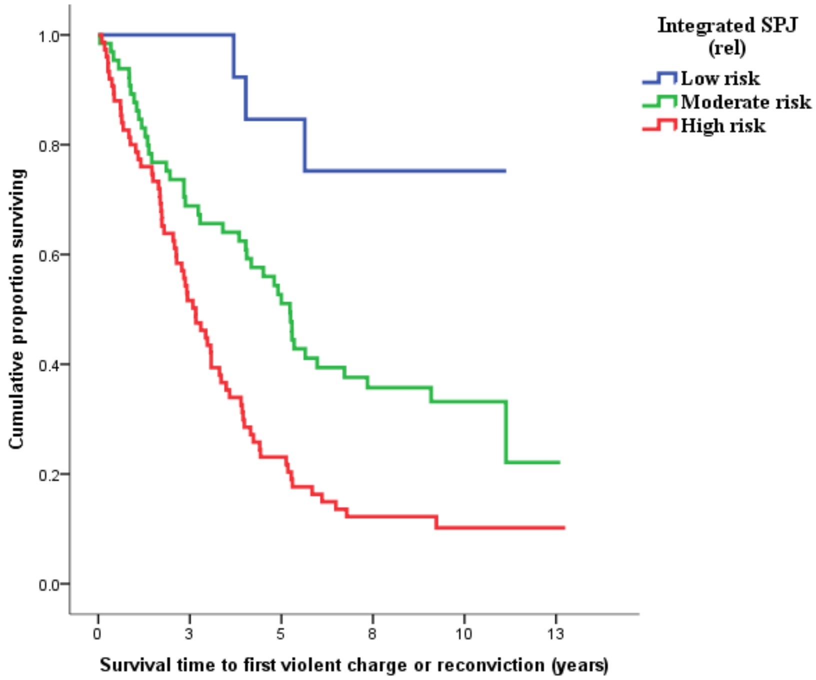


Figure 3.5.17

Survival Function: Cumulative Proportion of Offenders who Nonsexual Violently Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (All Charges)

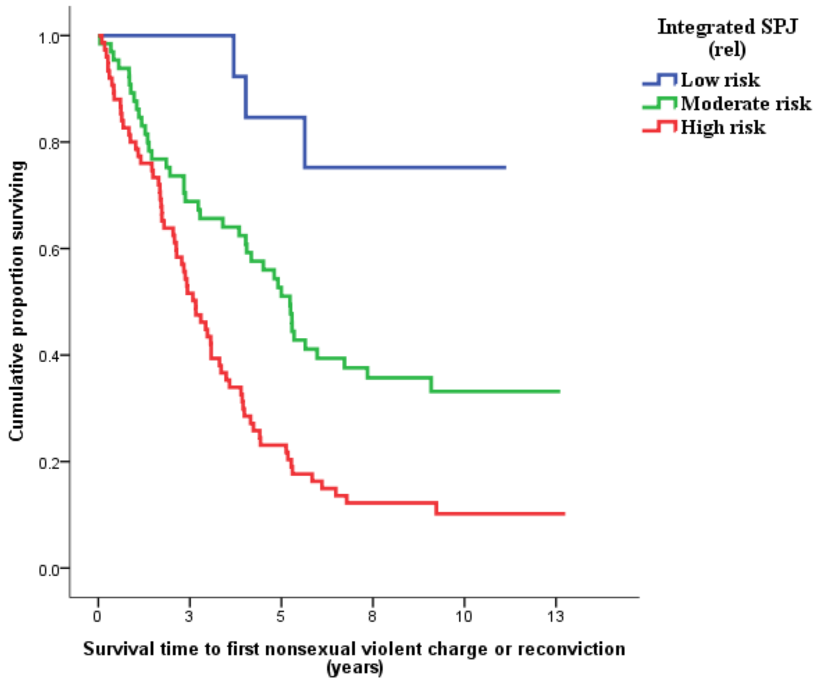
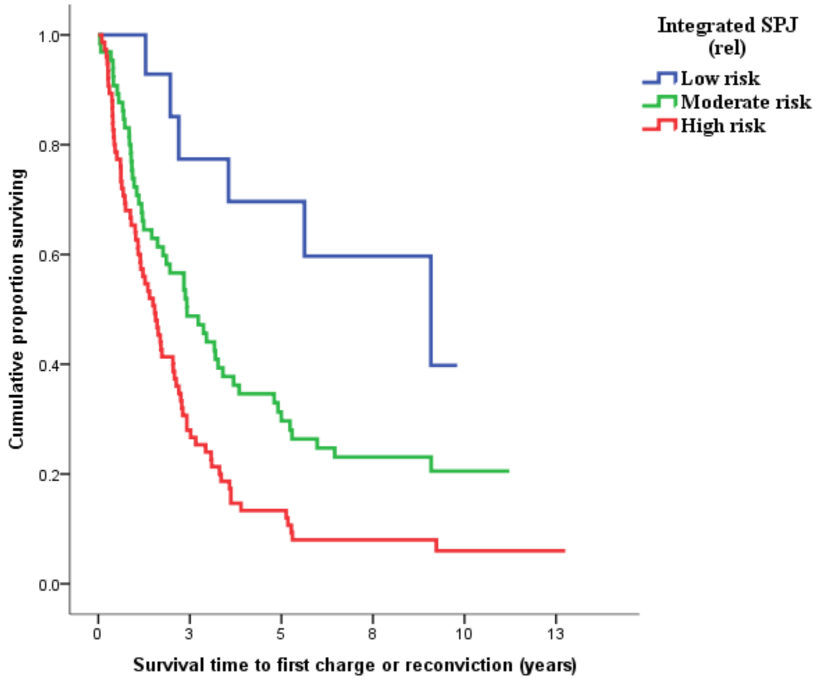


Figure 3.5.18

Survival Function: Cumulative Proportion of Offenders who Reoffended by SAPROF/HCR-20 SPJ Integrated Risk Category at Release (All Charges)



3.7.2.2 Institutional recidivism.

3.7.2.2.1 Correlations and area under the curve.

The predictive validity of the integrated HCR-20/SAPROF risk categories was examined with respect to major, minor, violent, and any institutional recidivism. Separate analyses were conducted to examine one week, one month, and no minimum follow-up following release into community after participation in the ABC program. Predictive validity was examined using both point-biserial correlations (r_{pb}) and receiver-operator characteristic generated area under the curve (AUC) values. Only the post-treatment risk categories were found to significantly predict major and violent institutional recidivism (see Table 3.5.5). Similarly, only the post-treatment risk categories were found to significantly predict major and violent institutional recidivism when AUC values were examined. None of the risk categories significantly predicted minor or any institutional recidivism.

Table 3.5.5

Predictive Validity of HCR-20/SAPROF Integrated SPJ Risk Categories for Institutional Recidivism: point-biserial correlations and AUCs

	Major			Minor			Violent			Any		
Risk Category	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
No minimum[a]												
HCR-20/SAPROF (pre)	.06	.54	.45, .63	.03	.51	.43, .60	.07	.54	.42, .66	.02	.51	.42, .60
HCR-20/SAPROF (post)	.18*	.61*	.52, .71	.05	.52	.44, .61	.18*	.64*	.53, .76	.07	.54	.45, .62
One week[b]												
HCR-20/SAPROF (pre)	.08	.55	.46, .64	.07	.53	.44, .62	.09	.55	.43, .67	.06	.53	.44, .62
HCR-20/SAPROF (post)	.19*	.62*	.43, .71	.06	.52	.43, .61	.19*	.64*	.53, .76	.08	.54	.45, .63
One month[c]												
HCR-20/SAPROF (pre)	.10	.56	.47, .65	.10	.55	.45, .64	.10	.56	.43, .68	.09	.55	.45, .64
HCR-20/SAPROF (post)	.21*	.63**	.53, .72	.08	.53	.44, .63	.20*	.65*	.54, .76	.11	.56	.46, .65

[a] $N = 178$, [b] $N = 164$, [c] $N = 157$; * = $p < .05$, ** = $p < .01$; pre = pre-treatment, post = post-treatment

3.7.2.2.2 Kaplan-Meier survival analysis.

Survival graphs were created for the integrated SAPROF/HCR-20 (pre-treatment) integrated rating as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.19 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group ($n = 135$) was significantly higher than the moderate-risk ($n = 36$) group, Log Rank χ^2 (1) = 8.666, $p = .003$. The failure rate of the low-risk group ($n = 7$) was not significantly different than the high-risk group, Log Rank χ^2 (1) = .085, $p = .770$. However, when the low-risk and moderate-risk groups were merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 7.618, $p = .006$. Figure 3.5.20 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (pre-treatment) SPJ integrated risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than moderate-risk group, Log Rank χ^2 (1) = 8.705, p = .003. The failure rate for the low-risk group was not significantly different than the high-risk group, Log Rank χ^2 (1) = 3.459, p = .063. However, when the low-risk and moderate-risk groups are merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 10.948, p = .001. Figure 3.5.21 shows the cumulative proportion of offenders surviving over the follow-up period for each of the SAPROF/HCR-20's (pre-treatment) SPJ integrated risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than both low-risk and moderate-risk groups, Log Rank χ^2 (1) = 1.485, p = .223 and Log Rank χ^2 (1) = 1.069, p = .301, respectively. None of the offenders in the low-risk group had a documented post-treatment violent misconduct. Similarly, when the low-risk and moderate-risk groups were merged, pairwise comparisons revealed that the failure rate for the high-risk group was not significantly different than the merged low/moderate-risk group, Log Rank χ^2 (1) = 2.014, p = .156. Lastly, Figure 3.5.22 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (pre-treatment) SPJ integrated risk groups in relation to any institutional misconducts. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the moderate-risk group, Log Rank χ^2 (1) = 9.449, p = .002. The failure-rate of the low-risk group was not significantly different than the high-risk group, Log Rank χ^2 (1) = 2.575, p = .109. However, when the low-risk and moderate-risk groups were merged, pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 10.942, p = .001.

Figure 3.5.19

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Pre-Treatment SPJ Integrated Risk Category (Major Misconduct)

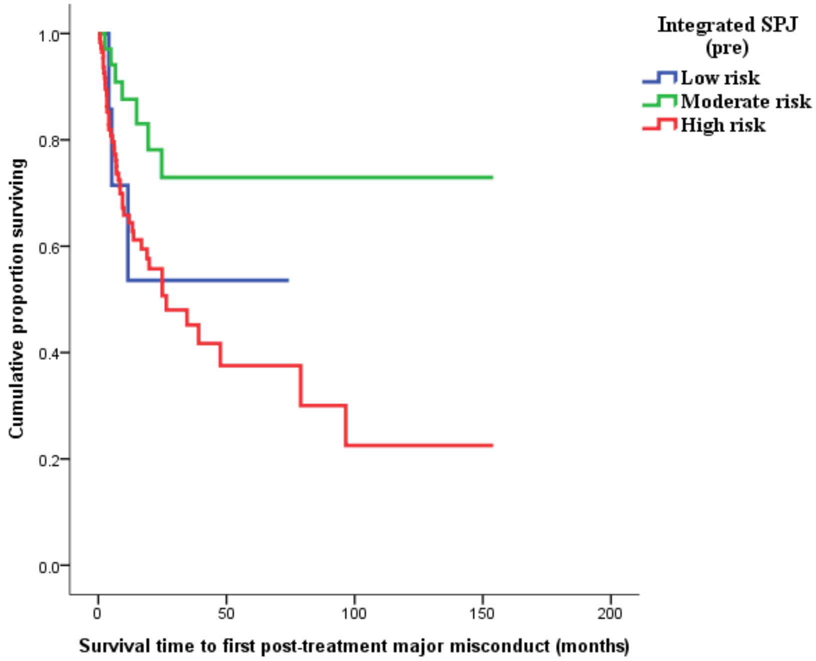


Figure 3.5.20

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Pre-Treatment SPJ Integrated Risk Category (Minor Misconduct)

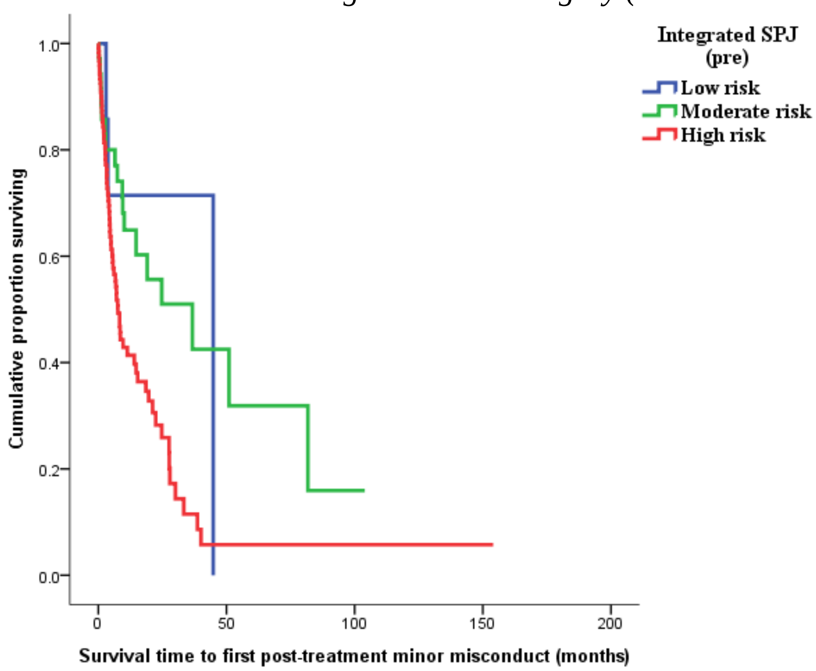


Figure 3.5.21

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Pre-Treatment SPJ Integrated Risk Category (Violent Misconduct)

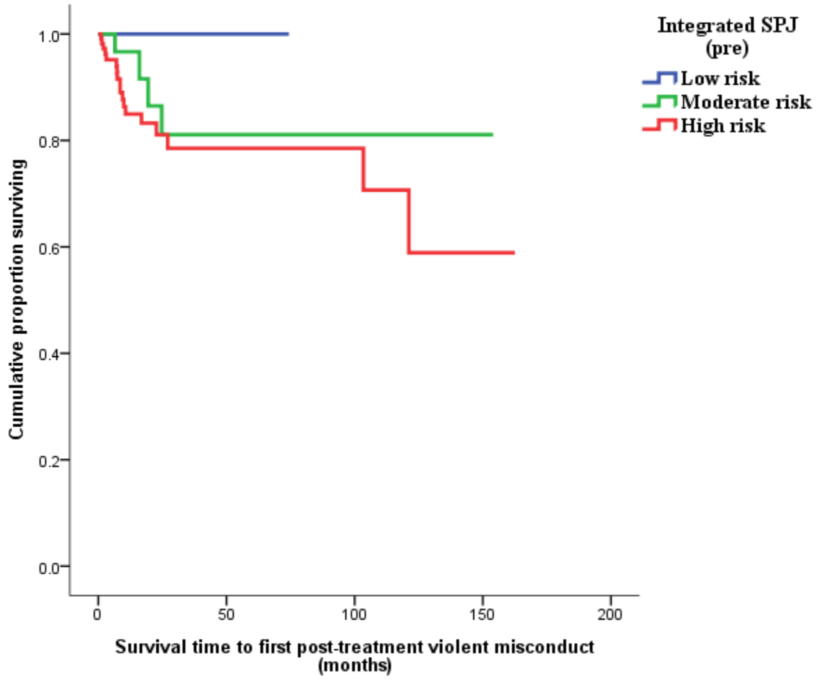
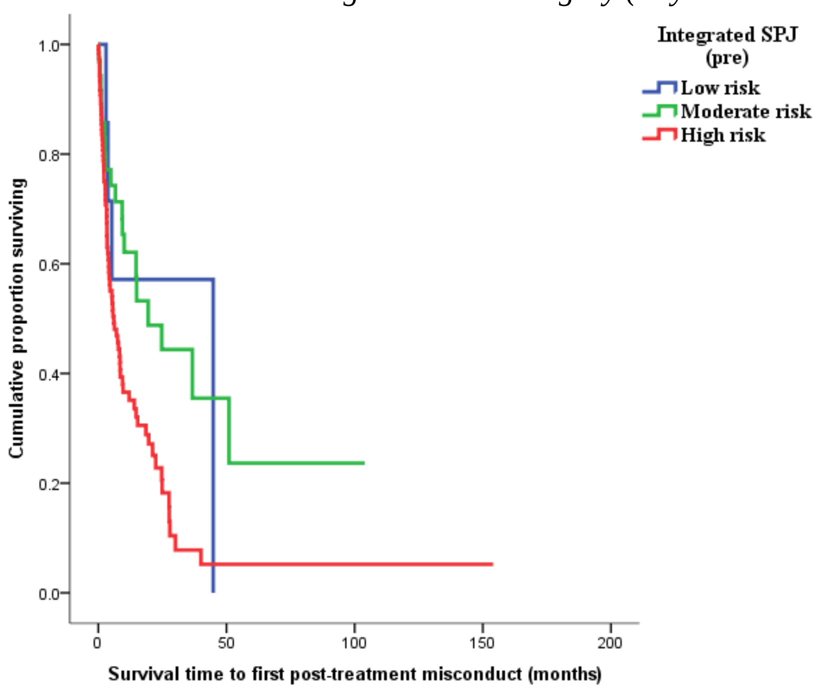


Figure 3.5.22

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Pre-Treatment SPJ Integrated Risk Category (Any Misconduct)



Survival graphs were created for the integrated SAPROF/HCR-20 (post-treatment) ratings as offenders were SPJ rated as low, moderate, or high risk for violence; thus, statistical comparisons were made among individual survival curves. Figure 3.5.23 shows the cumulative proportion of offenders surviving over the follow-up period for each SPJ integrated risk rating on the SAPROF/HCR-20 in relation to major institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group (n = 95) was significantly higher than the moderate-risk (n = 73) group was significantly different from, Log Rank χ^2 (1) = 17.606, p = .000. The failure rate for the low-risk group (n = 10) was not significantly different than the high risk group, Log Rank χ^2 (1) = 1.728, p = .186. However, when the low-risk and moderate-risk groups were merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 17.550, p = .000. Figure 3.5.24 shows the survival function for each of the SAPROF/HCR-20's (post-treatment) SPJ integrated risk levels in relation to minor institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the low-risk group, Log Rank χ^2 (1) = 5.843, p = .016. The failure rate of the moderate risk group was not significantly different than the high risk group, Log Rank χ^2 (1) = 3.002, p = .083. However, when the low-risk and moderate-risk groups are merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 5.502, p = .019. Figure 3.5.25 shows the survival function for each of the SAPROF/HCR-20's (post-treatment) SPJ integrated risk levels in relation to violent institutional misconducts. Pairwise comparisons revealed that the failure rate for the high-risk group was significantly higher than the moderate-risk groups, Log Rank χ^2 (1) = 5.624, p = .018. The failure rate for the low-risk group was not significantly different than the high risk group, Log Rank χ^2 (1) = 2.771, p = .096. None of the offenders in low-risk group had a documented post-treatment violent misconduct. However, when the low-risk and moderate-risk groups were merged, the failure rate for the high-risk group was significantly higher than the merged low/moderate-risk group, Log Rank χ^2 (1) = 7.687, p = .006. Lastly, Figure 3.5.26 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF/HCR-20 (post-treatment) SPJ integrated risk groups in relation to any institutional misconducts. Pairwise comparisons revealed that the high-risk group had a significantly higher failure rate than the low-risk and moderate-risk groups, Log Rank χ^2 (1) = 5.560, p = .018 and Log Rank χ^2 (1) = 6.126, p = .013, respectively.

Figure 3.5.23

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Post-Treatment SPJ Integrated Risk Category (Major Misconduct)

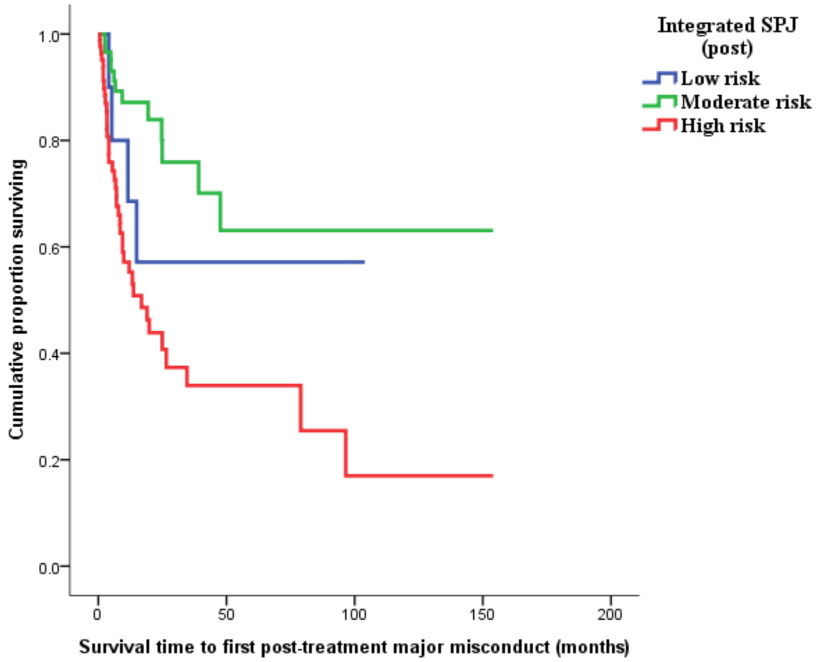


Figure 3.5.24

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Post-Treatment SPJ Integrated Risk Category (Minor Misconduct)

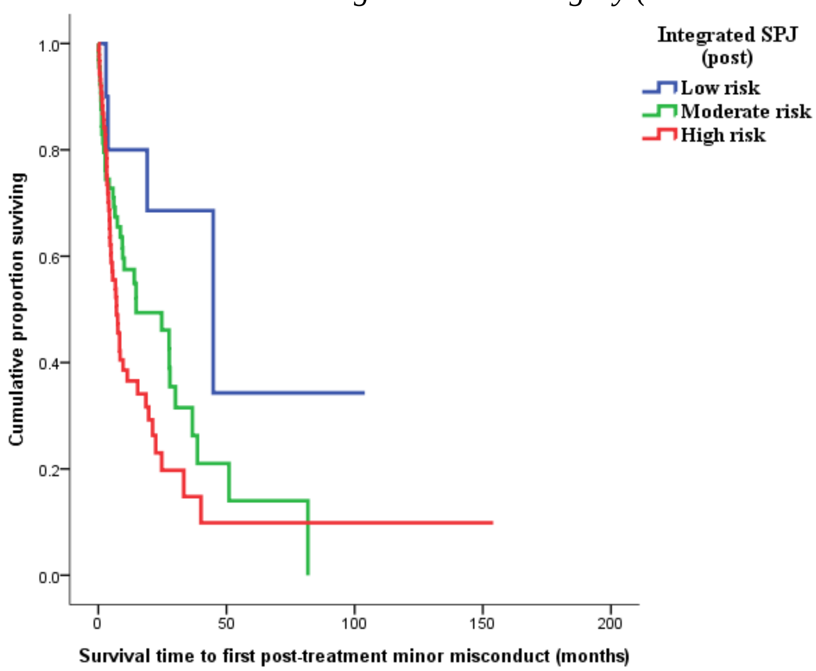


Figure 3.5.25

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Post-Treatment SPJ Integrated Risk Category (Violent Misconduct)

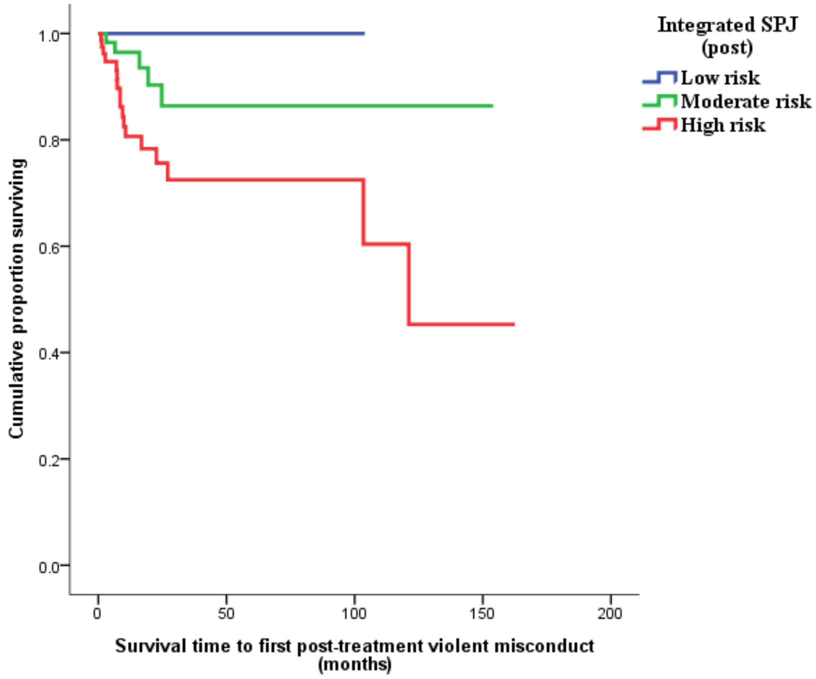
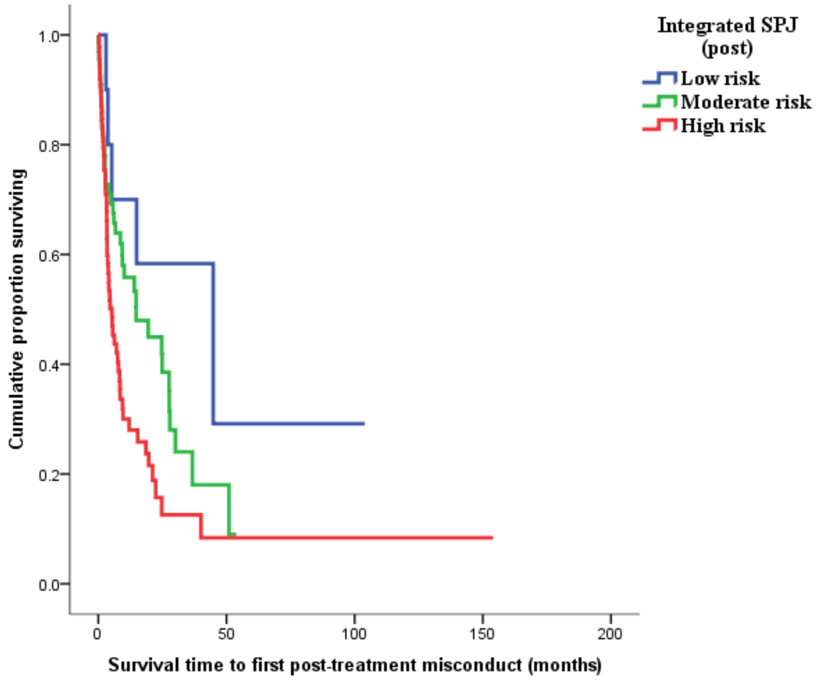


Figure 3.5.26

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF/HCR-20 Post-Treatment SPJ Integrated Risk Category (Any Misconduct)



3.7.2.3 Positive community outcomes.

3.7.2.3.1 Correlations.

To test whether HCR-20/SAPROF integrated SPJ risk categories are associated with positive community outcomes (e.g., attains stable housing, stable employment, etc.), correlations coefficients were computed between the risk categories and the operationalized measurements of positive community outcomes. Significant correlations were observed between all categories and all positive outcomes (see Table 3.5.6).

Table 3.5.6
The Relationship between SAPROF/HCR-20 Integrated SPJ Risk category and Positive Community Outcomes: Correlations

Risk Category	Employment	Stable Housing	Stable Relationships	Successful Supervision	Prosocial Activities	Total
SAPROF/HCR-20 (pre)	-.32***	-.23**	-.34***	-.46***	-.41***	-.45***
SAPROF/HCR-20 (post)	-.31***	-.28**	-.37***	-.37***	-.34***	-.42***
SAPROF/HCR-20 (rel)	-.34***	-.23**	-.38***	-.45***	-.42***	-.47***

N = 137; ** = $p < .01$, *** = $p < .001$; pre = pre-treatment, post = post-treatment, rel = at release, SPJ = structured professional judgement

3.7.3 Incremental predictive contributions.

3.7.3.1 Community recidivism.

3.7.3.1.1 Cox regression survival analysis.

To test whether protective factor scores demonstrate incremental validity in the prediction of community recidivism over risk factor scores, a series of hierarchical Cox regression survival analyses were used controlling for individual differences in follow-up time. Separate regressions were conducted for conviction-only community recidivism (see Table 3.5.7 and 3.5.8) and all charges community recidivism (see Table 3.5.9 and 3.5.10).

As seen in Table 3.5.7 and 3.5.9, pre-treatment PF List scores did not uniquely predict all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment VRS score. Post-treatment PF List scores uniquely predicted all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment VRS score. However, post-treatment PF List scores did not uniquely predict all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment VRS score and VRS total change score. At release PF List scores uniquely predicted all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment VRS score as well as both pre-treatment VRS score plus VRS total change score.

As seen in Table 3.5.8 and 3.5.10, pre-treatment SAPROF scores did not uniquely predict all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment HCR-20 scores. Post-treatment SAPROF scores uniquely predicted all violent recidivism (all charges) and nonsexual violent recidivism (both convictions-only and all charges), but not all violent recidivism (convictions-only) or any recidivism (both convictions-only and all charges). However, post-treatment SAPROF scores did not uniquely predicted all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment HCR-20 score and HCR-20 total change score. At release SAPROF scores uniquely predicted all violent, nonsexual violent, or any recidivism (for both convictions-only and all charges recidivism), after controlling for pre-treatment HCR-20 score. However, at release SAPROF scores only uniquely predicted all violent and nonsexual violent recidivism (convictions-only), after controlling for both pre-treatment HCR-20 score and HCR-20 total change score. At release SAPROF scores did not uniquely predict all violent (all charges), nonsexual violent (all charges) or any recidivism (both convictions-only and all charges recidivism), after controlling for both pre-treatment HCR-20 score and HCR-20 total change score.

Table 3.5.7

The Incremental Validity of PF List over VRS in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.047	.015	9.05	1.048	**.003**	1.016, 1.080
PF List (pre)	-.038	.038	.96	.963	.328	.893, 1.038
VRS Total (pre)	.044	.014	9.37	1.045	**.002**	1.016, 1.075
PF List (post)	-.057	.027	4.48	.944	**.034**	.895, .996
VRS Total (pre)	.049	.015	10.04	1.050	**.002**	1.019, 1.082
VRS Total change	-.041	.044	.85	.960	.358	.881, 1.047
PF List (post)	-.037	.035	1.14	.964	.285	.900, 1.031
VRS Total (pre)	.037	.015	6.43	1.038	**.011**	1.008, 1.068
PF List (rel)	-.074	.024	9.14	.929	**.002**	.886, .974
VRS Total (pre)	.039	.016	6.19	1.039	**.013**	1.008, 1.072
VRS Total change	-.013	.042	.09	.987	.762	.909, 1.072
PF List (rel)	-.068	.030	5.14	.934	**.023**	.881, .991
	Nonsexual Violent Recidivism					
VRS Total (pre)	.045	.015	8.50	1.046	**.004**	1.015, 1.078
PF List (pre)	-.039	.039	1.04	.961	.307	.891, 1.037
VRS Total (pre)	.043	.014	8.93	1.044	**.003**	1.015, 1.074
PF List (post)	-.057	.027	4.42	.944	**.035**	.895, .996
VRS Total (pre)	.048	.015	9.55	1.049	**.002**	1.018, 1.081
VRS Total change	-.040	.044	.80	.961	.373	.881, 1.048
PF List (post)	-.037	.035	1.15	.963	.283	.900, 1.031
VRS Total (pre)	.036	.015	6.08	1.037	**.014**	1.007, 1.067
PF List (rel)	-.074	.024	9.12	.929	**.003**	.885, .974
VRS Total (pre)	.037	.016	5.80	1.038	**.016**	1.007, 1.070
VRS Total change	-.011	.042	.07	.989	.788	.910, 1.074
PF List (rel)	-.069	.030	5.21	.933	**.022**	.880, .990
	All Recidivism					
VRS Total (pre)	.044	.013	11.41	1.045	**.001**	1.019, 1.072
PF List (pre)	-.052	.034	2.35	.949	.125	.888, 1.015
VRS Total (pre)	.043	.012	12.71	1.044	**.000**	1.019, 1.068
PF List (post)	-.097	.026	14.07	.908	**.000**	.863, .955
VRS Total (pre)	.054	.013	16.23	1.055	**.000**	1.028, 1.083
VRS Total change	-.075	.037	4.20	.928	**.040**	.863, .997
PF List (post)	-.059	.031	3.59	.943	.058	.888, 1.002
VRS Total (pre)	.038	.012	9.48	1.038	**.002**	1.014, 1.063
PF List (rel)	-.091	.023	15.31	.913	**.000**	.873, .956
VRS Total (pre)	.050	.014	13.05	1.051	**.000**	1.023, 1.079
VRS Total change	-.072	.035	4.07	.931	**.044**	.868, .998
PF List (rel)	-.060	.027	5.05	.941	**.025**	.893, .992

N =155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.5.8

The Incremental Validity of SAPROF over HCR-20 in the Prediction of Community Recidivism (Convictions): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
HCR-20 Total (pre)	.055	.028	3.94	1.056	**.047**	1.001, 1.115
SAPROF (pre)	-.034	.024	2.06	.966	.151	.922, 1.013
HCR-20 Total (pre)	.053	.026	4.13	1.054	**.042**	1.002, 1.109
SAPROF (post)	-.039	.021	3.29	.962	.070	.923, 1.003
HCR-20 Total (pre)	.084	.028	8.95	1.087	**.003**	1.029, 1.149
HCR-20 Total change	-.113	.042	7.26	.893	**.007**	.822, .970
SAPROF (post)	-.006	.024	.067	.994	.795	.949, 1.041
HCR-20 Total (pre)	.036	.026	1.95	1.037	.163	.985, 1.091
SAPROF (rel)	-.059	.019	9.95	.943	**.002**	.909, .978
HCR-20 Total (pre)	.057	.027	4.43	1.059	**.035**	1.004, 1.117
HCR-20 Total change	-.083	.040	4.33	.920	**.038**	.851, .995
SAPROF (rel)	-.039	.020	3.83	.962	**.050**	.925, 1.000
	Nonsexual Violent Recidivism					
HCR-20 Total (pre)	.054	.028	3.71	1.055	.054	.999, 1.114
SAPROF (pre)	-.038	.024	2.46	.963	.117	.918, 1.010
HCR-20 Total (pre)	.0525	.026	3.87	1.053	**.049**	1.000, 1.109
SAPROF (post)	-.043	.021	3.94	.958	**.047**	.919, .999
HCR-20 Total (pre)	.082	.028	8.45	1.086	**.004**	1.027, 1.148
HCR-20 Total change	-.111	.042	6.97	.895	**.008**	.824, .972
SAPROF (post)	-.010	.024	.18	.990	.668	.945, 1.037
HCR-20 Total (pre)	.036	.026	1.85	1.036	.173	.984, 1.091
SAPROF (rel)	-.061	.019	10.71	.941	**.001**	.907, .976
HCR-20 Total (pre)	.057	.028	4.25	1.058	**.039**	1.003, 1.117
HCR-20 Total change	-.083	.040	4.23	.921	**.040**	.851, .996
SAPROF (rel)	-.041	.020	4.26	.959	**.039**	.922, .998
	All Recidivism					
HCR-20 Total (pre)	.083	.025	10.99	1.087	**.001**	1.035, 1.141
SAPROF (pre)	-.022	.021	1.10	.978	.294	.938, 1.020
HCR-20 Total (pre)	.080	.024	11.47	1.083	**.001**	1.034, 1.134
SAPROF (post)	-.030	.019	2.39	.971	.122	.935, 1.008
HCR-20 Total (pre)	.105	.025	17.52	1.110	**.000**	1.057, 1.166
HCR-20 Total change	-.095	.037	6.75	.909	**.009**	.846, .977
SAPROF (post)	-.007	.020	.13	.993	.717	.954, 1.033
HCR-20 Total (pre)	.070	.023	8.80	1.072	**.003**	1.024, 1.123
SAPROF (rel)	-.044	.017	6.99	.957	**.008**	.926, .989
HCR-20 Total (pre)	.088	.024	13.14	1.092	**.000**	1.041, 1.146
HCR-20 Total change	-.080	.035	5.12	.923	**.024**	.862, .989
SAPROF (rel)	-.030	.017	3.11	.970	.078	.939, 1.003

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.5.9

The Incremental Validity of PF List over VRS in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.039	.014	7.91	1.040	**.005**	1.012, 1.069
PF List (pre)	-.064	.036	3.19	.938	.074	.875, 1.006
VRS Total (pre)	.039	.013	9.44	1.040	**.002**	1.014, 1.066
PF List (post)	-.072	.025	8.61	.930	**.003**	.886, .976
VRS Total (pre)	.046	.014	11.09	1.047	**.001**	1.019, 1.075
VRS Total change	-.055	.040	1.85	.947	.174	.875, 1.024
PF List (post)	-.045	.032	2.02	.956	.155	.899, 1.017
VRS Total (pre)	.034	.013	7.068	1.035	**.008**	1.009, 1.061
PF List (rel)	-.074	.022	11.39	.929	**.001**	.890, .969
VRS Total (pre)	.040	.014	8.29	1.041	**.004**	1.013, 1.070
VRS Total change	-.043	.038	1.25	.958	.264	.889, 1.033
PF List (rel)	-.056	.027	4.36	.945	**.037**	.897, .997
	Nonsexual Violent Recidivism					
VRS Total (pre)	.038	.014	7.68	1.039	**.006**	1.011, 1.068
PF List (pre)	-.065	.036	3.28	.937	.070	.874, 1.005
VRS Total (pre)	.039	.013	9.35	1.040	**.002**	1.014, 1.066
PF List (post)	-.072	.025	8.40	.931	**.004**	.887, .977
VRS Total (pre)	.045	.014	10.91	1.046	**.001**	1.019, 1.075
VRS Total change	-.053	.040	1.74	.948	.188	.876, 1.026
PF List (post)	-.045	.032	2.00	.956	.157	.899, 1.017
VRS Total (pre)	.034	.013	7.00	1.035	**.008**	1.009, 1.061
PF List (rel)	-.074	.022	11.24	.929	**.001**	.890, .970
VRS Total (pre)	.040	.014	8.11	1.040	**.004**	1.012, 1.069
VRS Total change	-.041	.038	1.14	.960	.286	.890, 1.035
PF List (rel)	-.056	.027	4.40	.945	**.036**	.897, .996
	All Recidivism					
VRS Total (pre)	.045	.013	12.82	1.046	**.000**	1.021, 1.073
PF List (pre)	-.045	.033	1.84	.956	.175	.897, 1.020
VRS Total (pre)	.044	.012	13.99	1.045	**.000**	1.021, 1.069
PF List (post)	-.091	.025	13.26	.913	**.000**	.869, .959
VRS Total (pre)	.055	.013	17.71	1.056	**.000**	1.030, 1.083
VRS Total change	-.076	.036	4.45	.927	**.035**	.864, .995
PF List (post)	-.054	.030	3.24	.948	.072	.894, 1.005
VRS Total (pre)	.039	.012	10.89	1.040	**.001**	1.016, 1.064
PF List (rel)	-.085	.022	14.41	.918	**.000**	.879, .960
VRS Total (pre)	.051	.013	14.75	1.052	**.000**	1.025, 1.080
VRS Total change	-.073	.035	4.40	.930	**.036**	.869, .995
PF List (rel)	-.056	.026	4.64	.946	**.031**	.899, .995

N =155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.5.10

The Incremental Validity of SAPROF over HCR-20 in the Prediction of Community Recidivism (All Charges): Hierarchical Cox Regression

	All Violent Recidivism					
Regression Model	B	SE	Wald	e^B	*p*	95% CI
HCR-20 Total (pre)	.066	.026	6.56	1.069	**.010**	1.016, 1.124
SAPROF (pre)	-.035	.022	2.52	.965	.113	.924, 1.008
HCR-20 Total (pre)	.065	.024	7.28	1.067	**.007**	1.018, 1.119
SAPROF (post)	-.040	.019	4.41	.961	**.036**	.925, .997
HCR-20 Total (pre)	.102	.026	15.26	1.108	**.000**	1.052, 1.166
HCR-20 Total change	-.126	.039	10.58	.882	**.001**	.817, .951
SAPROF (post)	-.005	.021	.05	.995	.824	.955, 1.037
HCR-20 Total (pre)	.054	.024	5.02	1.055	**.025**	1.007, 1.107
SAPROF (rel)	-.051	.017	9.31	.950	**.002**	.920, .982
HCR-20 Total (pre)	.083	.025	10.61	1.086	**.001**	1.033, 1.141
HCR-20 Total change	-.105	.037	8.28	.900	**.004**	.838, .967
SAPROF (rel)	-.028	.017	2.63	.972	.105	.940, 1.006
	Nonsexual Violent Recidivism					
HCR-20 Total (pre)	.066	.026	6.46	1.069	**.011**	1.015, 1.125
SAPROF (pre)	-.038	.022	2.82	.963	.093	.922, 1.006
HCR-20 Total (pre)	.065	.024	7.14	1.067	**.008**	1.017, 1.119
SAPROF (post)	-.043	.019	4.93	.958	**.026**	.923, .995
HCR-20 Total (pre)	.101	.026	14.81	1.107	**.000**	1.051, 1.165
HCR-20 Total change	-.123	.039	10.09	.884	**.001**	.819, .954
SAPROF (post)	-.008	.021	.13	.992	.718	.952, 1.034
HCR-20 Total (pre)	.054	.024	5.03	1.056	**.025**	1.007, 1.107
SAPROF (rel)	-.052	.017	9.79	.949	**.002**	.918, .981
HCR-20 Total (pre)	.083	.026	10.49	1.086	**.001**	1.033, 1.142
HCR-20 Total change	-.103	.037	8.01	.902	**.005**	.839, .969
SAPROF (rel)	-.029	.017	2.90	.971	.089	.939, 1.004
	All Recidivism					
HCR-20 Total (pre)	.085	.024	12.10	1.089	**.001**	1.038, 1.142
SAPROF (pre)	-.016	.021	.61	.984	.434	.944, 1.025
HCR-20 Total (pre)	.081	.023	12.56	1.084	**.000**	1.037, 1.134
SAPROF (post)	-.025	.019	1.73	.975	.189	.940, 1.012
HCR-20 Total (pre)	.108	.024	19.71	1.114	**.000**	1.062, 1.169
HCR-20 Total change	-.101	.036	8.11	.904	**.004**	.843, .969
SAPROF (post)	-.001	.020	.00	.999	.954	.961, .1039
HCR-20 Total (pre)	.070	.023	9.38	1.072	**.002**	1.025, 1.121
SAPROF (rel)	-.042	.016	6.43	.959	**.011**	.929, .991
HCR-20 Total (pre)	.090	.024	14.43	1.094	**.000**	1.044, 1.146
HCR-20 Total change	-.084	.034	6.10	.919	**.014**	.860, .983
SAPROF (rel)	-.027	.017	2.70	.973	.101	.942, 1.005

N = 155; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

3.7.3.2 Institutional recidivism.

3.7.3.2.1 Cox regression survival analysis.

To test whether protective factor scores demonstrate incremental validity in the prediction of institutional recidivism over risk factor scores, a series of hierarchical Cox regression survival analyses were used controlling for individual differences in follow-up time. As seen in Table 3.5.11, pre-treatment PF List scores did not uniquely predict major, minor, violent, or any institutional recidivism, after controlling for pre-treatment VRS score. Post-treatment PF List scores only uniquely predicted major institutional recidivism, after controlling for pre-treatment VRS score, and did not predict minor, violent, or any institutional recidivism. However, post-treatment PF List scores did not uniquely predict major, minor, violent, or any institutional recidivism, after controlling for both pre-treatment VRS score and VRS total change score.

As seen in Table 3.5.12, pre-treatment and post-treatment SAPROF scores did not uniquely predict major, minor, violent, or any institutional recidivism, after controlling for pre-treatment HCR-20 score. Further, post-treatment SAPROF scores did not uniquely predict major, minor, violent, or any institutional recidivism, after controlling for both pre-treatment HCR-20 score and HCR-20 total change score.

Table 3.5.11

The Incremental Validity of PF List over VRS in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Major						Minor					
Regression Model	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
VRS Total (pre)	.066	.019	11.59	1.068	**.001**	1.028, 1.109	.055	.014	15.83	1.057	**.000**	1.028, 1.086
PF List (pre)	-.013	.045	.083	.987	.773	.904, 1.078	.024	.033	.52	1.024	.473	.960, 1.092
VRS Total (pre)	.060	.019	10.14	1.062	**.001**	1.023, 1.102	.050	.013	14.65	1.051	**.000**	1.025, 1.079
PF List (post)	-.081	.039	4.37	.922	**.037**	.855, .995	-.007	.028	.06	.993	.808	.940, 1.050
VRS Total (pre)	.077	.021	13.58	1.080	**.000**	1.037, 1.126	.056	.014	14.85	1.057	**.000**	1.028, 1.088
VRS Total change	-.120	.056	4.61	.887	**.032**	.794, .990	-.038	.040	.90	.963	.344	.889, 1.042
PF List (post)	-.031	.043	.50	.970	.482	.891, 1.056	.011	.033	.10	1.011	.748	.947, 1.079
	Violent						Any					
VRS Total (pre)	.070	.032	4.90	1.073	**.027**	1.008, 1.142	.055	.013	16.88	1.056	**.000**	1.029, 1.084
PF List (pre)	.029	.071	.17	1.030	.679	.896, 1.183	.005	.032	.02	1.005	.877	.944, 1.070
VRS Total (pre)	.063	.030	4.473	1.065	**.034**	1.005, 1.130	.051	.013	16.40	1.052	**.000**	1.027, 1.079
PF List (post)	-.013	.059	.051	.987	.822	.879, 1.108	-.027	.027	.95	.974	.330	.923, 1.027
VRS Total (pre)	.090	.034	6.86	1.094	**.009**	1.023, 1.170	.060	.014	18.56	1.062	**.000**	1.033, 1.091
VRS Total change	-.163	.084	3.74	.850	.053	.720, 1.002	-.062	.039	2.54	.940	.111	.870, 1.014
PF List (post)	.048	.065	.56	1.050	.454	.925, 1.191	.000	.031	.000	1.000	.995	.941, 1.064

N =178; significant *p*-values bolded; pre = pre-treatment, post = post-treatment

Table 3.5.12

The Incremental Validity of SAPROF over HCR-20 in the Prediction of Institutional Recidivism: Hierarchical Cox Regression

	Major						Minor					
Regression Model	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
HCR-20 Total (pre)	.087	.037	5.58	1.091	**.018**	1.015, 1.173	.086	.028	9.71	1.090	**.002**	1.032, 1.150
SAPROF (pre)	-.007	.031	.05	.993	.821	.935, 1.055	.016	.023	.44	1.016	.507	.970, 1.064
HCR-20 Total (pre)	.074	.035	4.57	1.077	**.033**	1.006, 1.152	.087	.025	11.58	1.091	**.001**	1.037, 1.146
SAPROF (post)	-.028	.029	.94	.973	.334	.919, 1.029	.019	.021	.78	1.019	.378	.978, 1.062
HCR-20 Total (pre)	.117	.038	9.43	1.124	**.002**	1.043, 1.212	.090	.028	10.04	1.094	**.002**	1.035, 1.156
HCR-20 Total change	-1.51	.055	7.60	.859	**.006**	.772, .957	-.011	.044	.06	.989	.802	.908, 1.077
SAPROF (post)	.005	.030	.03	1.005	.858	.948, 1.066	.021	.023	.82	1.021	.366	.976, 1.069
	Violent						Any					
HCR-20 Total (pre)	.089	.060	2.22	1.093	.136	.972, 1.228	.079	.026	9.309	1.082	**.002**	1.029, 1.138
SAPROF (pre)	.019	.048	.15	1.019	.702	.926, 1.120	.001	.023	.003	1.001	.957	.958, 1.047
HCR-20 Total (pre)	.081	.055	2.18	1.085	.140	.974, 1.208	.079	.024	10.92	1.082	**.001**	1.033, 1.135
SAPROF (post)	.010	.043	.05	1.010	.820	.929, 1.098	.002	.021	.008	1.002	.931	.962, 1.043
HCR-20 Total (pre)	.140	.062	5.15	1.150	**.023**	1.019, 1.298	.093	.027	12.09	1.097	**.001**	1.041, 1.156
HCR-20 Total change	-.213	.092	5.38	.808	**.020**	.674, .967	-.050	.042	1.38	.952	.239	.876, 1.034
SAPROF (post)	.059	.047	1.55	1.060	.213	.967, 1.163	.013	.023	.33	1.013	.566	.969, 1.059

N = 178; significant *p*-values bolded; pre = pre-treatment, post = post-treatment

3.7.3.3 Positive community outcomes.

3.7.3.3.1 Multiple regression.

To test whether protective factor scores demonstrate incremental validity in the prediction of positive community outcomes over risk factor scores, hierarchical multiple regression was used. As seen in Table 3.5.13, pre-treatment, post-treatment, and at release PF List scores uniquely predicted total positive community outcomes score, after controlling for pre-treatment VRS scores as well as pre-treatment VRS score plus VRS total change score. As seen in Table 3.5.14, both pre-treatment and post-treatment SAPROF scores uniquely predicted total positive community outcomes score after controlling for pre-treatment HCR-20 scores. However, post-treatment SAPROF scores did not uniquely predict total positive community outcomes scare after controlling for both pre-treatment HCR-20 scores and HCR-20 total change scores. At release SAPROF scores uniquely predicted total positive community outcomes score, after controlling for pre-treatment HCR-20 scores as well as pre-treatment HCR-20 score plus HCR-20 total change score.

Table 3.5.13

The Incremental Validity of PF List over VRS in the Prediction of Positive Community Outcomes: Hierarchical Multiple Regression

Regression Model	b	SE	B	*p*	r_{part}^2
VRS Total (pre)	-.121	.028	-.390	**.000**	.29
PF List (pre)	.209	.080	.236	**.010**	.03
(constant)	.10.332	1.954			
R = .57, R^2 = .32, F (2, 134) = 31.81, p < .001					
VRS Total (pre)	-.129	.024	-.415	**.000**	.29
PF List (post)	.216	.059	.283	**.000**	.07
(constant)	9.976	1.698			
R = .59, R^2 = .35, F (2, 134) = 36.53, p < .001					
VRS Total (pre)	-.136	.026	-.438	**.000**	.29
VRS Total change	.060	.088	.056	.498	.03
PF List (post)	.192	.069	.251	**.006**	.04
(constant)	10.329	1.779			
R = .60, R^2 = .36, F (3, 133) = 24.41, p < .001					
VRS Total (pre)	-.124	.024	-.401	**.000**	.29
PF List (rel)	.225	.054	.316	**.000**	.08
(constant)	9.293	1.708			
R = .61, R^2 = .34, F (2, 134) = 39.19, p < .001					
VRS Total (pre)	-.128	.026	-.414	**.000**	.29
VRS Total change	.033	.087	.031	.709	.03
PF List (rel)	.212	.064	.298	**.001**	.05
(constant)	9.502	1.803			
R = .61, R^2 = .37, F (3, 133) = 26.01, p < .001					

N = 137; significant p-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Table 3.5.14

The Incremental Validity of SAPROF over HCR-20 in the Prediction of Positive Community Outcomes: Hierarchical Multiple Regression

Regression Model	b	SE	β	*p*	r_{part}^2
HCR-20 Total (pre)	-.173	.055	-.320	**.002**	.24
SAPROF Total (pre)	.124	.050	.249	**.015**	.03
(constant)	8.144	1.953			
$R = .52$, $R^2 = .28$, F (2, 134) = 25.36, $p < .001$					
HCR-20 Total (pre)	-.185	.050	-.342	**.000**	.24
SAPROF Total (post)	.121	.046	.243	**.010**	.04
(constant)	8.093	1.897			
$R = .53$, $R^2 = .28$, F (2, 134) = 25.84, $p < .001$					
HCR-20 Total (pre)	-.226	.055	-.419	**.000**	.24
HCR-20 Total change	.176	.096	.150	.070	.04
SAPROF Total (post)	.080	.051	.161	.119	.01
(constant)	9.262	1.986			
$R = .54$, $R^2 = .30$, F (3, 133) = 18.64, $p < .001$					
HCR-20 Total (pre)	-.147	.047	-.272	**.001**	.24
SAPROF Total (rel)	.173	.040	.374	**.002**	.09
(constant)	6.057	1.769			
$R = .58$, $R^2 = .33$, F (2, 134) = 33.58, $p < .001$					
HCR-20 Total (pre)	-.172	.051	-.318	**.001**	.24
HCR-20 Total change	.116	.091	.099	.206	.04
SAPROF Total (rel)	.151	.044	.326	**.001**	.06
(constant)	6.72	1.841			
$R = .59$, $R^2 = .34$, F (3, 133) = 23.03, $p < .001$					

$N = 137$; significant *p*-values bolded; pre = pre-treatment, post = post-treatment, rel = at release

Chapter 4. Discussion

The present program of research examined the interrelationship of dynamic violence risk, treatment-related change, and protective factors to institutional and community recidivism in a sample of predominantly high-risk treated violent federal offenders. Many important themes were evident from this body of work with implications for the psychometric properties of the tools, the dynamic nature of violence risk, and the capacity for a serious group of offenders to make risk relevant changes.

4.1 Risk Assessment: Convergent and Predictive Validity of Study Measures

Large convergent validity correlations (cf. Cohen, 1992) were found between the VRS and HCR-20, for the static and dynamic sections of each tool, as well as dimensional total scores and risk categories. These results are consistent with those of Dolan and Fullum (2007). None of these findings are surprising since both tools purport to measure violence risk and the strong pattern of convergence suggest that the components of the VRS and HCR-20 are measuring similar psychological constructs.

Institutional and community recidivism data were gathered to examine the predictive accuracy of the tools through ROC and correlational analyses. The sample was followed-up an average of 9.7 years (*SD* = 2.6, range = 0.1-13.8) in the community post release, the sample had fairly high rates of all violent (61%), nonsexual violent (60%), and any (79%) recidivism (convictions). For institutional recidivism, offenders were followed-up for an average of 29.7 months (*SD* = 40.3, range = 0.0-163.7) post ABC program and rates of major misconduct (31%), minor misconduct (51%), violent misconduct (12%), and any misconduct (79%) were examined.

Both pre-treatment and post-treatment HCR-20 and VRS scores and risk categories significantly predicted all violent, nonsexual violent, and any community recidivism with the exception of the HCR-20 pre-treatment risk management subscale, which was small in effect and failed to reach significance for violent recidivism. AUC effect size magnitudes were considered medium for all violent and nonsexual violent recidivism and large for any community recidivism (as per Rice & Harris, 2005, interpretation guidelines); post-treatment AUCs were slightly larger on average than pre-treatment AUCs. HCR-20 effect sizes were slightly higher than those generated for the VRS scale components, although the overlapping 95% confidence intervals for AUC values suggested the predictive accuracy of the tools to be roughly equal.

The major scale components of the VRS and HCR-20, pre and post-treatment, significantly predicted major institutional misconducts, with obtained effects being small in magnitude. Regarding risk categories, only the HCR-20 post-treatment risk category was a significant predictor of major institutional misconducts. Institutional recidivism results improved when a minimum follow-up period was used to ensure every individual had sufficient time at risk to reoffend. Again post-treatment scores demonstrating slightly higher AUC magnitudes than pre-treatment. As with the community recidivism prediction analyses, the large overlap in AUC 95% confidence intervals suggested few differences between the HCR-20 and VRS in their predictive efficacy for institutional recidivism.

A further test of the predictive accuracy of the VRS and HCR-20 and the validity of their risk bins specifically, was conducted via Kaplan-Meier survival analysis which examines failure rate over time. As this was a broadly high risk sample, there were very few truly low risk offenders, with a somewhat larger number in the moderate range, and most of the sample scoring high. As anticipated, high risk offenders on the VRS and HCR-20 had higher and faster rates of failure in the community for all recidivism outcomes than low and moderate risk offenders. Similarly, high risk offenders on the VRS and HCR-20 demonstrated higher and faster rates of major, minor, and any institutional recidivism than the low and moderate risk groups; only the VRS risk categories discriminated rates of institutional violence post program. Again, by virtue of the small number of low and moderate risk men, no significant difference in failure rate was observed between these risk groups for either tool.

In all, these preliminary prediction analyses support the predictive accuracy of the VRS and HCR-20 for violent and any recidivism, particularly that occurring within the community (as prediction magnitudes were higher), but also occurring within the institution. The results are consistent with the Yang and colleagues (2010) multilevel meta-analysis, which found broadly equal predictive efficacy of nine different risk tools for violent outcomes. The AUC magnitudes are also consistent with their reported findings. Also important to note is the high risk nature of this sample, which invariably restricts range to some degree, and decreases the magnitude of prediction by virtue of a loss of variance in scores. Even in this high risk sample, however, the VRS (as with Lewis et al., 2013) and HCR-20 were able to effectively discriminate recidivist from nonrecidivist offenders for most outcomes on the basis of their risk scores.

Part of the prediction debate also concerns the incremental predictive validity of dynamic over static variables. Not uncommonly, research examining the unique contributions of the two domains, whether this be with sexual offenders (e.g., Olver et al., 2007), violent offenders (e.g., Lewis et al., 2013), or even young offenders (e.g., Stockdale, Olver, & Wong, 2014) have found both components to be predictive. Accordingly, hierarchical Cox regression survival analyses were performed to examine the incremental predictive validity of the static and dynamic components of the VRS and HCR-20 for community and institutional recidivism meanwhile controlling for individual differences in follow-up time. The dynamic sections of both tools, broadly speaking (pre- and post-treatment), demonstrated unique prediction of all violent, nonsexual violent, and any community recidivism after controlling for static score. Only the post-treatment measured dynamic components of the VRS and HCR-20 uniquely predicted any institutional recidivism outcomes; with the exception of major misconducts, most of the results trended toward significance ($p < .10$). Again, consistent with the community recidivism-related bivariate prediction analyses, institutional recidivism-related incremental validity analyses tended to yield more modest results. In all, the incremental validity results harken back to Wong and Gordon's (2006) argument that dynamic variables do not necessarily need to trump the predictive accuracy of static variables in order to demonstrate their clinical utility; although in the present study, often they did. Both Douglas and Kropp (2002) and Wong and Gordon (2006) convincingly make the argument that dynamic variables are inherently valuable, given that they represent targets to be prioritized in treatment and can therefore guide the planning and delivery of treatment services and case management, in the prevention of future violence.

Finally, it would stand to reason that if the VRS and HCR-20 were good at predicting bad outcomes, perhaps they may also be effective at predicting good outcomes, but in the opposite direction. That is, lower risk scores would be linearly associated with higher positive community outcomes (such as employment, stable housing, etc.) as well as their summation. Consistent with this logic, medium to large negative correlations were observed between all risk scales and operationalized positive community outcomes, with post-treatment measures demonstrating slightly higher correlations than pre-treatment scores. As with the community and institutional recidivism analyses, incremental predictive validity of static and dynamic scale components was also examined via hierarchical regression. As with recidivism analyses, pre- and post-treatment dynamic scale components of the VRS and HCR-20 each uniquely predicted positive community outcomes after controlling for their respective static scale components. Together, these results support the importance of using dynamic variables in risk assessment as they not only add to our prediction of recidivism, but also add to our prediction of other important prosocial outcomes. To this author's knowledge, this is also the first piece of research to examine the prediction of positive community outcomes by the VRS and HCR-20.

4.2 Risk-related Therapeutic Change: Convergent and Predictive Validity

The risk assessment measures were also examined for their ability to assess treatment-related changes in risk. The HCR-20 utilized a pre-post model to generate change scores whereas the VRS used an integrated stages of change model to generate change scores. That is, calculation of change scores for the HCR-20 scales and the VRS static scale was atheoretical and involved the simple subtraction of pre-treatment scores from post-treatment scores; whereas the calculation of change scores for the VRS dynamic scale was theoretically linked to the stages-of-change model (Prochaska & DiClemente, 2005) in that progression through the stages of change on dynamic items is assigned specific change values which are then summed over all the dynamic items. Almost all change scores generated from the HCR-20 and VRS represented significant ($p < .001$) reductions in risk at post-treatment with the exception of the VRS static scale change score and the HCR-20 historical (static) scale change score. This is to be expected as both of these scales measure static risk variables which generally change very slowly over time and do not contain dynamic risk variables that are hypothesized to change with treatment. The average amount of change observed on the VRS and HCR-20 dynamic and total scales was medium in effect size. These results are comparable to those reported in Lewis and colleagues (2013) which also showed medium effect size VRS change scores. Further, the magnitude of the dynamic change scores was near identical to those reported in Polaschek and Kilgour (2013) when the VRS was used in the New Zealand high-risk special treatment units program. Comparable change scores and effect sizes do not exist for the HCR-20.

Similar amounts of change were observed on both measures. Convergent correlations showed that VRS change scores significantly correlated with HCR-20 change scores. Correlations between each measure's static change score was small in magnitude and likely represents the minimal observed variation in the static change scores. Correlations between each measure's dynamic and total change scores were medium to large in magnitude. Overall, the strong convergence correlations suggest that both the VRS and HCR-20 are measuring similar change constructs, that this change can be measured reliably over time, and that both the pre-post model and the integrated stages of change model are valid methods for capturing change.

Given that risk scores demonstrated significant change over the course of treatment, the next step was to examine whether these changes represented reductions in post-treatment recidivism. The predictive validity of change scores was examined using point-biserial correlations. With regards to community recidivism, all correlations were in the anticipated direction. This indicated that greater change was associated with lower rates of recidivism. However, only a few of the VRS and HCR-20 change scores generated significant correlations with all violent, nonsexual violent, and any recidivism, and these correlations were small in magnitude of effect. Weaker correlations were observed between change scores and institutional recidivism. Lewis and colleagues (2013) similarly found a significant, small to medium in magnitude, inverse relationship between dynamic change scores on the VRS with violent recidivism (r = -.21, d = .43) in a broadly high-risk sample with a 5-year follow-up period.

A limitation of zero-order correlations, however, is that important relationships can be suppressed if a covariate affects the distribution of scores in the predicting variable. Beggs and Grace (2011) and Olver and colleagues (2014) suggest that pre-treatment risk scores can have a suppressing effect on change score correlations because possible prosocial change is limited in low-risk offenders (due to a floor effect) whereas possible prosocial change is high in high risk offenders, as they have more room to change. Further, Sowden (2013) provided additional support for this hypothesis as she demonstrated that change scores on the VRS:SO were positively correlated with pre-treatment VRS:SO scores (i.e., low-risk offenders generally had smaller change scores and high-risk offenders had larger change scores). As such, semi-partial correlations were calculated to examine the unique relationship between change and recidivism after controlling for the covariate pre-treatment risk. Consistent with these authors' suggestion, most change scores on the VRS and HCR-20 became significant predictors of all violent, nonsexual violent, and any recidivism after controlling for pre-treatment risk. Semi-partial correlations between change scores and institutional recidivism, however, remained weak with most not reaching significance. Overall, these findings support that change scores are important predictors of community recidivism.

The main presumption of dynamic risk variables is that they should change with treatment and such changes should represent reductions in recidivism. However, this presumption has largely not been tested (Douglas & Skeem, 2005). Lewis and colleagues (2013) presented preliminary evidence supporting this presumption with regards to VRS dynamic change scores, but no such studies have examined whether the same is true for the HCR-20. Accordingly, hierarchical Cox regression survival analyses were performed to examine the incremental predictive validity of treatment-related change scores on the VRS and HCR-20 for community and institutional recidivism meanwhile controlling for individual differences in follow-up time. Similar to the pattern observed in the semi-partial correlations, most change scores on the VRS and HCR-20 demonstrated unique prediction of all violent, nonsexual violent, and any community recidivism, with the exception of the VRS static change score, and the Exp(B) values were in the anticipated inverse direction. The absence of a unique contribution of the VRS static change score is consistent with the nature of static risk variables which should demonstrate minimal change over the course of treatment. Strangely, however, the HCR-20 historical (static) change score was incrementally predictive for community recidivism, suggesting that some items on the historical scale (such as substance abuse) may be dynamic in their operationalization. Although initially surprising, review of the historical items provides some explanation. The HCR-20 considers employment, relationship instability, and substance use as static variables. However, on other measures (e.g., the VRS and LSI-R) these are considered dynamic risk factors. Further, they are easily subsumed as dynamic criminogenic needs under the central eight risk factors as seen in Andrews and Bonta (2010a).

With regard to institutional recidivism, the dynamic and total change components of the VRS and HCR-20 uniquely added (or approached significance) in the prediction major and violent institutional misconducts. Given the low base rate for violent institutional recidivism in this sample, power limitations may partly play a role in the lack of significance for some of the change scores. No change scores added incrementally to the prediction of minor or any institutional recidivism. A lack of relationship with minor institutional recidivism and a weaker relationship with any institutional recidivism are not surprising as many of these misconducts are less serious (e.g., sleeping with head positioned wrong way in cell, too many offenders in one's cell). Together, these results support that dynamic change scores on the VRS and HCR-20 uniquely add to the prediction of both community and institutional recidivism, and that treatment-related changes on these tools represents reductions in risk and future offending.

In all, the incremental predictive validity results support the underlying presumption of including dynamic risk variables as a core component of violence risk assessment and further supports the argument extended by Douglas and Kropp (2002) and Wong and Gordon (2006). That is, dynamic risk factors are key to prioritizing treatment targets and preventing future violence. These results add to the growing literature on the VRS family of measures which show treatment-related changes represent true reductions in recidivism rates in psychopathic (Olver et al., 2013), violent (Lewis et al., 2013), sexually violent (Sowden, 2013; Olver et al., 2014; Olver & Wong, 2011), and youth (Rojas, 2013; Stockdale et al., 2014) offenders. Until this study, the research on the dynamism of the HCR-20 had been limited to forensic inpatients and had only demonstrated that dynamic scores change over time (see Wilson et al., 2013; Belfrage & Douglas, 2002); however, neither of these studies examined change in relation to violence-reducing treatment or whether such changes were associated with reductions in recidivism rates.

In studying dynamic change, Kraemer, Kazdin, Offord, Kessler, Jensen, and Kupfer (1997) as well as Hanson and Harris (2000) noted that researchers must assess risk at a minimum of two time-points, but also distinguish between causal changes in risk (changes that result from specific intervention) and variable changes in risk markers (changes that are natural fluctuations over time). Given the unspecified and non-violence specific treatment programs used in Wilson and colleagues (2013) and Belfrage and Douglas (2002) as well as the lack of direct comparison between change scores and recidivism rates, one could only comment on variable changes in risk markers rather than causal changes in risk factors. This study provides the first evidence for what Kraemer and colleagues (1997) defined as causal changes in risk factors on the HCR-20, observed over the course of violence-specific treatment, and that these treatment-related changes represent genuine reductions in community and institutional recidivism rates in a correctional population. Additionally, the strongest relationship between treatment-related changes and institutional recidivism on the HCR-20 involved the changes on the clinical subscale. Such a relationship adds further support to the pattern observed in Chu, Dafferin, and colleagues (2013) and Chu, Thomas, and colleagues (2013) in which they demonstrated that the HCR-20's clinical variable was most predictive of acute inpatient aggression at a forensic hospital. Last, these results support the efficacy and use of violence-specific RNR-based correctional treatment programs to manage risk and reduce reoffending, as well as adding to literature on the effectiveness of the ABC program (see Wong et al., 2007).

Finally, given that the VRS and HCR-20 scores were found to be significant predictors of positive community outcomes, and that changes on these tools predict recidivism, it stands to reason that a similar relationship would be observed between change scores and the prediction of good outcomes. That is, higher change scores would be linearly associated with higher positive community outcomes (such as employment, stable housing, etc.), as well as their summation. Consistent with this rationale, nearly all semi-partial correlations between dynamic change scores and the positive community outcomes were significant (or approached significance). Successful completion of supervision was the only positive community outcome that was not associated with the change scores. As with community and institutional recidivism analyses, incremental predictive contributions of change scores over pre-treatment risk was examined via hierarchical regression. Similar to the pattern observed in the semi-partial correlations, most dynamic change scores on the VRS and HCR-20 uniquely predicted positive community outcomes, with the exception of the VRS static and HCR-20 historical change score. The absence of significant incremental predictive contribution of the VRS static change score is consistent with the nature of static risk variables which should demonstrate minimal change over the course of treatment. Strangely, however, the HCR-20 historical (static) change score was trending toward significance ($p = .10$) in the incremental prediction of positive community outcomes. Although the VRS and HCR-20 were not designed to predict positive outcomes, these results support that dynamic change scores on the VRS and HCR-20 uniquely add to its prediction. Further, it suggests that prosocial changes made during the completion of the ABC program appear to extend beyond dichotomous recidivism rates and reflect important progress on a variety of prosocial reintegration goals. To this author's knowledge, this is the first piece of research to examine the prediction of positive community outcomes using treatment-related change scores on the VRS and HCR-20.

4.3 Protection Assessment: Convergent and Predictive Validity of Study Measures

Large convergence correlations (cf. Cohen, 1992) were found between the PF List and SAPROF. Correlations between the PF List total and the SAPROF subscales and protection categories were also significant, but somewhat smaller in magnitude (medium to large in magnitude). These findings are not surprising as both tools are reportedly dynamic measures of protection and that the PF List utilized the SAPROF definition of protective factors to identify empirically supported protective factors in the published literature. Overall, the strong convergence correlations suggest that the components of the PF List and the SAPROF are measuring similar constructs.

Institutional and community recidivism data were gathered to examine the predictive accuracy of the tools through ROC and correlational analyses. Pre-treatment, post-treatment, and at release PF List and SAPROF scores and categories (with the exception of the pre- and post-treatment external subscale) significantly predicted all violent, nonsexual violent, and any recidivism; medium to large effect. Effect sizes were largest for at release scores. PF List and SAPROF AUC-values were near identical. Of note, the SAPROF at release external score was predictive of community recidivism. Many of the items on the external scale relate to release planning, which is often formalized toward the end of an offender's sentence. Thus, the lack of relationship between community recidivism and the pre- and post-treatment external scores (but not the at release score) may suggest that release plans can be highly variable and changing until formalized later in an offenders sentence. Given that the quality of release planning has been found to be an important predictor for future recidivism (Dickson, Polaschek, & Casey, 2013), the pattern of predictive accuracy for the external score is not unexpected. The predictive accuracy of the protective factor instruments for institutional recidivism was substantially weaker, with only the post-treatment PF List score predicting major institutional recidivism and only the pre- and post-treatment SAPROF motivational subscale predicting major institutional recidivism. Size of effect was small. Protective factors did not significantly predict minor, violent, or any institutional recidivism.

A further test of the predictive accuracy of the SAPROF and the validity of the protection bins specifically, was conducted using Kaplan-Meier survival analysis which examines failure rate over time. As this was a broadly low protection sample, there were very few truly high protection offenders, with a somewhat larger number in the moderate range, and most of the sample scoring low in protection. As anticipated, low protection offenders on the SAPROF had higher and faster rates of failure in the community for all recidivism outcomes than moderate and high protection offenders. With regards to institutional recidivism, SAPROF protection categories were less discriminating. Low protection offenders (at pre-treatment) recidivated faster and at greater frequency than high and moderate protection offenders for minor and any institutional recidivism only. Post-treatment protection categories did not generate significantly different survival curves. Again, by virtue of the small number of moderate and high protection men, no significant difference in failure rate was observed between these protection groups for the SAPROF.

In all, these preliminary prediction analyses support the predictive accuracy of the PF List and SAPROF for all community recidivism outcomes as well as major institutional misconduct. Given that both tools are predominantly composed of putatively dynamic protective factors, these findings provide evidence for the predictive accuracy of dynamic protection variables in adults who have violently offended. These results are generally consistent with previous SAPROF research, although the correlation and AUC values obtained in this study were somewhat smaller in magnitude (see de Vries Robbé et al., 2011; 2013; 2015). Important to note is the low protection nature of this sample (in conjunction with its high risk nature) which invariably restricts range to some degree and decreases the magnitude of prediction by virtue of a loss of variance in scores. Even in this low protection sample, however, the SAPROF and PF List were able to effectively discriminate recidivist from nonrecidivist offenders for most outcomes on the basis of their protection scores. Further, these protection results are consistent with the predictive accuracy of the risk measures presented in section 4.1, which suggests that these protective measures may be broadly equal in predictive efficacy as the nine different risk tools presented in Yang and colleagues (2010)'s multilevel meta-analysis. Most importantly, unlike previous research, this program of study was the first to examine the SAPROF in a correctional setting rather than a forensic or civil inpatient setting. Given that previous research was primarily European in origin, these results provide support for the use of these tools in a Canadian population. Additionally, this program of study had a substantially longer follow-up period in comparison to previous research. Together, these results suggest that the SAPROF and PF List, and protective factors more generally, may be useful tools in our correctional facilities and may make important contributions to our rehabilitation and risk management strategies.

Finally, it would stand to reason that if risk factors can predict more bad outcomes and fewer good outcomes, then protective factors, that are operationalized positively, should also predict positive community outcomes, if not be stronger predictors of such outcomes. Specifically, higher protection scores would be linearly associated with higher positive community outcomes (such as employment, stable housing, etc.), as well as their summation. Consistent with this logic, medium to large positive correlations were observed between all protection scales and positive community outcome items, with the exception of weaker results for the SAPROF external scale. These results demonstrate that protection assessment tools' predictive capacities are not limited to recidivism and can predict important prosocial outcomes. To this author's knowledge, this is also the first piece of research to examine the prediction of positive community outcomes using protection measures.

4.4 Protection-related Change: Convergent and Predictive Validity

The protection measures were also examined for their ability to assess treatment-related changes in protection. Both the SAPROF and PF List utilized a pre-post model to generate change scores. Change scores were generated for pre- to post-treatment and for pre-treatment to at release. All change scores generated from the SAPROF and PF List represented significant (most at $p < .001$) increases in total protection score at post-treatment and at release. This is to be expected as both of these scales are operationalized to measure putatively dynamic protection variables. The average amount of change observed for the SAPROF was medium in effect size and large in effect size for the PF List. Comparable change scores and effect sizes do not exist in the protection factor literature.

Similar amounts of change were observed on both measures. Convergence correlations showed that SAPROF change scores significantly correlated with PF List change scores. Correlations with the SAPROF subscale were generally medium magnitude whereas correlations with total scores were large in magnitude. Weakest correlations were observed with SAPROF External change scores, which may speak to the increased difficulty of rating the external subscales variables until release planning had begun. Overall, the strong convergence correlations suggest that the PF List is likely measuring a similar change construct as assessed in the SAPROF. Further, this supports that change can be measured reliably over time, and that the pre-post model is a valid method for capturing change in protection.

Given that protection scores demonstrated significant change over the course of treatment, the next step was to examine whether these changes represented reductions in post-treatment recidivism. The predictive validity of change scores was examined using point-biserial correlations. With regards to community recidivism, nearly all correlations were in the anticipated direction. This indicated that greater change was associated with lower rates of recidivism. However, only pre-treatment to at release change scores generated significant correlations with all violent and nonsexual violent recidivism, and these correlations were generally small in magnitude of effect. Weaker correlations were observed between change scores and institutional recidivism, with only pre- to post-treatment PF List change scores significantly predicting major institutional recidivism and pre- to post-treatment SAPROF external change scores predicting minor institutional recidivism. None of the change scores predicted violent institutional recidivism, which could well be attributable to the relatively low base rate of this outcome.

Important relationships are often suppressed when one relies exclusively on zero-order correlations as covariates can affect the distribution of scores in the predicting variable. As detailed in de Vries Robbé and colleagues (2013, 2015), the use of semi-partial correlations controlling for important covariates is suggested when examining the relationship between protection and recidivism just as it is when examining the relationship between risk and recidivism. Thus, semi-partial correlations were calculated to examine the unique relationship between change and recidivism after controlling for the covariate of pre-treatment protection. Most protection change score correlations improved following the partialling of pre-treatment protection, with small and medium magnitudes of effect. Predominantly the pre-treatment to post-treatment change scores on the SAPROF and PF List were significant predictors of all violent and nonsexual violent recidivism after controlling for pre-treatment protection. After controlling for pre-treatment protection, both pre- to post-treatment and pre-treatment to at release change scores on the PF List were significant predictors of the any community recidivism outcome. Semi-partial correlations between change scores and institutional recidivism, however, remained weak with a near identical pattern as the zero-order correlations and with most not reaching significance. Overall, these findings support that change scores are important predictors of community recidivism.

As with dynamic risk variables, the main presumption of a dynamic protection variable is that they should change with intervention and such changes should represented reductions in recidivism; however, again, this has not been formally tested. De Vries Robbé (2011) demonstrated that SAPROF scores changed over the course of treatment, with greatest changes occurring on the motivational and external subscales. However, they did not examine whether such changes translated to reductions in recidivism. Accordingly, hierarchical Cox regression survival analyses were performed to examine the incremental predictive validity of treatment-related change scores on the SAPROF and PF List for community and institutional recidivism meanwhile controlling for individual differences in follow-up time. Both pre- to post-treatment and pre-treatment to at release change scores on the PF List significantly (or approached significance) added to the prediction of community recidivism, and the Exp(B) values were in the anticipated direction. However, only the pre-treatment to at release change scores on the SAPROF significantly (or approached significance) added to the prediction of community recidivism. This likely reflects the fact that: i) a greater magnitude of change occurred over this longer time interval, and ii) the inclusion of pre-release outcome is a more proximal time point to behavior in the community than post-program, where the amount of time leading up to release is highly uncertain and variable. With regard to institutional recidivism, only the PF List pre-treatment to post-treatment change score significantly added to the predication of major institutional recidivism, again, likely owing to the more proximal nature of post-program evaluations of change to behavior following treatment within the institution. No change scores on the SAPROF or PF List added incrementally to the prediction of minor, violent, or any institutional recidivism. A lack of relationship with minor institutional recidivism and any institutional recidivism are not surprising as many of these misconducts are less serious (e.g., sleeping with head positioned wrong way in cell, too many offenders in one's cell). Further, the lack of relationship with violent institutional misconducts may relate to the power limitations that occur when the predicted variable has a low base rate.

With regard to the somewhat less consistent SAPROF change score relationships, the lack of incremental predictive accuracy on some analyses may relate to using total and subscale change scores rather than considering unique item changes. De Vries Robbé (2011) noted that, although most protective factors on the SAPROF are expected to increase with treatment, a small subset should actually decrease with treatment. That is, if certain risk factors are successfully treated in the course of treatment, then the need for certain protective factors may also decrease. Specifically, three of the five items on the SAPROF's external subscale (the need for intensive professional care, the need for heavily supervised living circumstances, and intensive external or probationary controls) should decrease if the client's risk is adequately reduced through treatment. Thus, prosocial decreases on the external subscale may have confounding effects on the relationship between the overall total change score and recidivism. In tentative support of this hypothesis is that the external subscale change scores appear to have the weakest relationship with recidivism; although, item level analyses would be required to determine whether some external items increased while others decreased with treatment in this sample.

In all, these results are the first direct support that the SAPROF and PF List are dynamic tools and that dynamic protection changes add uniquely to the prediction of community and (to a lesser degree) institutional recidivism in a correctional sample. These results support the hypothesis that dynamic protective factors meet the criteria of Kraemer and colleagues (1997)'s so-called causal, rather than variable, changes in risk (or in this case, protection). In other words, treatment-related changes in protection represent actual reductions future offending. Pre-treatment to at release changes in protection, also represent actual reductions in reoffending. However, pre-treatment to at release changes incorporate both treatment-related changes and post-treatment change. Given that most pre-treatment to at release change scores were somewhat largely than their respective pre-treatment to post-treatment change scores, it suggests that offenders continue to consolidate protection gains in the time period between treatment completion and release. Alternatively, the larger scores could relate to gains made in other programming and/or the protective effects of release planning with their parole officer. It should be noted, however, that not all offenders continued to make gains in this time period with some offenders seeing substantial losses in protective factors. As such, it is somewhat unclear whether the relationship between recidivism and pre-treatment to at release change scores represents predominantly treatment-related changes or other unspecified sources of dynamism.

Further, these incremental predictive validity results extend the underlying presumption of including dynamic risk variables as a core component of violence risk assessment (Douglas & Kropp, 2002; Wong & Gordon, 2006) to the inclusion of dynamic protection variable as well. That is, dynamic risk and protective factors may be key to prioritizing treatment targets and preventing future violence. These results also mirror the burgeoning literature on treatment-related changes in risk and recidivism reduction. Last, these results extend the efficacy of violence-specific RNR-based correctional treatment programs beyond the management of risk to the promotion of protection, as well as adding to literature on the effectiveness of the ABC program (see Wong et al., 2007).

Finally, given that the SAPROF and PF List scores were found to be significant predictors of positive community outcomes, and that changes on these tools are associated with changes in recidivism, it stands to reason that a similar relationship, if not stronger relationship, would be observed between protection changes scores and the prediction of good outcomes. That is, higher protection change scores, in principle, should be linearly associated with higher positive community outcomes (such as employment, stable housing, etc.) as well as their summation. Consistent with this rationale, most semi-partial correlations between pre-treatment to at release change and positive outcomes approached or became significant. Just as with risk change scores, successful completion of supervision was the only positive community outcome that generally was not associated with the protection change scores. As with community and institutional recidivism analyses, incremental predictive contributions of change scores over pre-treatment protection was examined using hierarchical regression. Similar to the pattern observed with the semi-partial correlations, both pre- to post-treatment and pre-treatment to at release change scores on the PF List incrementally added to the prediction of positive community outcomes. Only the pre-treatment to at release change scores on the SAPROF incrementally added to the prediction of positive community outcomes. All beta values for the two protection tools were in the anticipated direction. Although these tools were not designed to predict positive outcomes (outside of not reoffending), these results support that change scores on the PF List and SAPROF uniquely add to its prediction, and that treatment-related changes and post-treatment changes in protection represent increases positive outcomes. Further, it suggests that prosocial changes made during the completion of the ABC program extend beyond risk/recidivism management. These changes reflect important progress on a variety of prosocial reintegration goals and the bolstering of protection. To this author's knowledge, this is the first piece of research to examine the prediction of positive community outcomes using treatment-related and post-treatment change scores on the SAPROF and protective factors more generally.

4.5 The relationship between protective and risk factors.

Institutional and community recidivism data were gathered to examine the predictive accuracy of the integrated HCR-20/SAPROF risk SPJ categories through ROC and correlational analyses. Pre-treatment, post-treatment, and at release integrated HCR-20/SAPROF risk judgements significantly predicted all violent, nonsexual violent, and any community recidivism; effect sizes were medium to large. Effect sizes were largest for at release risk judgements. However, given the large overlap in the 95% confidence intervals for the three time points, predictive accuracy of the different time points appears roughly equal. Additionally, given the large overlap in the 95% confidence intervals with the respective HCR-20 and SAPROF AUC-values, predictive accuracy of the integrated HCR-20/SAPROF risk judgement appears roughly equal to the original HCR-20 risk and SAPROF protection categories. With regard to institutional recidivism, only post-treatment integrated HCR-20/SAPROF risk judgements significantly predicted major and violent institutional recidivism; small to medium effect sizes were observed.

A further test of the predictive accuracy of the integrated HCR-20/SAPROF risk SPJ categories was conducted using Kaplan-Meier survival analysis which examines failure rate over time. As this was a broadly high risk sample, there were very few truly low risk offenders, with a somewhat larger number in the moderate range, and most of the sample scoring high. As anticipated, high risk offenders had higher and faster rates of failure in the community for all recidivism outcomes than low and moderate risk offenders. Similarly, high risk offenders demonstrated higher and faster rates of major, minor, violent, and any institutional recidivism than the low and moderate risk offenders. Again, by virtue of the small number of low and moderate risk men, predominantly no significant difference in failure rate was observed between these risk groups.

Finally, it would stand to reason that if both risk and protection measures were good at predicting positive community outcomes, the integrated HCR-20/SAPROF risk judgment categories should be linearly associated with positive community outcomes (such as employment, stable housing, etc.) as well as their summation. That is, low risk offenders would have higher positive community outcomes. Consistent with this logic, small to medium negative correlations were observed between all positive community outcomes and the integrated HCR-20/SAPROF risk judgement categories. To this author's knowledge, this is also the first piece of research to examine the prediction of positive community outcomes using the integrated HCR-20/SAPROF risk judgements.

In all, these preliminary prediction analyses support the predictive accuracy of the integrated HCR-20/SAPROF risk judgements in a correctional sample for all community and institutional recidivism outcomes, as well as for positive community outcomes. The relationship between integrated risk and positive community outcomes is a novel finding where as its relationship with recidivism appears consistent with much of the SAPROF literature using in European inpatient samples. The results are also consistent with the Yang and colleagues (2010) multilevel meta-analysis, which found broadly equal predictive efficacy of nine different risk tools for violent outcomes. The magnitude of the AUC values generated here appears consistent with their reported findings. Also important to note is the high risk nature of this sample, which invariably restricts range to some degree, and decreases the magnitude of prediction by virtue of a loss of variance in scores. Even in this high risk sample, however, the integrated risk categories were able to effectively discriminate recidivist from nonrecidivist offenders.

To expand on the relationship between protective and risk factors, correlations were used. Medium to large convergence correlations (cf. Cohen, 1992) were observed between risk and protection measures, including total scores, subscale sores, change scores, and risk/protection categories. Overall, the strong convergence correlations suggest that the components of the protection tools are measuring similar constructs to the risk tools, and that the change variance captured on protection measures is similar to the change variance captured with risk tools.

One of the biggest questions about the emerging research on adult protective factors relates to the incremental contributions of protective factors over risk factors in the prediction of recidivism. With regard to the research on the SAPROF, support for its incremental contributions has been mixed and limited primarily to European inpatients as the literature review earlier in this document illustrated. Accordingly, hierarchical Cox regression survival analyses were performed to examine the incremental predictive validity of protection scores over risk in the prediction of recidivism after controlling for individual differences in follow-up time. Pre-treatment protection scores did not add incrementally to the prediction of community or institutional recidivism over pre-treatment risk scores. Additionally, post-treatment protection scores did not add incrementally to the prediction of community or institutional recidivism over post-treatment risk score (pre-treatment risk + risk change score). The absence of significant incremental predictive contribution of the protection scores is not surprising given their high correlations with risk scores. At release protection scores did add incrementally to the prediction of community recidivism over post-treatment risk scores (pre-treatment risk + risk change score). Caution must be drawn, however, before inferring support for the incremental predictive accuracy of protective factors as no appropriate (i.e., at release) risk ratings were available for proper comparison. Thus, it is unclear whether risk/protection-related changes occurring between the post-treatment and at release ratings would have been captured both by risk and protective tools. Together, these results do not provide conclusive support that protective factors uniquely add to the prediction of both community and institutional recidivism in a Canadian correctional sample.

In sum, the convergence correlations and cox regression analyses raise some questions about the truly “protective” nature of the protective factors included in the SAPROF and PF List. Thus far, the examination of the incremental validity of the SAPROF has largely been limited to inpatient samples and has used two different statistical methodologies. In some studies, the authors make claims of incremental validity using a statistical method that compares AUC-values. This method utilizes private software that is not widely available and has not, as of yet, been widely adopted by the broader recidivism literature (see de Vries Robbé et al., 2011; 2015). Further, this method is a much weaker statistical paradigm given that unique variance in protective factor scores, independent of shared risk variance, is not being examined. Rather, other studies, which have utilized the more widely adopted logistic and cox regression analyses, have presented positive but inconsistent support for the tools unique contributions (see Viljoen, 2014; de Vries Robbé et al., 2013; 2015). One potential hypothesis for the non-significant incremental validity results in this program of research may relate to the difference in sample. It is possible that a different set of protective factors may be relevant to inpatient samples than are relevant to correctional samples. Unfortunately, research on protective factors in different samples is too early to draw conclusions.

An alternative hypothesis could be that, given the large convergence correlations, protective measures may actually be measuring the absence of risk rather than the presence of protection. For example, the SAPROF includes “Intellectual Functioning” as a protective factor. However, low intellectual functioning has long been identified as a risk factor for certain types of violence and is a clear responsivity issue within the RNR-model (Heilbrun, 1982; Tudway & Darmoody, 2005; Cantor, Blanchard, Robichaud, & Christensen, 2005; Coupland & Olver, 2012). The obverse of the item “Secure Attachment” on the SAPROF may well be considered a risk factor on the VRS (i.e., static item: stability of family upbringing). The “Living Circumstances” item on the SAPROF and the “Accommodation upon Release” item on the PF List could both be subsumed under the “Accommodation” risk factor on the LSI-R; a tool specifically structured around the central eight risk factors. Moreover, large correlations have also been observed between the SAPROF item “Self-Control” and the HCR-20 item “Impulsivity” as well as the SAPROF item “Motivation for Treatment” and the HCR-20 item “Non-Compliance with Remediation Attempts” (de Vries Robbé, 2011) suggesting they may be similar variables operationalized in opposite directions. In fact, most of the protective factors outlined in both the SAPROF and the PF List could potentially represent obverse operationalizations of the central eight risk factors (i.e., criminal history, antisocial personality, antisocial cognitions, and antisocial associates, family/marital concerns, substance abuse, school/work, and leisure/recreation). Thus, even if incremental predictive accuracy was observed for the SAPROF, one cannot falsely assume that incremental predictive accuracy equates to "proof" that the SAPROF's, and PF List's, protective factors are in fact protective and not just strong operationalizations for the absence of risk factors. Whether this convincingly indicates that protective factors, at least as measured by the tools in this study, are merely the absence of risk factors, is a difficult, but extremely important, matter to decisively resolve.

Kraemer, Stice, Kazdin, Offord, and Kupfer (2001) give us additional insights into the strong convergent relationship observed between the risk and protective factor measures. The authors state that researchers must understand that predictive variables can be independent, overlapping, or proxy risk factors. Research must also consider mediators and moderators. Independent risk factors are by definition uncorrelated with each other but both predict the outcome variable. Clearly, this is not the case for risk and protection factors examined in this program of research. However, Hoge and colleagues (1996) have observed independence of risk and protective factors in a sample of youth offenders. Overlapping risk factors on the other hand correlate highly with each other as they are measuring the same underlying construct. This is possible as both risk and protection measures may be measuring risk (or the lack there of). Proxy risk factors are pseudocorrelates in which any correlate of a strong global risk factor will also appear to be a risk factor for the outcome variables of interest. In other words, scores on protection and risk measures may actually be correlates of a more global (but latent) risk factor and the correlation between protection/risk scores and recidivism may actually be a proxy of the relationship between the more global risk factor and recidivism. Such a proxy relationship is possible, but does not necessarily explain the large correlations between the risk and protection scores.

Finally, Kraemer and colleagues (2001) describe the importance of considering mediators and moderators. Mediators represent intervening variables between the predictor and the outcome. Fully mediated relationships suggest that all of the predictive accuracy between a predictor and outcome variable is fully explained by the intervening variable. Partially mediated relationships suggest that only some of the predictive accuracy between a predictor and an outcome variable is explained by the intervening variable, and that both the original predictor and intervening variable remain significant predictors of the outcome. Mediation is possible for total risk and protection combinations as well as for individual risk and protective item combinations. The possibility that mediation relationships exist between risk and protective factors is not new as they have long been documented in the substance abuse literature, for example (Clayton, Leukefeld, Donohew, Bardo, & Harrington, 1995). The Cox regressions examining the incremental contributions of protective factors over risk factors in the prediction of recidivism suggest that the relationship between protective factors and recidivism is fully mediated by the risk measures in this correctional sample. However, Viljoen (2014) and de Vries Robbé and colleagues (2013; 2015) suggest that this may not be true for inpatient samples. Last, in moderation relationships, the relationship between a predictor and an outcome may differ at different levels of a moderator (i.e., a unidirectional interaction). In youth offenders, a moderator effect of age has been found for some protective factors (Hoge et al., 1996). Thus, a moderator effect may explain some of the inconsistent incremental validity findings as the unique contributions of protective factors may differ for different risk levels. In the current sample, the majority of offenders were high risk, which would make it difficult to determine whether the unique contributions of protective factors differ at different risk levels. Further, this program of study's reliance on comparing risk and protection total scores may hide further moderation relationships. It is possible that specific protective factors may only have protective effects on recidivism when there is the presence of a specific risk factor. That is, protective factors do not have a global protective effect on recidivism but rather have smaller moderating effects when specific risk factors are present. Rogers (2000) has made specific arguments that research on moderator and mediator variables is the next logical (and overdue) step for the advancement of risk assessment.

As Yang and colleagues (2010) demonstrated, most risk assessment tools predict recidivism roughly equally. It appears that protective factor tools (such as the SAPROF and PF List) have similar predictive accuracy. Thus, the inclusion of protective factor tools on top of risk assessment tools is unlikely to drastically change our final judgements of risk for recidivism. However, the authors of the SAPROF argue that its greatest value of the SAPROF relates to guiding treatment planning, prospective prevention, and evaluation. Just as Douglas and Kropp (2002) and Wong and Gordon (2006) stated that dynamic risk variable do not necessarily have to trump static risk variables to be useful, the same may be true for the inclusion of protective factors. That is, even if protective factors do not change our final evaluations of risk or added incrementally to our prediction of violence, they may have immense clinical importance and value. Although not formally tested in the program of research, this hypothesis is somewhat supported when the incremental contributions of protective factors was examined in relation to positive outcomes.

Hierarchical multiple regressions were performed to examine the incremental contributions of protective factors to the prediction of positive community outcomes meanwhile controlling for risk scores. Pre-treatment protection scores added incrementally to the prediction of positive community outcomes over pre-treatment risk scores. Additionally, post-treatment protection scores added incrementally to the prediction of positive community outcomes over post-treatment VRS scores but not HCR-20 scores (pre-treatment risk + risk change score). At release protection scores added incrementally to the prediction of positive community outcomes over post-treatment risk scores (pre-treatment risk + risk change score). However, this last result cannot be construed as support for the incremental predictive accuracy of protective factors as no appropriate (i.e., at release) risk ratings were available for proper comparison. Together, these results support the importance of using protective factors in our prediction of important prosocial outcomes and goals. These results speak to the potential value of protective factors in the rehabilitation and successful reintegration of offenders beyond the prediction of recidivism. To this author's knowledge, this is also the first piece of research to examine the incremental prediction of positive community outcomes using protective factors.

4.6 Strengths, Limitations, and Future Directions

This study was archival in nature. Although prospective designs are generally preferred, the retrospective design implemented here has a number of advantages. First, prospective studies often utilize smaller sample and have shorter follow-up periods. This retrospective design allowed the inclusion of offenders who participated in treatment over an approximate 5+ year period, thereby allowing for a larger sample size. Comprehensive file information was available for the entire sample, which made careful scoring of the tools possible. Of note, however, was that variables from the SAPROF's external subscale were somewhat more difficult to rate as many of the items related to release planning (e.g., housing and professional care upon release into community), which generally was in its infancy when the offenders started treatment. De

Vries Robbé and colleagues (2011) similarly noted difficulties rating these variables from file review. In part, this may explain the lower inter-rater agreement observed for the SAPROF external scale and the weaker predictive findings between the external scale and the outcome variables.

The retrospective design used in this program of research also allowed for nearly ten years of follow-up, which is longer than most follow-up periods used in recidivism research. This longer period of follow-up also acts as a potential confound. Long follow-up periods can reduce the observed relationship between treatment-related change and recidivism as treatment effects can change and/or become diluted through the passage of time. That is, other changes after the completion of treatment may minimize the predictive accuracy of change scores. Despite this potential dilution, the positive results suggest that changes can be longstanding and should be interpreted as a conservative estimate of change effects. Thus, the present results, although more conservative, should be considered as even stronger evidence for the dynamic nature of risk and protection factors.

In this program of research, a tremendous number of analyses were conducted. When a large amount of multiple comparisons occur, the chance of spurious significant results increases. However, the vast majority of the analyses included in this program of research were a priori; thus, reducing the need to correct significance levels for potential inflations error (Tabachnick & Fidell, 2007). Further, for most of the key predictive analyses, sample size was adequate and magnitudes of effect were generally strong; suggesting that the substantive findings are robust.

There are a number of potential limitations which merit discussion. First the present study sample was predominantly high risk in nature, which may reduce the findings' generalizability. The mean pre-treatment VRS score was one full standard deviation above that of the normative sample (see Wong & Gordon, 2006). This was to be expected, however, as the ABC program's mandate was to provide high intensity treatment to high risk offenders as per the RNR-model. An advantage of using a high risk sample is that it allows for the examination of change in a population where potentially the most treatment-related gains could be made. However, the use of a predominantly high risk low protection sample has a number of limitations. Most offenders at both pre- and post-treatment were categorized into the high risk (or low protection) bin. With a sample of 178 offenders, the number of offenders in the low and moderate risk (high and moderate protection) bins was small. Thus, small cell sizes prevented the examination of potential sub categories that would ordinarily be afforded to a sample that is more heterogeneous in risk and protection (i.e., moderate risk with high protection vs moderate risk with low protection; moderate risk with high change vs moderate risk with low change). Range restriction of observed scores on the risk and protection measures has additional limitations. Generally, ROC analysis is argued to be the best statistical method for assessing predictive accuracy as it is less influenced by low base rates (in contrast to correlation coefficients) and is less biased for certain prediction outcomes (Mossman, 1994; Rice & Harris, 2005). Low base rates were a concern for some recidivism outcomes (e.g., violent institutional misconducts); however, restricted range (i.e., variance) in the predictor variable (i.e., risk or protection score) can reduce the magnitude of both AUC and correlation values (Tabachnick & Fidell, 2007). Although most recidivism outcomes were significantly predicted by the risk and protection scores, the magnitude of the AUC and correlation values was generally smaller than seen in previous research.

Second, this sample included male violent offenders receiving services in a correctional facility. They were found criminally responsible for their index offenses. As such, the results found in this study may not generalize to inpatient populations or to other offender populations (e.g., sex offenders, female offenders). To our knowledge, this was the first study to examine and validity the predictive accuracy of the SAPROF in a correctional (non-inpatient) sample. Further, protection scores were demonstrated to be dynamic and that dynamic changes on the protection tools translated to reductions in the recidivism. These positive results notwithstanding, one cannot rule out sample differences (correctional vs inpatient) as an alternative contributing factor to the smaller predictive accuracy values of the SAPROF than in previous research.

A third, potential limitation is that change scores were generated using only two time-points for risk measures and three time-points for protection measures. Unfortunately, this prevented the comparison of at release protection scores with at release risk scores; however, the ideal number of time-points used to assess dynamism and predict subsequent recidivism is under debate. Although it is tempting to assert that linking recidivism to dynamic changes through repeated assessment at multiple time-points is the best way to detect changes as they occur over time, such a time consuming practice may not be realistic for clinicians especially when improvements in predictive accuracy can be small when assessments occur frequently. Further, Chu, Thomas, Daffern, and Ogloff (2013) demonstrated that in an inpatient sample, the predictive accuracy of any single time-point rating was generally weaker than the mean score of a week's daily ratings in the prediction of acute and moderate term institutional violence.

Fourth, for the majority of the analyses, simple binary recidivism variables were used to explore treatment related changes in recidivism rates; however, using alternative recidivism outcomes such as crime severity estimates or aggregate sentence length could provide invaluable information on treatment-related change. Harm reduction effects, such as those observed in Wong and colleagues (2006) and Wong & Parhar (2011), are more readily detected when using these alternative recidivism outcomes. This potential shortcoming is offset in the present study, as it included the examination of positive community outcomes beyond recidivism, and change scores were significant predictors of increased positive outcomes. To my knowledge, this is the first study to examine the prediction of positive community outcomes beyond recidivism, although two additional limitations of the positive community outcome data are worth noting. First, only offenders who were release on parole had adequate file information to code the positive outcomes. As such, offenders released on warrant expiry were excluded from the analyses and, therefore, it is unclear whether the results would generalize to this population as well. Second, positive community outcomes were rated two years post-release or at the end of the supervision period (which ever came first). As such, follow-up period on the positive community outcomes did vary. Nevertheless, the current findings support the hypothesis that positive therapeutic changes in high risk offenders can be linked to reductions in recidivism and increases in other positive community outcomes.

Finally, although the change score results were positive, it should be noted that in the absence of a true control group, statements regarding the causal connection between treatment and reduced recidivism must remain tentative. It is possible that other causal agents could be responsible for the relationship (e.g., other treatments, aging, etc.). As noted in Lewis and colleagues (2013, p. 161), "we have little understanding as to how much offenders 'naturally' change on these dynamic variables as a function of the passage of time without treatment or any active manipulation." Further, the present study did not investigate the potentially moderating effect of incarcerated time between the end of treatment and release on dynamic risk change. Protection scores were generally larger at release than at post-treatment, which may suggest some offenders continued to consolidate and make further prosocial treatment-related risk gains.

Given that change scores appear to uniquely add to our prediction of recidivism and positive community outcomes, future research will need to examine how best to incorporate change-related and protection-related information into our risk assessments if we wish to best inform treatment staff, parole officers, judges, and other judicial decision makers. Simply subtracting protection scores from risk scores or relying on post-change ratings may not adequately capture protection and change importance. Clearly, a more systematic approach to the integration of this information is needed. With that said, these positive change score findings provide support for many of the models discussed in the introduction of this document. Specifically, the RNR model purports that targeting criminogenic needs (i.e., dynamic risk variables), with treatment at an intensity equivalent to the offenders overall risk, can reduce recidivism rates. In this program of research, treatment-related changes in criminogenic needs were reliably assessed and meaningful. That is, treatment-related changes translate to reduced recidivism as the RNR model would suggest. Thus, risk needs to be assessed both before and after correctional treatment programs, and, given that changes in risk do occur, conclusions from any one risk assessment should be considered to have an expiration date and risk should be reassessed after major life changes or crime-specific treatment programs. However, a large proportion of variance is still unaccounted for in the prediction of recidivism, even after the inclusion of protection and change scores. Future research has much left to address.

In conclusion, the present study examined the relationships among therapeutic change, protective factors, risk factors, and the recidivism and positive community outcomes. All the measures investigated in this program of research garnered additional support, with further evidence being generated for the benefits of the ABC program and its adherence to the RNR-model. The importance of dynamism in risk was emphasized, and the measurement of treatment-related changes and protective factors in comprehensive risk assessment was highlighted. Broadly, static measures were unable to capture therapeutic change, which corresponded with reductions in risk and recidivism. Dynamic risk measures generally contributed uniquely to the prediction of recidivism, and changes on these measures predicted recidivism. Protective factors also predicted recidivism, with protection change scores similarly predicting some recidivism outcomes. This was the first study to validate the predictive accuracy of the SAPROF in a correctional sample; however, it remains unclear whether the benefits of including protective factors in risk assessments relates to treatment planning rather than adding incrementally to the prediction of recidivism. Additionally, conceptual issues remain regarding whether protective factors are the obverse of risk factors. Moving beyond the narrow examination of recidivism, risk and protection scores (including change scores) appear to predict other positive community outcomes. To the author's knowledge, these findings are novel. Violent offending remains an important issue across Canada and particularly in the Prairie Provinces. Together with previous research, this program of study has demonstrated that correctional and forensic psychology should play an important role in the assessment, rehabilitation, and reintegration of violent offenders.

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Appendix A

VRS Score Sheet (Wong & Gordon, 1999)

Name: _________________ Client #: _________________

Pre-Treatment Rater: _________________ Pre-Treatment Rating Date: ______________

Post-Treatment Rater: _________________ Post-Treatment Rating Date: ______________

Static Factors

						I or N
S1	Current Age	0	1	2	3	_____
S2	Age at First Violent Conviction	0	1	2	3	_____
S3	Number of Young Offender Convictions	0	1	2	3	_____
S4	Violence throughout Lifespan	0	1	2	3	_____
S5	Prior Release Failures/Escapes	0	1	2	3	_____
S6	Stability of Family Upbringing	0	1	2	3	_____

Total Static Factor Score before Treatment: ________

Total Static Factor Score after Treatment: ________
(only if there are changes to S1 or S5)

If it is necessary to omit rating a Static or Dynamic Factor, the rater should indicate whether the omission is because there is insufficient information (I) or because the item is not applicable (N).

DYNAMIC FACTORS AND TOTAL SCORES

RATINGS

	Pre-Tx	Stage of Change	# of Stages changed x .5	Post-Tx	I or N
D1 Violent Lifestyle	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D2 Criminal Personality	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D3 Criminal Attitudes	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D4 Work Ethic	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D5 Criminal Peers	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D6 Interpersonal Aggression	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D7 Emotional Control	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D8 Viol. during Institutionalization	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D9 Weapon Use	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D10 Insight into Violence	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D11 Mental Disorder	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D12 Substance Abuse	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D13 Stability of Relationships	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D14 Community Support	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D15 Released to High Risk Situations	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D16 Violence Cycle	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D17 Impulsivity	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D18 Cognitive Distortion	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D19 Compliance with Supervision	0 1 2 3	P/C P A M	1.5 1 .5 0	____	____
D20 Security Level of Release Inst.	0 1 2 3	0 1 2 3	1.5 1 .5 0	____	____

Pre-Tx:	**← Total Dynamic Factor → Score**	Post-Tx:
	← Total Static Factor → Score From Previous Page	
	← Total Static + Total → Dynamic Factor Score	

Indicate if Clinical Override was used:

Yes __ No __

Appendix B

HCR-20 Coding Sheet (Webster et al., 1997)

Participant Name ________________	Date _______________	ID# ____________

Historical Items		*Code (0, 1, 2)*
H1	*Previous Violence*	
H2	*Young Age at First Violent Incident*	
H3	*Relationship Instability*	
H4	*Employment Problems*	
H5	*Substance Use Problems*	
H6	*Major Mental Illness*	
H7	*Psychopathy*	
H8	*Early Maladjustment*	
H9	*Personality Disorder*	
H10	*Prior Supervision Failure*	
Historical Item Total:		/ 20

Clinical Items		*Code (0, 1, 2)*
C1	*Lack of Insight*	
C2	*Negative Attitudes*	
C3	*Active Symptoms of Major Mental Illness*	
C4	*Impulsivity*	
C5	*Unresponsive to Treatment*	
Clinical Item Total:		/ 10

Risk Management Items __ In __ Out		*Code (0, 1, 2)*
R1	*Plans Lack Feasibility*	
R2	*Exposure to Destabilizers*	
R3	*Lack of Personal Support*	
R4	*Noncompliance with Remediation Attempts*	
R5	*Stress*	
Risk Management Item Total:		/ 10

HCR-20 Total:	/ 40
Final Risk Judgement:	__ Low __ Moderate __ High

Assessor Name ____________	Signature ______________	Date ____________

Appendix C

Coding sheet SAPROF (de Vogel et al., 2009)

To be used only in combination with the HCR-20 or related structured risk assessment instruments

Name:	**Number:**	**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 Judgement and Integrative Final Risk Judgement SAPROF + HCR-20	**Protection** __ Low __ Moderate __ High	**Risk** __ Low __ Moderate __ High

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

Signature:

Appendix D

Operationalized List of Protective Factors (PF List)

1. Social Support

0 = The individual has minimal or nonexistent prosocial support upon release into the community as described in the 3-rating below. The primary source of support may be highly turbulent and inconsistent, or may comprise a network of individual who are supportive of antisocial beliefs or behaviours (e.g., promotion of violent or criminal behaviour, gang involvement, drug or alcohol abuse, etc.).

1 = More positive than 0 but the factor is largely not present

2 = Less positive than 3 but still present

3 = The individual has tangible social support in the form of a stable network of individuals who discourage antisocial behaviour, do not condone criminal thinking, and display positive, prosocial behaviour and beliefs. The individual has a “life” to return to in the community represented by the presence of prosocial friends, family, colleagues, pastors, etc. Individuals in the support network are willing to provide the necessary support and encouragement during the individual’s transition back into the community. The individual encounters minimal conflicts, any of which tend to be resolved in a prosocial manner and stability maintained within the network.

I = Insufficient information to code this item.

N = Item not applicable

2. Emotional Support

   0 = The individual has no emotional support network as defined in the 3-rating below, or alternatively, refuses to utilize it in an emotionally supportive capacity if one is available (i.e., primarily relying on the network for physical needs such as money or lodging). If an emotional support network is present and utilized but the network is supportive of antisocial behaviour and beliefs, a 0-rating should be applied.

   1 = More positive than 0 but factor is largely not present

   2 = Less positive than 3 but still present

   3 = The individual has a prosocial emotional support network, that is, a group of prosocial individuals who are an active source of warmth, empathy, and emotional relief for the individual. The individual draws upon this network as a means of coping with adversity and is comfortable utilizing and expressing to this network. The individual may report that specific family members and peers are reliably and readily available during times of need.

   I = Insufficient information to code this item.

   N = Item not applicable

3. Leisure Time

   0 = The individual demonstrates little or no constructive use of leisure time and may spend much of their spare time in isolation, with antisocial peers or family members, or participating in idle or unproductive activities (e.g., playing video games, watching television). The individual does not have identified prosocial interests (e.g., sports, hobbies) or regularly engages in such interests. Alternatively, the individual's leisure time may be occupied by harmful or counterproductive activities that may increase

their risk (e.g., spending free time engaging in drug or alcohol use, hanging around in bars or casinos, etc.).

1 = More positive than 0 but factor is largely not present

2 = Less positive than 3 but still present

3 = The individual demonstrates active and constructive use of leisure time available. The individual may have little idle time, and engage in prosocial leisure pursuits. The individual currently (or historically) spends the majority of their spare time engaging in prosocial interests or in the company of prosocial family or peers.

I = Insufficient information to code this item.

N = Item not applicable

4. Religious Activity

0 = The individual demonstrates a superficial commitment to a religious or spiritual affiliation. The individual may demonstrate no understanding of the religious/spiritual affiliation, does not engage relevant religious or spiritual activities, or has superficially engaged for primarily external incentives (e.g., "finding" religion to convey impressions of reform or to improve conditional release prospects). If the individual does not report any religious or spiritual affiliation, the item is rated as not applicable.

1 = More positive than 0 but largely not present

2 = Less positive than 3 but still present

3 = The individual demonstrates a seemingly sincere and genuine commitment to a religious/spiritual affiliation as evidenced through routine engagement in relevant religious/spiritual activities. Relevant examples may include attending weekly

communion, church, or sweat lodge ceremonies or volunteering in places of worship or positive initiatives back by a religious community (e.g., soup kitchen, homeless shelter, religious study or prayer groups, etc.) on their own accord.

I = Insufficient information to code this item.

N = Item not applicable

5. Attitude Toward Intervention

0 = The individual demonstrates a hostile or negative attitude toward risk-reduction intervention and may even actively refuse to participate in recommended interventions. Relevant examples may include recent expulsion from treatment programs, refusal to participate while in program, frequent absenteeism from program, disrespect of group facilitators, or medication noncompliance. The individual may refuse to cooperate with case planning, including missing appointments with their parole/probation officer in the institution or community.

1 = More positive than 0 but largely not present

2 = Less positive than 3 but still present

3 = The individual demonstrates a positive attitude toward intervention as demonstrated through active involvement in reducing their violence risk including planning, compliance, and openness to recommended interventions. This may be evident by active participation in violence treatment groups as well as maintenance groups. In treatment, the individual demonstrates respect for co-patients, program facilitators, and other treatment service providers (e.g., mental health professionals). Other relevant examples may include voluntary attendance of alcohol, narcotics, or support groups and maintaining a cooperative and respectful relationship with other

professionals involved in case management in the institution or community (e.g., parole or probation officer).

I = Insufficient information to code this item.

N = Item not applicable

6. Housing/Accommodation Upon Release

    0 = The individual has no confirmed housing or accommodation upon release, or if such housing has been arranged, the individual refuses to accept or utilize the arrangement. If the arranged housing is with antisocial friends or family members, a zero rating should be applied.

    1 = More positive than 0 but largely not present

    2 = Less positive than 3 but still present

    3 = The individual has a confirmed, stable accommodation or housing in which to reside upon release. The housing/accommodation conditions are adequate, and sufficient in terms of safety and security needs. If housing is with family or friends, they are prosocial and supportive. If housing is through community services (e.g., halfway house), housing has active involvement of staff with good supervision.

7. Adaptive Coping/Prosocial Problem Solving

    0 = The individual resorts to counterproductive or maladaptive strategies to cope with stressors or high risk situations (e.g., interpersonal conflict, financial problems) that may serve to increase, rather than decrease risk, for future violence. Relevant examples of poor coping may include (but are not limited to) substance use, escalating or inciting conflict, or engaging in risky or thrill seeking behaviors.

    1 = More positive than 0 but largely not present

2 = Less positive than 3 but still present

3 = The individual demonstrates to use of positive, healthy or prosocial cognitive and behavioural skills and strategies to navigating stressful, challenging, or otherwise high risk situations. Relevant examples of positive prosocial coping may include (but are not limited to) exercise, perception checks, time outs, stress management, engaging supports or prosocial interests, etc. in response to adversities.

Appendix E

Operationalized List of Positive Community Outcomes (Burt, 2003)

Obtained Employment

0 = None or extremely sporadic and inconsistent. (e.g., cut lawns or paint for a friend).

1 = Employment less stable or consistent than 2. No employment but evidence of active attempts to gain employment.

2 = Stable and consistent employment. Employment lends itself to a structure and planned lifestyle (i.e. defined hours including shift work.).

I = Insufficient information to code.

Housing

0 = Nonexistent

1 = Unstable housing or marginal housing.

2 = Satisfactory or stable housing

I = Insufficient information to code.

Stability of Relationships/Family

0 = Negative and unstable. Relationships foster criminal beliefs and behaviour.

1 = Notable areas of both positive/stable and negative/unstable relationships. If any of the relationships foster procriminal attitudes/behaviour, score a zero.

2 = Positive and stable. Minimal conflicts. Conflicts resolved in prosocial mode.

I = Insufficient information to code.

Completion of Supervision (if relevant)

0 = Multiple breaches. Parole, statutory release, or conditional release revoked.

1 = Rare breaches. If breach occurs, long period of compliance follows.

2 = No breaches

I = Insufficient information to code.

___ length of supervision

Community Prosocial Activities

0 = Individual is involved in minimal prosocial activities on a weekly basis. No or minimal efforts were made by the individual to engage in prosocial community activities.

1 = Involvement in prosocial activities is on a less than weekly basis or is variable and is inconsistent from week to week.

2 = The individual is involved in prosocial activities on a weekly basis including but not limited to: religious involvement, sports, educational/vocational training, non-sanctioned volunteering, and other prosocial hobbies.

I = Insufficient information to code.

Appendix F

Data Collection Protocol

FPS#:________________

DEMOGRAPHICS:

Date of Birth (yy/mm/dd): ________

Ethnicity:
1. White
2. Aboriginal
3. East Asian
4. Black
5. Add as Needed

Education (enter total years completed): _________

Learning difficulties (circle): Yes No N/A __________________________

Level of Cognitive Functioning (use any info available): _________________________
____

CAAT scores (if available): PCL-R (or SV) score: ____________________

Employment Background:
1. Never employed
2. Frequently unemployed (more than 6 months of the last 1 year prior to current sentence)
3. Never employed a full year
4. Regularly employed (2-years and up)

Longest period of employment (yrs + place of employment): __________________

Marital Status:
1. Never married
2. Divorced/ separated
3. Currently common-law/married
4. Widowed

CRIMINAL HISTORY/ INDEX OFFENSE

Index Offense:

1. Sexual
2. Non-Sexual Violent
3. Non-Sexual Non-violent

Specify: ____

Offense History *(Do not include index offense when rating):*

Total prior charges for sexual offenses: _____
Total prior convictions for sexual offenses: _____
Total prior sexual offenses (charges + convictions) = _____

Total prior charges for non-sexual violent offences: _____
Total prior convictions for non-sexual violent offenses: _____
Total prior non-sexual violent offenses (charges + convictions) = _____

Total prior charges for non-sexual non-violent offences: _____
Total prior convictions for non-sexual non-violent offences: _____
Total prior non-sexual non-violent offenses (charges + convictions) = _____

Total prior sentencing dates: _____

Date of first adjudicated violent offense (charge or conviction) (yy/mm/dd): ____________
actual date offense was committed (yy/mm/dd): ____________
age at actual date offense was committed: _________
age at time offense was adjudicated: ____________

INSTITUTIONAL INFORMATION:

Name of Parent Institution: ______________

Security Level:

1. Minimum
2. Medium
3. Maximum

Sentence Commencement date (yy/mm/dd): ____________

Index Sentence Length (years, months, and days): ______________

Institutional Incidents Prior to Admission:
- # of minor incidents: _____
- # of major incidents: _____
- # of nonviolent incidents: _____
- # of violent incidents: _____

Institutional Incidents During Program:
- # of minor incidents: _____
- # of major incidents: _____
- # of nonviolent incidents: _____
- # of violent incidents: _____

Institutional Incidents Post Discharge:
- # of minor incidents: _____
- # of major incidents: _____
- # of nonviolent incidents: _____
- # of violent incidents: _____

PROGRAM INFORMATION:

Date admitted to ABC Program (yy/mm/dd): __________________

Age upon admission (Admission Date - DOB): __________

Date discharged from the ABC Program (yy/mm/dd): ___________

Total length of stay (months): ____________

Did the offender successfully complete the program? (Please circle one) Yes No

If No (not successful) was circled in previous question:

Reason for discharge (if applicable):

1. Disruptive behaviour
2. Low motivation/poor effort
3. Institutional infractions
4. Security concerns
5. Patient requested
6. Add as needed

Initiator of Discharge (if applicable):

1. Staff-initiated
2. Client-initiated
3. Mutually-initiated
4. System-initiated

If Yes (successful), did the offender repeat the program (circle): Yes No

- Reason for repeat: ________________
- Length of stay for repeat: _____________

If Yes (successful), did the offender have previous failures completing ABC (circle)? Yes NO

- Reason for previous failure: _________
- Number of previous failures: _________

PSYCHIATRIC INFORMATION

Axis I DSM diagnosis upon admission to ABC (not including substance abuse): ________
Axis I DSM diagnosis upon completion of ABC (not including substance abuse): ________
Axis I DSM diagnosis upon release to community (not including substance abuse): ___________

Axis II DSM diagnosis upon admission to ABC: _________
Axis II DSM diagnosis upon completion of ABC: ________
Axis II DSM diagnosis upon release to community: ________

Substance abuse/dependence diagnosis upon admission to ABC: ______________
Substance abuse/dependence diagnosis upon completion of ABC: _______________
Substance abuse/dependence diagnosis upon release to community: _______________

RECIDIVISM

Date of first release (DP/FP/SR/WED) (yy/mm/dd): ____________

Date of first reconviction (yy/mm/dd): ___________

Date of first new violent offense (charge or reconviction) (yy/mm/dd): _______________

Recidivism History:
Total new charges for sexual offense: ______
Total new convictions for sexual offense: ______
Total new sexual offenses (charges + convictions) = ______

Total new charges for non-sexual violent offense: _____
Total new convictions for non-sexual violent offense: _____
Total new non-sexual violent offenses (charges + convictions) = _____

Total new charges for non-sexual non-violent offense: _____
Total new convictions for non-sexual non-violent: _____
Total new non-sexual non-violent offences (charges + convictions) = _____

Sentence length for first new violent offense (years, months, days): ______

Aggregate sentence length for new violent offenses (years, months, days): ______

Appendix G

List of Abbreviations

ABC = aggressive behaviour control
C = clinical
CBT = cognitive behaviour therapy
Clin = clinical
CPIC = Canadian police information centre
CSC = correctional service of Canada
Dyn = dynamic
Ext = external
E = external
H = historical
HCR = Historical Clinical Risk Management scheme-20
HCR-20 = Historical Clinical Risk Management scheme-20
Hist = historical
I = internal
Int = internal
LS/CMI = Level of Service/Case Management Inventory
M = motivational
Mot = motivational
OMS = offender management system
PCL-R = Psychopathic Checklist-Revised
PF List = operationalized list of protective factors
Post = post-treatment
Pre = pre-treatment
R = risk management
Rel = at release
RiskM = risk management
RNR = risk-need-responsivity model
ROC = receiver operator characteristic
RPC = Regional Psychiatric Centre
SAP = Structured Assessment of Protective Factors
SAPROF = Structured Assessment of Protective Factors
SAVRY = Structured Assessment of Violence Risk in Youth
SIR = Statistical Information on Recidivism
SPJ = structured professional judgement
START = Short-Term Assessment of Risk and Treatability
Stat = static
SVR-20 = Sexual Violence Risk-20
TBS = terbeschikkingstelling
Tot = total
TTM = transtheoretical model of behavior change
Tx = treatment
VRAG = Violence Risk Appraisal Guide
VRS = Violence Risk Scale
VRS:SO = Violence Risk Scale: Sex Offender Version

Appendix H

Additional Psychometric Data for the PF List and Positive Community Outcomes

Table H.1
Additional Psychometrics for the PF List: Item Means, Standard Deviations, and Cronbach's Alpha if Item Deleted

Item	*M* (*SD*)	Cronbach's Alpha if Deleted
Pre-treatment		
1. Social Support	.98 (.77)	.688
2. Emotional Support	1.01 (.91)	.692
3. Leisure Time	.54 (.79)	.721
4. Religious Activity	.86 (.73)	.735
5. Attitude toward Intervention	1.35 (.69)	.735
6. Housing upon Release	.48 (.89)	.731
7. Adaptive Coping/Problem Solving	.42 (.61)	.732
Total	(5.6 (3.4))	(.750)
Post-treatment		
1. Social Support	1.23 (.81)	.739
2. Emotional Support	1.25 (.91)	.738
3. Leisure Time	1.06 (.97)	.735
4. Religious Activity	1.22 (.85)	.761
5. Attitude toward Intervention	1.89 (.84)	.750
6. Housing upon Release	.87 (1.10)	.791
7. Adaptive Coping/Problem Solving	1.40 (.78)	.746
Total	(8.9 (4.1))	(.780)
At Release		
1. Social Support	1.35 (.85)	.804
2. Emotional Support	1.39 (.94)	.801
3. Leisure Time	1.08 (.96)	.796
4. Religious Activity	1.31 (.91)	.825
5. Attitude toward Intervention	1.86 (.91)	.805
6. Housing upon Release	1.52 (1.14)	.832
7. Adaptive Coping/Problem Solving	1.40 (.84)	.797
Total	(9.9 (4.6))	(.831)

$N = 178$

Table H.2

Additional Psychometrics for the PF List: Corrected Item-Total Correlation Matrix

	Pre-treatment Total	Post-treatment Total	At Release Total
Item 1	.606	.579	.615
Item 2	.578	.569	.624
Item 3	.463	.580	.653
Item 4	.394	.452	.473
Item 5	.393	.515	.603
Item 6	.427	.348	.473
Item 7	.412	.541	.663

N = 178

Table H.3

Additional Psychometrics for the Positive Community Outcomes: Item Mean, Standard Deviation, Cronbach's Alpha if Item Deleted, and Corrected Item-Total Correlation Matrix

Item	*M* (*SD*)	Cronbach's Alpha if Deleted	Corrected Item-Total Correlation
1. Obtained Employment	.90 (.88)	.810	.712
2. Housing	1.54 (.65)	.856	.518
3. Stability of Relationships/Family	1.03 (.82)	.822	.667
4. Completion of Supervision	.49 (.79)	.806	.726
5. Community Prosocial Activities	.62 (.77)	.811	.710
Total	(4.58 (3.12))	(.853)	-

N = 137

Appendix I

Additional Survival Analyses using Trichotomized Risk/Protection Bins

Low cell sizes for the low risk and high protection bins were consistently issues in the Kaplan-Meier survival analyses conducted in the main body of this dissertation. This was due to the predominantly high risk and low protection nature of the sample. As a result of these low cell sizes, most comparisons between low risk and moderate risk bins (or high protection and moderate protection bins) were unable to reach significance. In recognition of this issue, a subset of these survival analyses are re-analyzed using alternate cut-offs for the risk/protection bins. In the main document, VRS risk bins were assigned as: 0-34, low risk; 35-50, moderate risk; and 51+, high risk. The HCR-20 and SAPROF bins were based on structured professional judgement and did not have specific cut offs. Last, the PF list did not have pre-defined protection bins, so it was excluded from survival analysis. For the following survival analyses, the scores on each tool, at each time point, have been trichotomized (i.e., divided the sample in thirds based on ascending total score of each measure) such that roughly equal cell sizes exist for each risk/protection bin. Given that the primary community outcome of interest was all violent recidivism (convictions-only), new survival analyses are conducted on this outcome using the alternate risk/protection bins. Further, the primary institutional outcome of interest was major institutional recidivism. As such, new survival analyses are conducted on this outcome as well.

Table I.1 presents the new risk/protection bin means, standard deviations, and cell sizes for these alternate cut-offs across the three time-points. Using the new cut offs, the mean score in the lowest third on the VRS would be considered moderate risk, with the middle and highest third bins both being well above the cut-off for high risk. Similarly high scores are noted on the HCR-20. For both the SAPROF and PF List, both the mean score for the lowest third and middle third appear below the total sample mean score, suggesting that both the middle and lowest thirds of the sample would likely have low protection.

Table I.1

Sample by Trichotomized Risk and Protection Bins

	Pre-treatment		Post-treatment		At Release	
	M (*SD*)	*n*	*M* (*SD*)	*n*	*M* (*SD*)	*n*
VRS						
Lowest third	47.3 (8.7)	62	42.4 (8.5)	64	-	-
Middle third	60.7 (1.7)	62	54.9 (1.9)	54	-	-
Highest third	66.6 (2.3)	54	62.1 (3.1)	60	-	-
Total	57.8 (9.7)	178	52.8 (10.0)	178	-	-
HCR-20						
Lowest third	22.4 (5.1)	60	19.1 (4.6)	62	-	-
Middle third	29.5 (1.2)	60	25.9 (1.0)	59	-	-
Highest third	33.3 (1.4)	58	31.0 (2.5)	57	-	-
Total	28.3 (5.5)	178	25.2 (5.8)	178	-	-
SAPROF						
Lowest third	4.0 (1.4)	57	6.7 (2.6)	59	7.2 (2.8)	61
Middle third	9.0 (1.8)	61	12.9 (1.5)	59	13.6 (1.7)	58
Highest third	17.0 (3.9)	60	20.3 (3.9)	60	22.4 (3.4)	59
Total	10.1 (6.0)	178	13.4 (6.3)	178	14.3 (6.8)	178
PF List						
Lowest third	2.4 (0.9)	58	4.5 (2.1)	58	5.1 (2.4)	62
Middle third	4.9 (0.9)	60	8.6 (1.0)	60	9.6 (1.1)	58
Highest third	9.5 (2.8)	60	13.5 (2.4)	60	15.3 (2.0)	58
Total	5.6 (3.4)	178	8.9 (4.1)	178	9.9 (4.6)	178

N = 178

Kaplan-Meier survival graphs were created for the pre-treatment risk and protection categories as offenders' scores were trichotomized into lowest third, middle third, or highest third for their respective risk/protection measure. Trichotomizing the sample based on total scores allows for more similar sample sizes in the bins when using a predominantly high risk sample. Thus, these bins were statistically derived and do not represent the cut offs generated bins presented in these tools administration manuals. Statistical comparisons were made among individual survival curves. Figure I.1 shows the cumulative proportion of offenders surviving over the follow-up period for each risk bin on the VRS (pre-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 52) was significantly higher than the lowest third risk bin (n = 48) but not the middle third risk bin (n = 55), Log Rank χ^2 (1) = 9.987, p = .002 and Log Rank χ^2 (1) = .666, p = .414, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 16.389, p = .000. Figure I.2 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment risk bin in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 54) was significantly higher than the lowest third risk bin (n = 48) but not the middle third risk (n = 53) bin, Log Rank χ^2 (1) = 8.883, p = .003 and Log Rank χ^2 (1) = .699, p = .403, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 12.338, p = .000. Figure I.3 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF pre-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 52) had a significantly higher failure rate than the highest third protection bin (n = 53) but not the middle third protection (n = 50) bin, Log Rank χ^2 (1) = 13.818, p = .000 and Log Rank χ^2 (1) = 1.745, p = .187. The middle third protection had a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 4.963, p = .026. Lastly, Figure I.4 presents the cumulative proportion of offenders surviving over the follow-up period for the PF List pre-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 52) had a significantly higher failure rate than the highest third protection bin (n = 50) but not the middle third protection bin (n = 53), Log Rank χ^2 (1) = 5.134, p = .023 and Log Rank χ^2 (1) = .543, p = .461. The middle third protection bin did not have a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 2.321, p = .128.

Figure I.1

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Pre-treatment Trichotomized Risk Bins (Convictions)

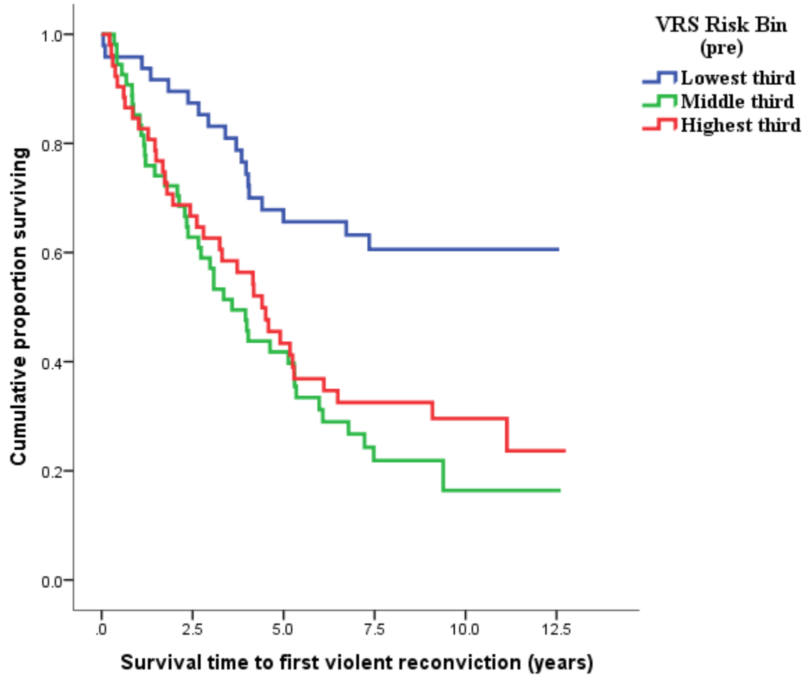


Figure I.2

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 Pre-treatment Trichotomized Risk Bins (Convictions)

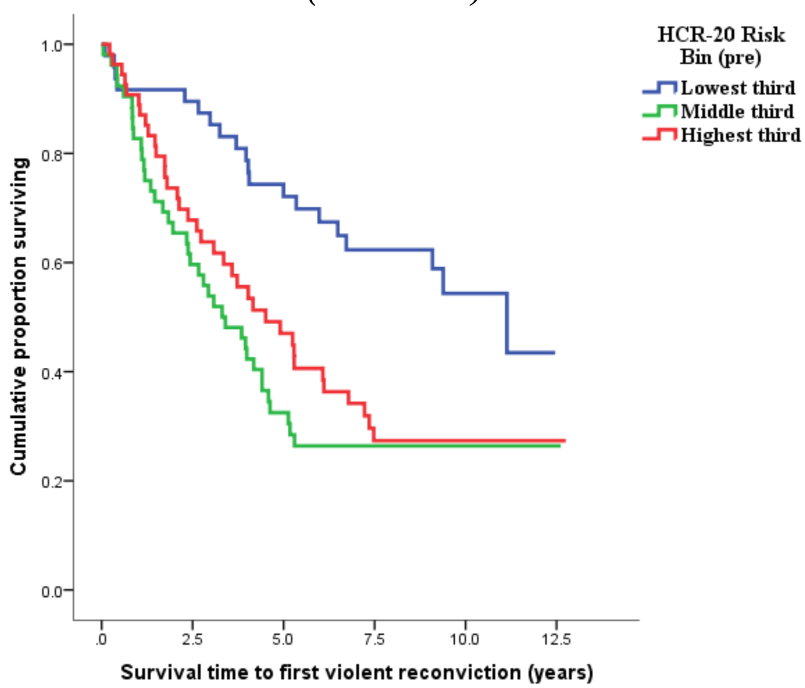


Figure I.3

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF Pre-treatment Trichotomized Protection Bins (Convictions)

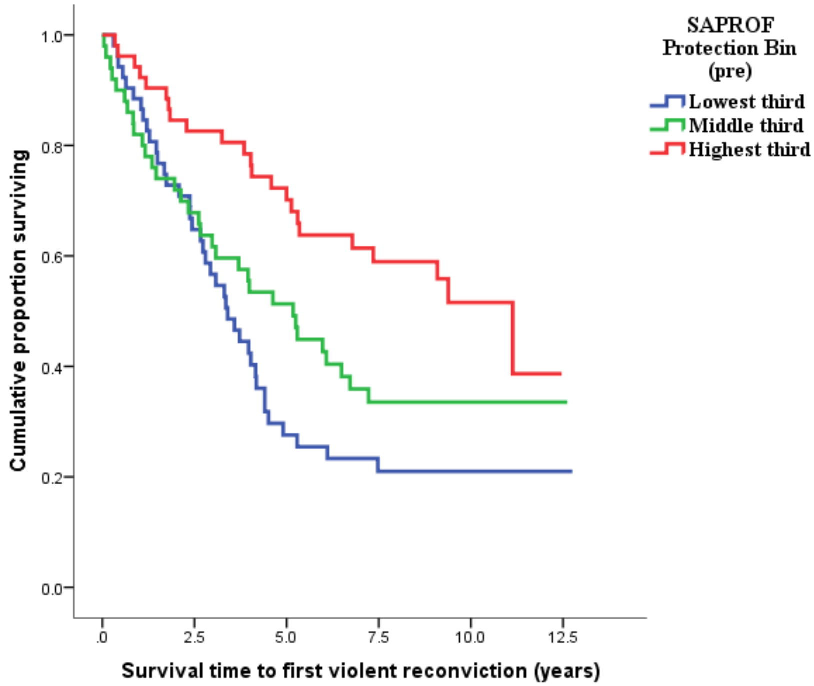
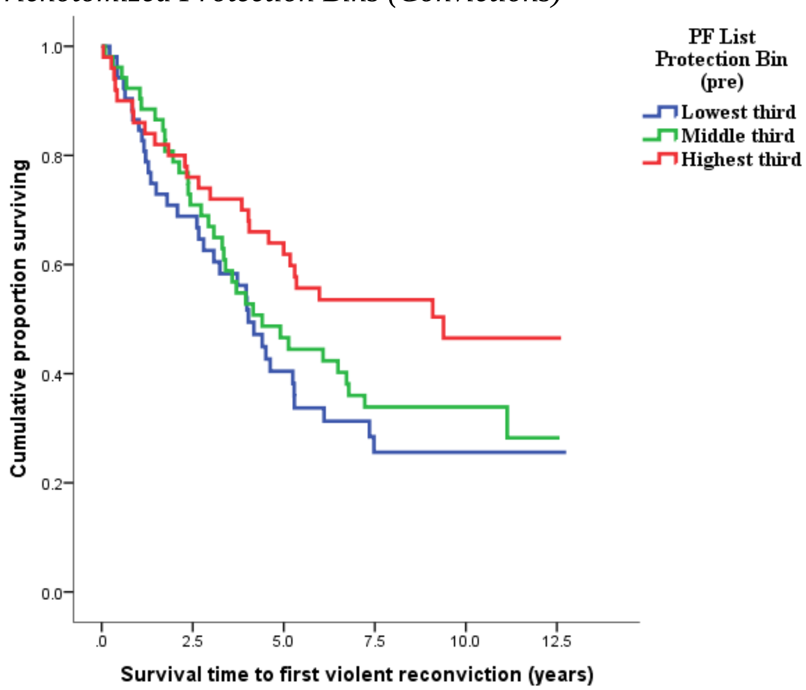


Figure I.4

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by PF List Pre-treatment Trichotomized Protection Bins (Convictions)



Survival graphs were created for the post-treatment risk and protection categories as offenders' scores were trichotomized into lowest third, middle third, or highest third for their respective risk/protection measure. Statistical comparisons were made among individual survival curves. Figure I.5 shows the cumulative proportion of offenders surviving over the follow-up period for each risk bin on the VRS (post-treatment) in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 59) was significantly higher than the lowest third risk bin (n = 47) but not the middle third risk bin (n = 49), Log Rank χ^2 (1) = 12.767, p = .000 and Log Rank χ^2 (1) = .004, p = .950, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 10.687, p = .001. Figure I.6 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's post-treatment risk bin in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 53) was significantly higher than the lowest third risk bin (n = 49) and approached significance for the middle third risk (n = 53) bin, Log Rank χ^2 (1) = 18.476, p = .000 and Log Rank χ^2 (1) = 3.105, p = .078, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 5.476, p = .019. Figure I.7 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF post-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 50) had a significantly higher failure rate than the highest third protection bin (n = 51) and the middle third protection (n = 54) bin, Log Rank χ^2 (1) = 13.863, p = .000 and Log Rank χ^2 (1) = 4.468, p = .035. The middle third protection did not have a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 1.839, p = .175. Lastly, Figure I.8 presents the cumulative proportion of offenders surviving over the follow-up period for the PF List post-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 51) had a significantly higher failure rate than the highest third protection bin (n = 52) but not the middle third protection bin (n = 52), Log Rank χ^2 (1) = 15.462, p = .000 and Log Rank χ^2 (1) = 1.497, p = .221. The middle third protection bin had a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 9.561, p = .002.

Figure I.5

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by VRS Post-treatment Trichotomized Risk Bins (Convictions)

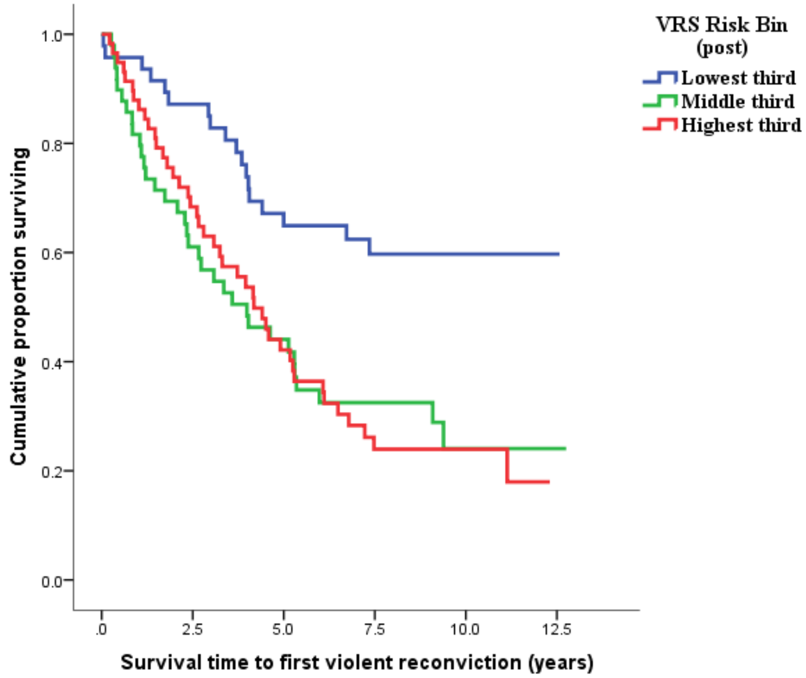


Figure I.6

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by HCR-20 Post-treatment Trichotomized Risk Bins (Convictions)

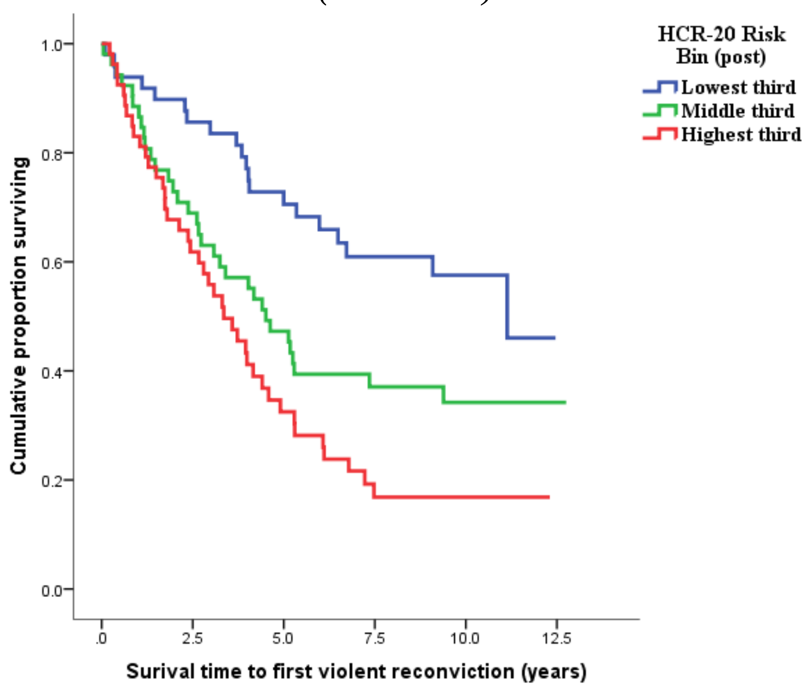


Figure I.7

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF Post-treatment Trichotomized Protection Bins (Convictions)

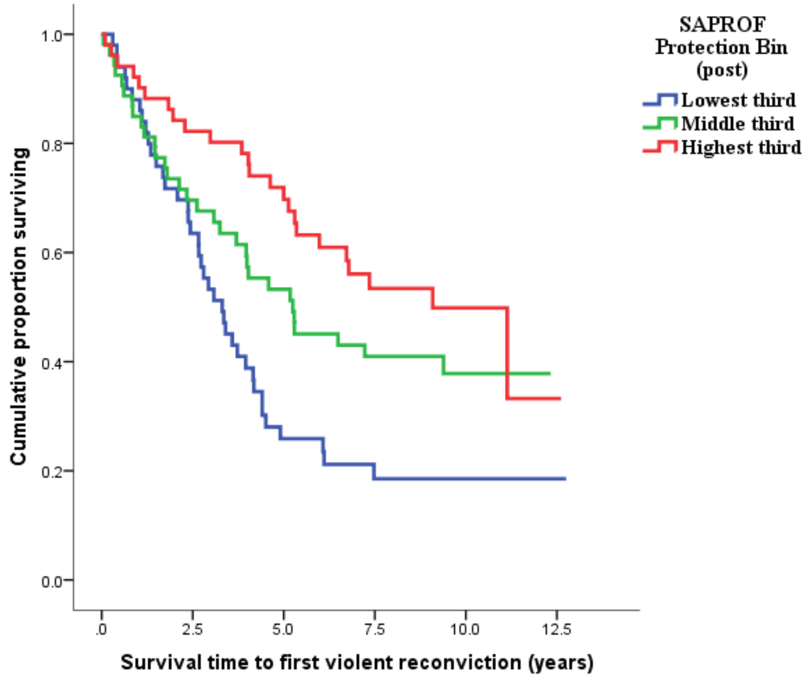
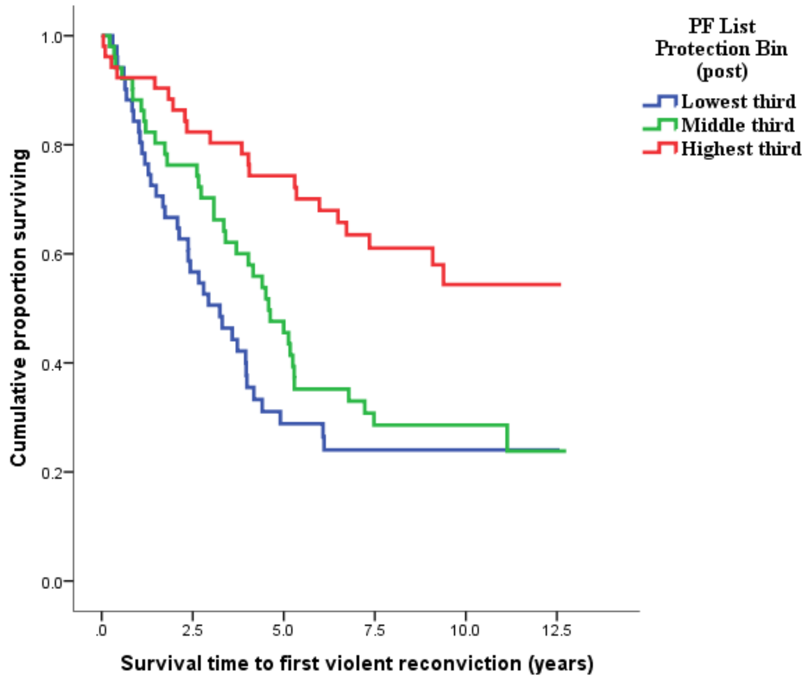


Figure I.8

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by PF List Post-treatment Trichotomized Protection Bins (Convictions)



Survival graphs were created for the at release protection categories as offenders' scores were trichotomized into lowest third, middle third, or highest third for their protection measure. Statistical comparisons were made among individual survival curves. Figure I.9 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF post-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 48) had a significantly higher failure rate than the highest third protection bin (n = 54) and the middle third protection (n = 53) bin, Log Rank χ^2 (1) = 24.180, p = .000 and Log Rank χ^2 (1) = 4.029, p = .045. The middle third protection bin had a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 7.183, p = .007. Lastly, Figure I.10 presents the cumulative proportion of offenders surviving over the follow-up period for the PF List post-treatment protection bins in relation to all violent reoffending (convictions-only). Pairwise comparisons revealed that the lowest third protection bin (n = 51) had a significantly higher failure rate than the highest third protection bin (n = 49) but not the middle third protection bin (n = 55), Log Rank χ^2 (1) = 22.208, p = .000 and Log Rank χ^2 (1) = .592, p = .441. The middle third protection bin had a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 14.520, p = .000.

Figure I.9

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by SAPROF At Release Trichotomized Protection Bins (Convictions)

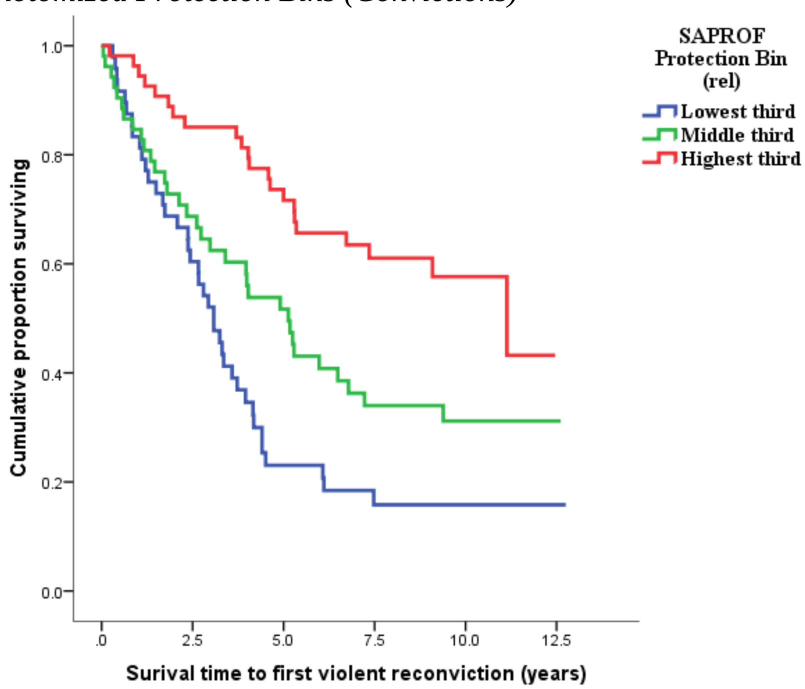
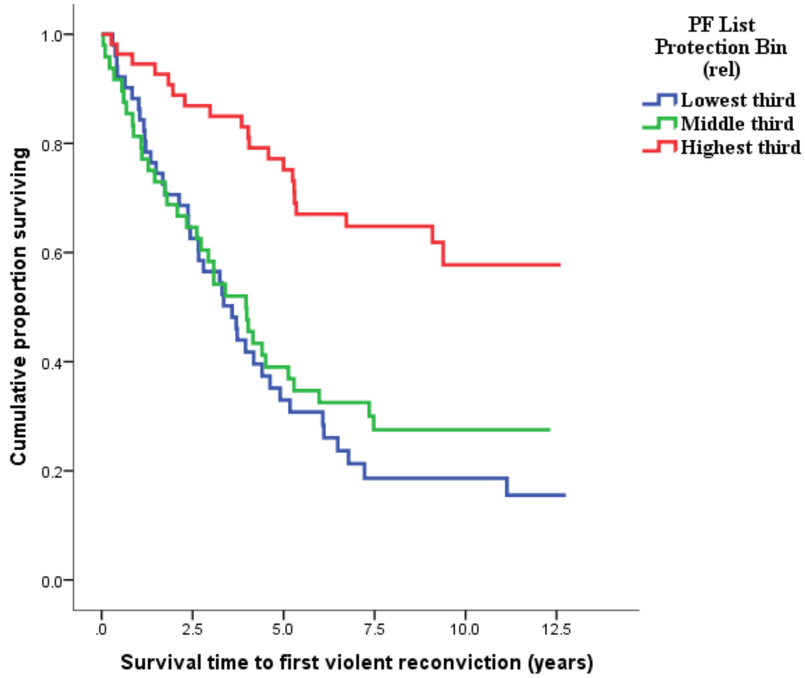


Figure I.10

Survival Function: Cumulative Proportion of Offenders who Violently Reoffended by PF List At Release Trichotomized Protection Bins (Convictions)



Survival graphs were created for the pre-treatment risk and protection bins as offenders' scores were trichotomized into lowest third, middle third, or highest third for their respective risk/protection measure. Statistical comparisons were made among individual survival curves. Figure I.11 shows the cumulative proportion of offenders surviving over the follow-up period for each risk bin on the VRS (pre-treatment) in relation to post-treatment major misconducts. Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 54) was significantly higher than the lowest third risk bin (n = 62) but not the middle third risk bin (n = 62), Log Rank χ^2 (1) = 16.215, p = .000 and Log Rank χ^2 (1) = 1.462, p = .227, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 9.116, p = .003. Figure I.12 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's pre-treatment risk bin in relation to major misconducts. Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 58) was significantly higher than the lowest third risk bin (n = 60) but not the middle third risk (n = 60) bin, Log Rank χ^2 (1) = 10.200, p = .001 and Log Rank χ^2 (1) = .099, p = .752, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 8.782, p = .003. Figure I.13 presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF pre-treatment protection bins in relation to major misconducts. Pairwise comparisons revealed that the lowest third protection bin (n = 57) did not have a significantly higher failure rate than the highest third protection bin (n = 60) and the middle third protection (n = 61) bin, Log Rank χ^2 (1) = 3.206, p = .073 and Log Rank χ^2 (1) = .088, p = .766. The middle third protection bin did not have a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 1.856, p = .173. Lastly, Figure I.14 presents the cumulative proportion of offenders surviving over the follow-up period for the PF List pre-treatment protection bins in relation to major misconducts. Pairwise comparisons revealed that the lowest third protection bin (n = 58) did not have a significantly higher failure rate than the highest third protection bin (n = 60) and the middle third protection bin (n = 60), Log Rank χ^2 (1) = .726, p = .394 and Log Rank χ^2 (1) = 1.222, p = .269. The middle third protection bin had a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = 4.156, p = .041.

Figure I.11
Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Pre-treatment Trichotomized Risk Bins (Major Misconduct)

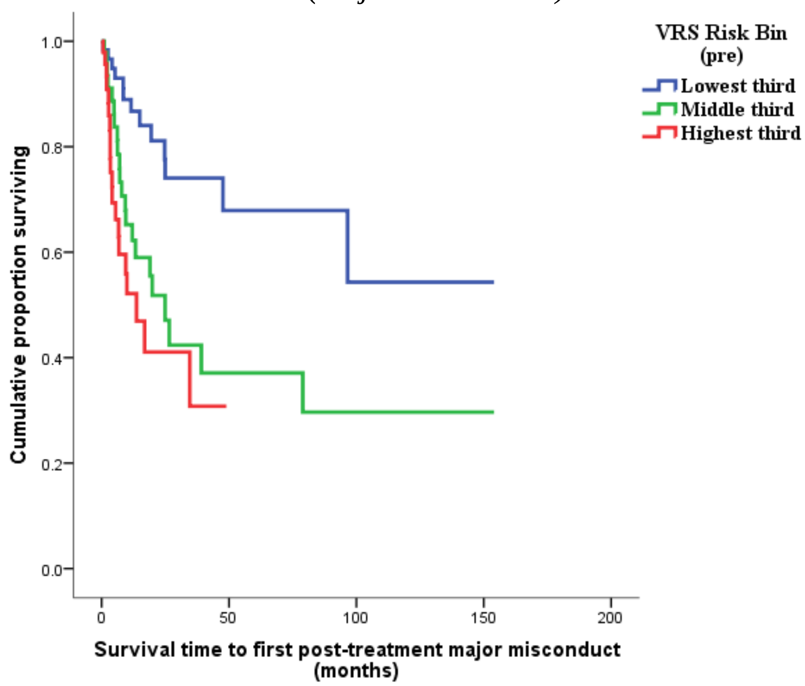


Figure I.12

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Pre-treatment Trichotomized Risk Bins (Major Misconduct)

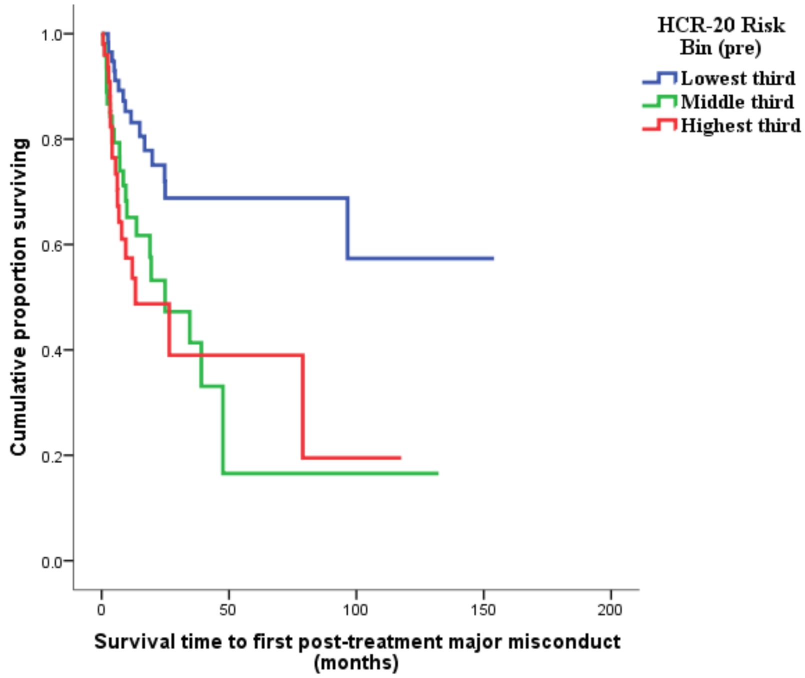


Figure I.13

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Pre-treatment Trichotomized Protection Bins (Major Misconduct)

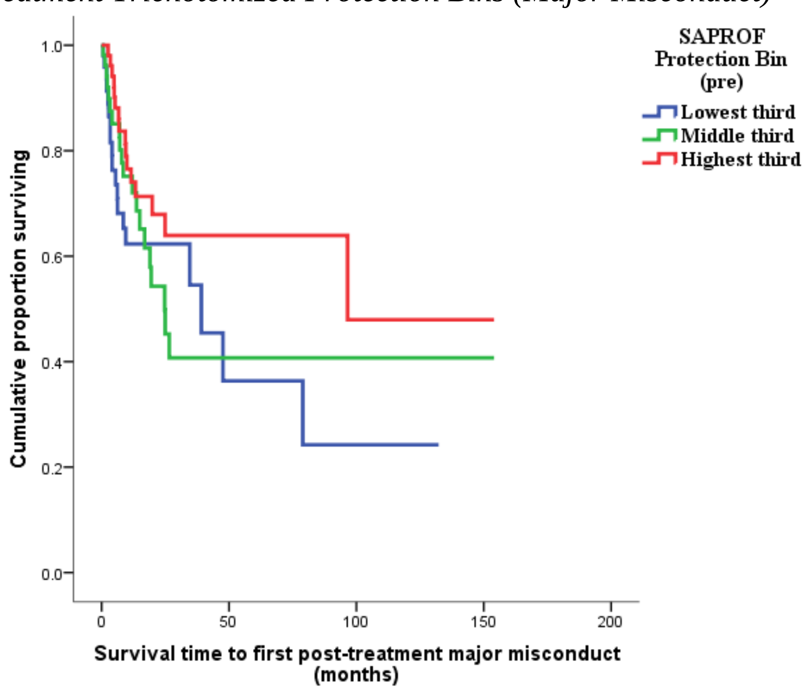
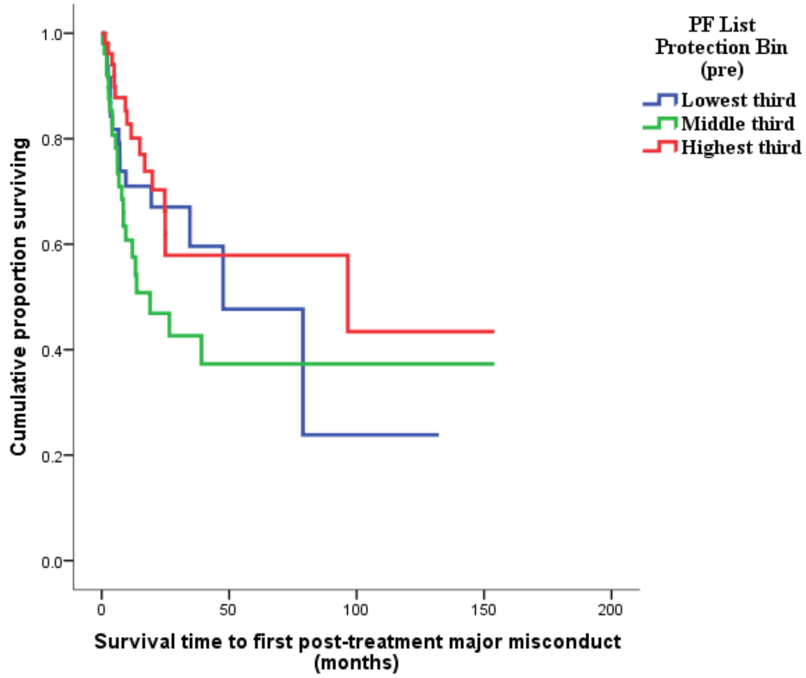


Figure I.14

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by PF List Pre-treatment Trichotomized Protection Bins (Major Misconduct)



Survival graphs were created for the post-treatment risk and protection bins as offenders' scores were trichotomized into lowest third, middle third, or highest third for their respective risk/protection measure. Statistical comparisons were made among individual survival curves. Figure I.15 shows the cumulative proportion of offenders surviving over the follow-up period for each risk bin on the VRS (post-treatment) in relation to post-treatment major misconducts. Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 60) was significantly higher than the lowest third risk bin (n = 64) but not the middle third risk bin (n = 54), Log Rank χ^2 (1) = 14.746, p = .000 and Log Rank χ^2 (1) = 1.310, p = .252, respectively. The middle third risk bin had a significantly higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 8.632, p = .003. Figure I.16 shows the cumulative proportion of offenders surviving over the follow-up period for each of the HCR-20's post-treatment risk bin in relation to major misconducts. Pairwise comparisons revealed that the failure rate for the highest third risk bin (n = 57) was significantly higher than the lowest third risk bin (n = 62) and approached significance for the middle third risk (n = 59) bin, Log Rank χ^2 (1) = 15.760, p = .000 and Log Rank χ^2 (1) = 3.327, p = .068, respectively. The middle third risk bin approached significance for a higher failure rate than the lowest third risk bin, Log Rank χ^2 (1) = 3.408, p = .065. Figure I.17

presents the cumulative proportion of offenders surviving over the follow-up period for the SAPROF post-treatment protection bins in relation to major misconducts. Pairwise comparisons revealed that the lowest third protection bin (*n* = 59) did not have a significantly higher failure rate than the highest third protection bin (*n* = 60) and the middle third protection (*n* = 59) bin, Log Rank χ^2 (1) = 2.211, *p* = .137 and Log Rank χ^2 (1) = .405, *p* = .525. The middle third protection did not have a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = .586, *p* = .444. Lastly, Figure I.18 presents the cumulative proportion of offenders surviving over the follow-up period for the PF List post-treatment protection bins in relation to major misconducts. Pairwise comparisons revealed that the lowest third protection bin (*n* = 58) had a significantly higher failure rate than the highest third protection bin (*n* = 60) and the middle third protection bin (*n* = 60), Log Rank χ^2 (1) = 8.803, *p* = .003 and Log Rank χ^2 (1) = 4.715, *p* = .030. The middle third protection bin did not have a significantly higher failure rate than the highest third protection bin, Log Rank χ^2 (1) = .782, *p* = .376.

Figure I.15
Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by VRS Post-treatment Trichotomized Risk Bins (Major Misconduct)

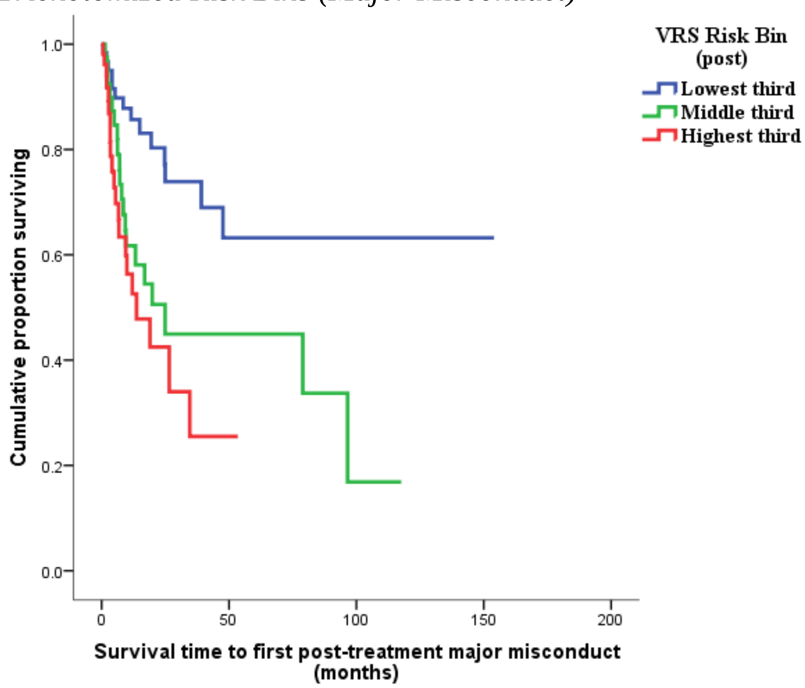


Figure I.16

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by HCR-20 Post-treatment Trichotomized Risk Bins (Major Misconduct)

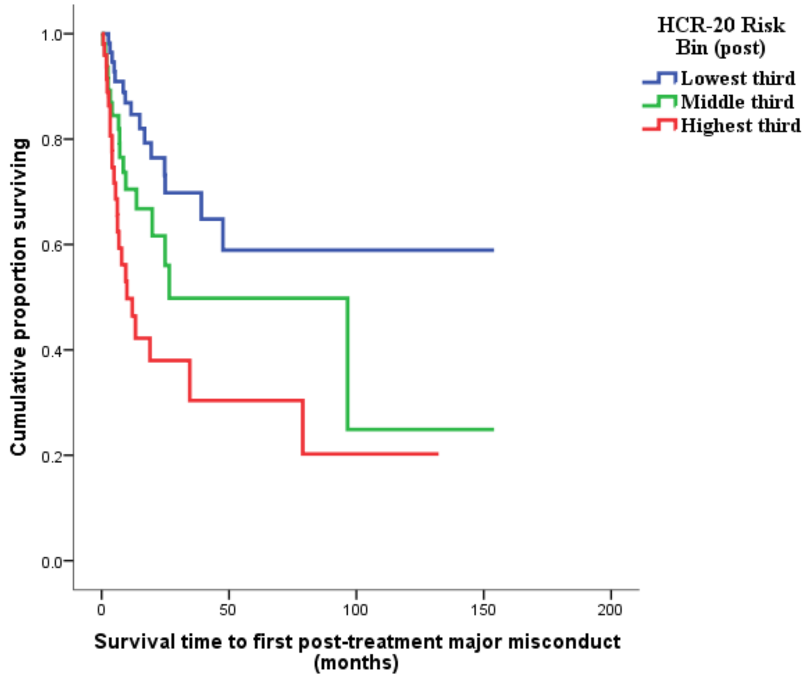


Figure I.17

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by SAPROF Post-treatment Trichotomized Protection Bins (Major Misconduct)

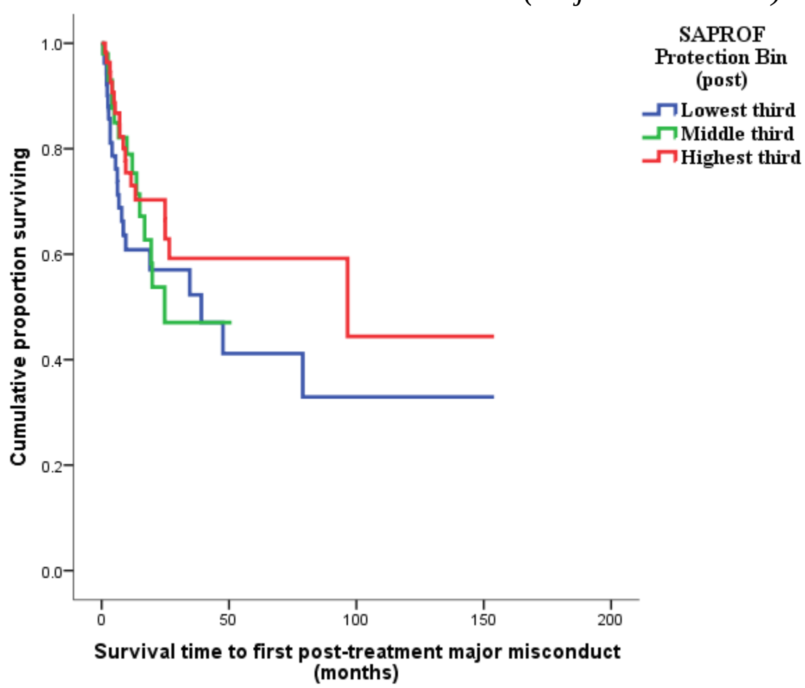


Figure I.18

Survival Function: Cumulative Proportion of Offenders who Institutionally Reoffended by PF List Post-treatment Trichotomized Protection Bins (Major Misconduct)